FACULTY EXPERIENCES WITH COLLABORATIVE LEARNING IN THE ONLINE CLASSROOM

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The purpose of this qualitative case study was to identify the perceptions and experiences that instructors in higher education have toward providing collaborative learning activities and opportunities in their online classroom. Through semi-structured interviews, the experiences of four higher education instructors from two universities were collected concerning their provision of collaborative learning opportunities in their online classrooms. A multi-phase coding process was used to analyze the information, including the constant comparative coding method for theme and category development. Three themes emerged from the study: online communication approaches matter, there are challenges and supports for online collaborative learning, and care is at the core of online learner support. The findings are discussed and recommendations are provided for the development and design of meaningful online collaborative learning.

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TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1

INTRODUCTION

Statement of the Problem

There have been significant contributions to research in the field of online learning and online education in higher education during the past 15 years. Various facets of online learning have been researched, including the technology and pedagogy, student satisfaction, learning outcomes, and the quality of online learning in higher education (Akdemir, 2008; Allen & Seaman, 2014; Kang & Im, 2005). Face-to-face classroom instruction has been the standard to match (Larreamendy-Joerns & Leinhardt, 2006). Research continues on various areas of online education in an attempt to develop and provide innovative online courses that possess academic excellence and incorporate the ideals of face-to-face instruction. However, the two are not the same, as the instructor and students are not in the same physical location in online learning. The flexibility of scheduling draws students to online learning, but the physical limitations present challenges. Online students miss the interactions and informal communications found in a face-to-face college classroom. Instructors must shift roles in online learning, with more emphasis placed on being a facilitator and mentor (Barr & Tagg, 1995; Rovai & Jordan, 2004). The delay of responses to questions also presents a challenge. Online education takes additional discipline for instructors and students. The number of students enrolling in at least one online course continues to grow, inspiring researchers to persistently advance and improve upon what students are offered and are learning in the higher education online classroom.

A report series originating in 2002 investigated the state of online learning in U.S. higher education at 2,800 institutions (Allen & Seaman, 2014). Prior to this, the number of institutional leaders who believed that the learning outcomes in online education were equal to classroom education had increased in nine consecutive reports (Allen & Seaman, 2014). However, in the most recent report, this number decreased. Thus, while the growth of students taking at least one online course has continued to increase (to an all-time high of 33.5 percent) and online education remains an important part of the long-term strategy for many institutions, the recent report indicates the overall perception of the quality of online instruction may not be improving (Allen & Seaman, 2014).

Rovai (2004) emphasized quality online education, integrating best practices and encouraging instructors to reflect upon and improve their online teaching and course design skills. Instructors "must have a solid understanding of the major principles of online course design before they attempt to put a course together" (Rovai, 2004, p. 82). Instructors are inclined to teach as they were taught (Cyrs, 1997) and apply the same approach and instruction in the online classroom. However, there are fundamental differences between the online classroom and the face-to-face classroom (i.e. the physical limitations; communication; course design and delivery) and it would be a mistake to teach an online course the same way an instructor would teach a face-to-face course (Rovai, 2004).

Many students take online courses for the flexible and asynchronous nature of this type of learning (Hrastinski, 2008). Students in online courses miss the conversations in face-to-face courses when learning online. The emotion, interaction,

energy, and connections were lacking in some online courses, as reported in student interviews (Stodel, Thompson & MacDonald, 2006). Synchronous meetings with a computer conferencing program (i.e. Adobe Connect) remove some of this flexibility, but are one new approach used to simulate a typical face-to-face classroom. However, funding, time constraints of working students and the availability of the technology needed to conduct such meetings could present challenges. As technology adoption increases, pedagogical changes in online learning have gradually emerged.

Three separate studies on 26 online courses at the New Jersey Institute of Technology, determined that participating in collaborative learning is directly related to higher learning outcomes when compared with those in traditional settings (Hiltz, Coppola, Rotter, Turoff, & Benbunan-Fich, 2000). Additionally, technologies that encourage interaction can be used to develop higher-order thinking skills and build knowledge when following a constructivist or collaborative learning model (Leidner & Jarvenpaa, 1995). If such technologies are to be "fully optimized (sic) as an enabling factor in collaborative distance education then their educational benefits need to be more strongly highlighted to practitioners" (O'Neill, Scott & Conboy, 2011, p. 945). The "fear or the loss of content coverage and lack of teacher training in collaborative learning methods" are examples of why teachers are reluctant to implement collaborative learning activities (Nayan, Shafie, Mansor, Maesin & Osman 2010, p. 116). It is critical to find approaches to "support teachers in developing and applying creative and collaborative teaching methods" (Hämäläinen, & Vähäsantanen, 2011, p. 179) as learner engagement and collaboration in online education continues to be

identified as a priority for further research (Kim & Bonk, 2006; Moore and Kearsley, 2012; Oncu & Cakir, 2011).

From 2000-2005 there was a surge of attention on online collaborative learning (Roberts, 2004). Based on a review of the literature, the research on collaborative learning online focuses on approaches and logistics of forming online groups, the approaches to integrate collaborative learning, tools, grading, and measuring learning. The student perspective and measuring student learning is the focus of this most recent research. The 2015 Horizon Report identifies higher education institutions advancing cultures of change and evolution by promoting innovations at their campuses. Training faculty in preparation to teach online is one such innovation mentioned (Johnson, Adams Becker, Estrada, & Freeman, 2015). Instructors do prioritize the need for training, specifically in issues related to technical aspects and how to teach online (Beck & Ferdig, 2008). “Recent research has indicated factors that influence teachers’ abilities to apply creative and collaborative working methods. First, there is a need to highlight the autonomy of teachers’ work to enhance professional development and creativity. Second, external administration and the work culture need to support creative and collaborative teaching methods. Third, there is a need to offer teachers concrete resources to orchestrate collaborative learning and creativity” (Hämäläinen, & Vähäsantanen, 2011, p. 178).

Purpose of the Study

“The potential of technology for future learning relies first on designing new ways to support teachers in orchestrating collaborative learning and creativity, and second, in

developing technological environments which require and support definite collaboration in problem solving" (Hämäläinen, & Vähäsantanen, 2011, p. 178). The purpose of this qualitative case study was to identify the perceptions and experiences that instructors in higher education have toward providing collaborative learning activities and opportunities in their online classroom. With synchronous, Web 2.0, and cloud-based applications such as web conferencing applications, blogs and collaborative document development opportunities the options for developing collaborative learning activities are expanding. It is central to the study to identify how instructors in higher education teaching fully online courses are presently offering collaborative opportunities to their students and to provide voices to these instructors.

Through semi-structured interviews, the researcher gathered the experiences that instructors reported concerning their provision of collaborative opportunities in their online classrooms for this case study. Information was collected concerning the meaning of collaborative learning to the individual instructors. An inquiry of these instructors' preferences concerning collaborative learning practices and tools in the online classroom was also conducted. Codes and inferences were developed through the multi-phase analysis of the interviews with higher education online instructors. Further, theme development through constant comparative coding process was used to clarify and narrow categories.

Topics of Inquiry

- What are the perceptions instructors in higher education have toward collaborative learning in the online classroom?

- What are the experiences faculty identify with providing online collaborative learning?

Sub-topics of Inquiry

- What tools are higher education instructors integrating into their pedagogy for collaborative learning in the online classroom?
- How are online instructors presently providing collaborative learning opportunities in the online classroom?

Rationales

Barkley, Major, and Cross found that there is very little research on the impact of collaborative learning on teachers (2014). The experiences, the types of collaborative activities, and the tools used will be explored from the perspective of the educators in this case study. The role of an instructor is “significant in the enhancement of productive collaboration processes” (Hämäläinen, & Vähäsantanen, 2011, p. 179). Much of the focus of current research has been on student learning, online collaborative learning from the student perspective, the tools used to support collaborative learning, and instructors’ ability to respond to the needs of students in order to provide these learning opportunities (Capdeferro & Romero, 2012; Coll, Rochera, & de Gispert, 2014; Kai-Wai Chu & Kennedy, 2011; Thompson & Ku, 2006). There should be more attention and research on how to support instructors’ “abilities to apply creative and collaborative working methods” (Hämäläinen, & Vähäsantanen, 2011, p. 179). There is a need to offer instructors concrete resources to orchestrate collaborative teaching methods,

support for collaborative teaching methods from administrators and the work culture, and a “need to highlight the autonomy of teachers’ abilities to apply creative and collaborative working methods” (Hämäläinen, & Vähäsantanen, 2011, p. 179). The need for research on online instructor support, training, professional development, and guidance on how to integrate tools for collaboration and collaborative learning is recommended (Ajjan & Hartshorne, 2008; Hämäläinen, & Vähäsantanen, 2011; Kim & Bonk, 2006; Oncu & Cakir, 2011; Zhu, Valcke & Schellens, 2010).

Research Methods and Design

“Qualitative research is conducted through intense and/or prolonged contact with participants in a naturalistic setting to investigate the everyday and/or exceptional lives of individuals, groups, societies, and organizations” (Miles, Huberman & Saldaña, 2013, p. 9). A qualitative researcher seeks a holistic view of the problem being studied and is interested in the participants’ life experiences and their construction of meaning surrounding these experiences (Creswell, 2014; Merriam, 2009; Miles et al., 2013). Further, they “study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them” (Denzin & Lincoln, 2005, p. 3).

A case study was used as the qualitative approach and design for this study. The “particularity and complexity of a single case” are studied to further understand the importance of the case (Stake, 1995, p. xi). The topics and subtopics of inquiry are “how” and “why” questions regarding a contemporary phenomenon (collaborative learning in online learning), making a case study research a preferred method for this

inquiry (Yin, 2014). Further, more than one source of evidence will be used; four instructors from two different universities contributed to the case study.

The participants for this study consisted of higher education instructors who teach fully online courses and use collaborative learning in their courses. Four instructors from two research universities were interviewed. The researcher utilized purposive sampling, a technique used to select participants who are representative of the area of interest (Teddlie & Tashakkori, 2009). The researcher was looking for instructors who teach fully online courses and are providing collaborative learning opportunities in their online classroom. These lived experiences and social practices provided by instructors through responding to questions during semi-structured interviews allowed the researcher to explore the “how” and “why” of such happenings (Mason, 2006). The use of semi-structured interview questions helped identify and further explain experiences, develop a deeper understanding, and a more thorough analysis of the overall perceptions and experiences online instructors have when providing collaborative learning opportunities.

This qualitative study identified perceptions and experiences that instructors in higher education have toward providing collaborative learning opportunities in their online classroom. Through semi-structured interviews, demographic information was gathered and collaborative learning definitions and activities were explained and described by the participants. Thoughts on the use of collaborative learning in the online classroom were explored. The participants further explained their approaches to implementing collaborative learning activities in their online classroom. Experiences of and situations in which collaborative learning went well and instances where it did not

were described. Further, the participants discussed the tools used in their online classroom and support strategies used when integrating new collaborative tools or collaborative activities in online setting.

A combination of coding methods and a multi-phase process was used in the analysis of the information obtained in this study. This included In Vivo, Attribute, Initial, Descriptive, and Structural coding in Phase 1. Constant comparative analytical method examining the combined codes was employed for a second phase of information analysis. Constant comparative methods combine a coding procedure with a style of theory development, as compared to a separate analysis (Glaser & Strauss, 1999). The method consists of four stages. The researcher used the guidance of Lincoln (1985), Glaser and Strauss (1999), and Saldaña (2009) while analyzing the information gathered from the interviews and developing categories and themes, focusing on the information processing aspects of the constant comparative method.

Operationalizations

Definitions for the following terms developed from a review of literature. Several terms used in this study are often used in place of terms with a similar meanings or related affordances. The term online learning is often used synonymously with web-based learning or e-learning (Moore, Dickson-Deane, & Galyen, 2011). Cooperative learning and collaborative learning are often used interchangeably. The terms have similar meanings, however there are distinct differences. Providing online group activities does not “automatically result in collaborative interactions” or online collaborative learning, as instructors may believe (Paulus, 2005, p. 113). This

technology determinism, or a “belief that because learners now can interact more frequently, they automatically will” is a side effect of the availability of various and emerging technology tools (Paulus, 2005, p. 102).

Group learning occurs in a larger group as compared to collaborative learning. Early examples of online group learning were typically asynchronous in nature and included the use of discussion threads that allow students to interact, discuss and pose questions to group members (Henri & Rigault, 1996; Paulus, 2005). Collaborative and cooperative learning groups are smaller, usually with less than six members. Further, cooperative learning utilizes a division of labor approach and members of a group choose certain tasks to complete individually (Henri & Rigault, 1996). In collaborative learning students work together to increase understanding and reach a common goal with support from the instructor, and as group members share various perspectives, awareness develops of an individual’s thinking process (Arvaja, Salovaara, Häkkinen, & Järvelä, 2007; Bento & Schuster 2003). Mutual respect of group members and recognition of the individual abilities that each group member possesses is an essential component of a collaborative learning process (Hathorn & Ingram, 2002). More recent research on online collaborative learning looked at how the features of traditional collaborative learning evolve in the online environment. The same features of collaborative learning (intentional design, co-laboring of individuals, and meaningful learning) are approached differently in an online course versus a face-to-face course (Barkley et al., 2014; Major, 2015). Intentional design is potentially more important in the online classroom. Co-laboring or equal distribution of work and meaningful learning

presents a challenge in an online course because of the physical limitations (Barkley et al., 2014; Major, 2015).

Collaborative learning

Collaborative learning occurs in "a learning environment in which individual learners support and add to an emerging pool of knowledge of a group; emphasizes peer relationships as learners work together creating learning communities" (Moore & Kearsley, 2012, p. 305). The term collaborative learning corresponds with Vygotsky's theory of learning, specifically the "zone of proximal development" (ZPD), in which a shared understanding can be developed during this learning process (1978). "Online collaborative learning comprises the same indispensible features as onsite collaborative learning, but they typically unfold differently" (Barkley et al., 2014, p. 5).

Constructivism and Social Constructivism

Constructivism is a worldview and theory that "rests on the assumption that knowledge is constructed by learners as they attempt to make sense of their experiences" (Driscoll, 1994, p. 387). It is a learner-centered theory in which learners engage in social negotiation to test their understandings or develop meaning (Vygotsky, 1978). Social constructivists extend the constructivist viewpoint. "Social constructivists believe that groups construct knowledge, collaboratively creating a culture of shared meanings" (Barkley et al., 2014, p. 17).

Online course

An online course is delivered through the Internet synchronously or asynchronously. The teacher and students are separated geographically. It is often used synonymously with web-based learning or e-learning.

Face-to-face course

A face-to-face course is a traditional classroom approach where the teacher and students are in the same geographical location and can communicate in time and in-person.

Interaction

Interaction is an interplay or exchange of information, ideas, or opinions between the instructor and student or between students that may be influential in some manner (Moore & Kearsley, 2012; Wagner, 1994).

Asynchronous online learning

Asynchronous learning allows learners to work at different times. Communication in asynchronous learning is not at the same time (Moore & Kearsley, 2012).

Synchronous online learning

Synchronous learning allows learners to work at the same time, but they do not need to be in the same geographic location. One example of synchronous online learning is a virtual course meeting using a web conferencing program, such as Adobe Connect.

Web 2.0

Web 2.0 is the read-write web, or a generation of web-based applications that "allow collaboration and information sharing" (as opposed to simply proving access to information) (Moore & Kearsley, 2012, p. 313). Blogs are an example of a Web 2.0 application.

Cloud

The term "cloud" was inspired by information technology textbooks and images of computer clusters linked together, or a visual of what the Internet looks like (Scale, 2009; Sultan, 2010). It is believed that the cloud images were used as a user-friendly image to conceal the complexity of what was behind them (Sultan, 2010).

Cloud computing

The National Institute of Standards and Technology (NIST) provides a cohesive definition, which emerges as the standard description of cloud computing as "a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Mell & Grance, 2011, p. 2).

Cloud-based application

A cloud-based application is a program that operates from the cloud. GoogleDocs is an example of this type of application. A cloud-based application lives in the cloud and initiates or is activated through an Internet connection.

Outcomes and Contributions to the Body of Knowledge

The next chapter synthesized literature on the foundational learning theory of collaborative learning, constructivism and social constructivism, and the instructional design methods used to develop collaborative learning. Further, online learning best practices and the articles and research on the use and integration tools and applications for collaborative learning, and support for the integration of collaborative learning were explored. This study helped identify how faculty in higher education feel about collaborative learning in online learning, including their perceptions of and experiences with collaborative learning. Additionally, the researcher identified some of the current tools instructors integrate in their online classroom for collaborative learning.

The articles and research on the use and integration of cloud-based collaborative applications (such as Google Docs) and other Web 2.0 tools (such as blogging) revealed the research studies are emerging concerning their use in higher education. Cloud-based and Web 2.0 applications have emerged in recent years with many benefits for online collaboration, media sharing, and student and teacher interaction. These Web 2.0 applications are not widely utilized in higher education, though they have the potential for encouraging creative interaction and informal communication

(Moore & Kearsley, 2012). These applications are thought to have a profound impact on education for future learners (Moore & Kearsley, 2012).

Instructors, researchers, and students use cloud-based and Web 2.0 applications to write collaboratively and develop various deliverables within these online spaces (Schöch, 2014). Educators gain new ideas and inspiration as they connect with other educators (Crane, 2012). Students may benefit from this connection and collaboration, as well. Advances in technology, connection speed, and the availability of cloud computing tools will lead to new and improved ways to collaborate online addressing some shortcomings of traditional or early online learning and its static nature. The perceived usefulness of the technologies could also be further explored, including specifically, the lack of support for some of the newer technologies (O'Neill et al., 2011).

The online instructor has an important role as a facilitator, who can establish a constructivist-based learning environment that encourages collaboration to accomplish learning objectives. The literature confirms that collaborative opportunities are being provided in higher education online classrooms. The experiences of the instructors and participants of this case study providing collaborative learning opportunities in their classroom were analyzed. The themes and findings from this study are reported. The findings from this study provide instructors in higher education approaches to provide online collaborative learning, as well as considerations and implications for practice. Recommendations for the practice of online collaborative learning are offered.

CHAPTER 2

RELATED LITERATURE

Introduction

Teaching and learning in an online environment permits participants the opportunity to apply new technologies, collaborate with others, and take advantage of flexible schedules (Johnson, 2013). However, teaching and learning in an online environment requires a redefinition of roles for both the instructor and the learners (Anderson, 2008; Keengwe & Georgina, 2012; Johnson, 2013). The online instructor has an important role as a facilitator, who can establish a constructivist-based learning environment that encourages collaboration to accomplish learning objectives (Rovai, 2004). Activities and group work in the online classroom require additional considerations and modifications beyond the typical face-to-face classroom. This requires instructors to consider alternative solutions for communicating, collaborating, and clarifying written instructions. Vonderwell and Turner (2005) reported that students want clear and effective communication of online messages and instruction. The delay factor and lack of interaction in asynchronous communication can negatively influence student learning (Kang & Im, 2005; Vonderwell & Turner, 2005). The presence of the instructor in an online classroom is essential for improved communication, motivation, and building and developing a sense of community (Palloff & Pratt, 1999).

Advances in technology, connection speed, and the availability of collaborative tools will lead to new and improved ways to collaborate online addressing some shortcomings of traditional or early online learning and its static nature. The research on the use of new technologies and applications for collaboration is emerging, with Web tools providing many opportunities for small group collaboration which some online

instructors have adopted and integrated into their online classroom to facilitate collaboration.

Constructivism and Social Constructivism

Constructivism is a rationalist philosophy based on a belief that "reason is the primary source of knowledge and that reality is constructed rather than discovered" (Smith & Ragan, 2005, p. 19). From this perspective, individual realities are created and are specific in nature (ontology); individual outcomes are created during the investigation process (epistemology), and refined through interaction between individuals, or peers (methodology) (Guba & Lincoln, 1994). A learner brings a unique set of experiences and beliefs about the world into the constructivist epistemology (Smith & Ragan, 2005; Tam; 2009). A learner cannot be directed or led to expand their understanding (Von Glasersfeld, 1989), the learner gains understanding "in" the interactions with the environment, a core concept of constructivism, according to Savery and Duffy (1995). What is learned and how it is learned are not separated in this view. All learning involves mental construction regardless of what is taught, according to constructivists (Swan, 2005). Learners expand their understandings or construct new knowledge by building on what they already know and believe.

> Constructivists believe that meaning is constructed in our minds as we interact with the physical, social, and mental worlds we inhabit, and that we make sense of our experiences by building and adjusting such internal knowledge structures that collect and organize our perceptions of and reflections on reality. (Swan, 2005, p. 1)

Social constructivists extend this constructivist viewpoint. Social interaction is fundamental in knowledge construction (Vygotsky, 1978). "Social constructivists believe

that groups construct knowledge, collaboratively creating a culture of shared meanings" (Barkley et al., 2014, p. 17). Students working in groups can pool their knowledge, as the knowledge of a group combined is greater than that of an individual. Through communication, collaboration and sharing within the group, the understanding is deepened (Barkley et al., 2014).

To be effective for learning and teaching, online learning must be rooted in epistemological frameworks (Bednar, Cunningham, Duffy, & Perry, 1991; Dabbagh, 2005). The course developer needs to have an awareness of the theoretical foundation upon which the course and activities are designed (Bednar et al., 1991). Constructivism has multiple roots in philosophy and psychology, including the works of Piaget (1972/2008), but Piaget's cognitive and development process is only one example of the multiple roots of constructivism (Driscoll, 1994; Ertmer & Newby, 1993). As Driscoll explained, because researchers in various fields approach certain aspects of constructivism differently, there is not a single constructivist theory for instruction (1994). Three individuals who viewed learning in the facet of the social construction of meaning are: Bruner, Dewey, and Vygotsky (Swan, 2005). Each theorist believed that language, collaboration, and interaction played an important role in thinking and learning (Swan, 2005). Interaction and collaboration are examined further in this review of literature, as instructional principles for application in the online classroom.

The two characteristics fundamental to the constructivist learning process are: problems and collaboration—solving real-life problems and interacting with peers and the instructor (Tam, 2009). Bringing this into the online classroom requires more than accommodating these processes. The design practices should also "support the

creation of powerful learning environments that optimize the value of the underlying epistemological principles" (Tam, 2009, p. 67). Developing an understanding and awareness of the theoretical principles must come before the design.

Online Learning

Online education "lies in the junction of distance education, human-computer interaction, instructional technology, and cognitive science" (Larreamendy-Joerns & Leinhardt, 2006, p. 568). Instructional design is another aspect that should be included in this list. Classroom instruction is the standard to match, in an attempt to deliver online courses that possess academic excellence and incorporate "sound cognitive and instructional principles" (Larreamendy-Joerns & Leinhardt, 2006, p. 571). In the infancy of online learning in the early 1990s, the social interactions experienced during a traditional face-to-face course with peers and instructors was transformed into email communications, discussion or forum postings, with far less overall interaction. These content heavy, independent study courses left little time or opportunity for meaningful interaction and collaboration.

Kang and Im (2005) recognized that early online learning lacked meaningful interactions. Interaction between the student and instructor is a critical element in the overall student satisfaction and learner's perceived learning outcome in online courses. Technological advances overall have made synchronous tool integration possible (Kang & Im, 2005). Instruction should rely on online constructivist theories and support synchronous and asynchronous learning to fulfill the need for interactive online learning and to mitigate online learner isolation (Larreamendy-Joerns & Leinhardt, 2006).

There has been an idea shift in higher education institutions from a focus on the instructor and instruction to an emphasis on the learner and learning (Barr & Tagg, 1995). The shift from a teacher-centered classroom to a learner-centered classroom is explained and summarized by Rovai and Jordan (2004). In an online, constructivist learning environment the instructional emphasis shifts from teaching and knowledge reproduction to learning and knowledge construction (Rovai & Jordan, 2004). The authors explained that there is room for traditional pedagogy in the online classroom (i.e. lecture) however these are not dominant elements. Tam (2009) explained how constructivism supports ideas and principles about learning "that have important implications for the construction of technology-supported learning environments" (Tam, 2009, p. 72). Using curricula that is customized to the students' prior knowledge and background is essential, but teaching strategies may need adaptation (Rovai & Jordan, 2004).

Faculty roles change in online classrooms (Anderson, 2008; Keengwe & Georgina, 2012). By assuming the role as a mentor and coach, the instructor facilitates learning activities and helps the student succeed academically by supporting the learner-centered context (Keengwe & Georgina, 2012). In the learner-centered context, the instructor in an online classroom makes an effort to understand the prerequisite knowledge of each student (Anderson, 2008). These prerequisite skills are not overlooked in a constructivist learning environment: rather, higher order goals incorporate entry-level goals and scaffolding is provided, as necessary (Driscoll, 1994). Providing norms and expectations in the online classroom is part of scaffolding and increases teacher presence. Examples include: providing due dates, organized

modules, and teacher contact information. Several implications for practice to improve online learning, as provided by Stodel, Thompson, and MacDonald (2006), are an important part of the learner-centered context. These implications include: coaching learners how to learn online, creating opportunities to enhance spontaneity and emergent design, articulating and managing the expectations of the online community, and attempting to understand all learners in online learning environments.

Interaction in Online Learning

Online learning environments can promote discourse and interaction by providing structured, yet open-ended questions to encourage conversation among students (Rovai, 2004). Providing opportunities for this discourse support student meaning construction (Rovai & Jordan, 2004). The community of inquiry (CoI) model, a constructivist approach adapted for online learning, suggests that meaningful learning occurs when three components are provided in online learning: teaching presence, cognitive presence and social presence (Anderson, 2008). CoI is grounded on the work of Dewey and the collaborative constructivist approach (Swan, Garrison & Richardson, 2009). Swan et al. (2009) argue that constructivist approaches and community are needed in higher education to achieve effective critical thinking. By supporting discourse, setting the climate, and the selection of content, an instructor provides to the overall educational experience through each “presence” presented in the CoI approach (Anderson, 2008).

Providing students with access and motivation (Anderson, 2008) is a first step to increase teaching presence in the online classroom. When students enter the online

classroom it should be organized and guide the student through the first week of class, but also allow for flexibility and encourage questioning. A teacher can create discussion threads for introductions, news, questions and answers, or tips that can be added to by all participants of the class. (i.e. resources found). Teaching presence improves in the online course through involvement in class forums, providing feedback, and prompt grading.

Delivering an environment where students feel supported and confident is one way to increase teacher presence in the online classroom (Anderson, 2008). Reaching out to students early through email for a brief introduction and course details are additional approaches to increase teacher social presence. Additionally, teachers creating a video or audio introduction, providing a current photo in the profile or the discussion thread and asking the students do the same are approaches to increase social presence in an online classroom. Aragon (2003) suggested the following to increase social presence: limit online class sizes, include collaborative learning activities, and share personal stories and experiences in discussion threads.

To increase cognitive presence, teachers should provide an online environment that supports thinking, expression, and growth in the subject area (Anderson, 2008) and provide content that is relevant and timely, as well as utilize goal-based scenarios that apply to the content or subject area to enhance cognitive presence (Koller, Harvey, & Magnotta, 2006). Asynchronous learning may emphasize the role of the community of learners for a given subject according to Koller et al. (2006). These asynchronous online discussions can be used as repositories of knowledge for future use. Online forums, collaborative workspaces, and blogging may support cognitive and social presence.

Synchronous and asynchronous learning provide options for presenting lectures, online discussions, and collaboration. The use of evaluations to gather information and feedback are additional strategies to increase cognitive presence.

Each “presence” is important to the overall educational experience and meaningful learning, as shown in the CoI model, which was clarified through a figure developed by Garrison, Anderson, and Archer (2000). The use of dotted lines, signifying flow in-between “presences” and overlapping circles, explains that each “presence” plays an equal role in the educational experience of the online learning context. This model is applicable for teaching and learning in an online constructivist environment. The strategies to increase teacher presence play a critical role in developing a community of inquiry and may arguably be the most important, especially in asynchronous learning.

Online instructors require a different set of “technical and pedagogical competencies to engage in superior teaching practices” (Bernard et al., 2004, p. 409). The transition may be easier for experienced instructors who teach with synchronous learning because it is more like classroom education (Barbour, 2009; Bernard et al., 2004). Adopting new and more appropriate teaching methods is critical for asynchronous online learning as compared to synchronous. Retention is lower in asynchronous online learning (Bernard et al., 2004). Bernard et al. (2004) provided an explanation for this: students in asynchronous learning typically do not work together in groups, removing the important group affiliation aspect from this type of learning. Murphy, Rodriquez-Manzanares and Barbour (2011) mentioned the need of a teachers’

guidance in asynchronous learning. The need for an increased teaching presence in fully asynchronous learning may be a factor.

In terms of achievement and attitude outcomes, asynchronous learning had more positive effects. Similarly, the use of “active learning” and interactive media appeared to facilitate better attitudes and positive achievement in asynchronous learning (Bernard et al., 2004).

Wen, Cuzzola, Brown, and Kinshuk (2012) attempted to exploit the delay in communications and answering students’ question that is common in asynchronous learning by integrating a solution into the learning management system (LMS). This solution is an asynchronous approach with emphasis on student and instructor interaction through a question/answer (QA) interface. The QA prototype uses natural language processing to provide computer-generated answers to students’ questions within an LMS, which the instructor then adds to when logged in to the LMS (Wen et al., 2012). The answer or response may validate the students’ choice or provide some instruction in real-time, eliminating some of the frustrations students feel when they become stuck (Wen et al., 2012).

Asynchronous learning is a preferred method of online learning for many students (Barbour, 2009; Murphy et al., 2011) however, the design of the course is important and findings support the argument that it is not the media but the pedagogy that determines the interaction in online learning (Bernard et al., 2004; Murphy et al., 2011). Teachers need to be well grounded in pedagogy especially when using highly “interactive” media (Murphy et al., 2011).

Instructional Design and Active Learning

> The pathway of course migration to online environments often begins with the assumption that instructional designs, grading procedures and other methods that typically work in the traditional classroom would remain the same in online settings however, this is not usually the case. (Keengwe & Georgina, 2012, p. 366)

Problem-based learning (PBL) and rich environments for active learning (REALs) are two constructivist instructional design models appropriate for online learning. Applying each to an online classroom is challenging, takes time, patience, and a mind shift from the content driven classroom with which teachers are most familiar. PBL is a constructivist framework where problems and collaboration are central to learning and is a student-centered pedagogy in which learning occurs through the interpretation of information (Duffy & Cunningham, 1996). Duffy and Cunningham (1996) noted the importance of active learning in both understanding and challenging the learners' thinking. They argued that aspects of constructivism are necessary components of PBL, which in turn contribute to an effective learning experience. Central to PBL is presenting students with ill-structured problems (Duffy & Cunningham, 1996). A well-structured problem does not mimic real life and there is less to solve; students may be less engaged in the problem solving process if the problem is not authentic (Kitz & Ebner, 2013). This type of learning can be effective in motivating learners, but is typically applied to face-to-face settings; research on its use in online learning is limited. Distributed problem-based learning is a version of PBL that can be offered to distance learners (Wheeler, 2009). Instructors provide students with real-world, authentic problems through computer technology and a learning environment is utilized for collaboration in solving the problem (Wheeler, 2009). Students practice problem-solving

skills through investigating the problem and searching for a solution. This type of learning should encourage a self-regulating and self-directed association of students (Wheeler, 2009).

PBL can be used to create a REAL. Both models encourage and promote problem solving and higher-level thinking by placing the student at the center of the learning activity and prepare them for the workplace (Grabinger, Dunlap, & Duffield, 1997). A REAL is based on constructivist beliefs and has five specific characteristics: (1) student responsibility, (2) dynamic, generative learning, (3) authentic contexts, (4) collaboration, and (5) reflection (Grabinger et al., 1997). Involving students in the planning, controlling, and directing of learning activities and the application and assessment of learning processes and outcomes is the essence of a REAL (Grabinger & Dunlap, 1995).

The works of Dewey (1910) and Bruner (1961) influenced the foundation of the REAL model through their efforts with experiential, discovery, and inquiry learning to solve real-life problems (Grabinger & Dunlap, 1995). The core of the REAL model is developing knowledge, which can be applied to problems students face in real life, compared to knowledge that cannot be transferred. Inert knowledge is knowledge acquired in abstract circumstances (i.e. memorizing dates, formulas, or quotations) that “cannot be applied to real problems or situations” (Grabinger & Dunlap, 1995, p. 7). The presence of inert knowledge is a weakness in online education that the REAL model addresses (Grabinger & Dunlap, 1995)

The REAL model was conceived in the early 1990s, however the five key attributes of this model are appropriate for the online classroom (Robinson, Phillips,

Moore & Sheffield, 2015) and address three characteristics of constructivism (Grabinger & Dunlap, 1995). Active knowledge construction, a characteristic of constructivism, is addressed by these two REAL attributes*: student responsibility* (i.e. students identify their deficiencies, self-directed study, self-monitoring), and *generative learning activities* (i.e. groups apply and discuss ideas presented in PBL) (Grabinger & Dunlap, 1995; Grabinger et al., 1997). Knowledge acquisition (a characteristic of constructivism) may be addressed by the REAL model through *authentic contexts* and *authentic assessments*, such as providing students with a PBL challenge or authentic scenario. The third characteristic of constructivism that the REAL model addresses is collaboration and social negotiation, which has progressed. Originally termed co-operative support (Grabinger & Dunlap, 1995) and later referred to as collaboration (Grabinger et al., 1997), is *collaborative learning*, in which students work online with their peers on a problem to develop a solution (Robinson et al., 2015). This corresponds with Vygotsky's theory of learning, specifically the "zone of proximal development" (ZPD) in which a shared understanding can be developed during this learning process (1978).

Collaborative Learning

Understanding does not emanate from a verbal explanation of a problem or situation. An instructor must provide a model where the student integrates what is being explained (Von Glasersfeld, 1989). Social-constructivist instructors use group learning or collaborative learning to support understanding. Collaborative learning is grounded in the works of Vygotsky and ZPD. Learning and more importantly, understanding, occur in this zone (ZPD) through peer collaboration and interacting with someone more skilled

(Hrastinski, 2009; Vygotsky, 1978). Collaborative learning refers to a method of instruction where students work together to increase understanding and reach a common goal with support of the instructor (Bento & Schuster 2003). Investigating the potential benefits of collaborative learning in the classroom and the design challenges that it imposes is an area for future research and development of educational materials (Bransford, Brown, Cocking & Donovan, 2000). “Outside the classroom, much learning and problem solving takes place as individuals engage with each other, inquire of those with skills and expertise, and use resources and tools that are available in the surrounding environment” (Bransford et al., 2000, p. 279). In the online classroom environment, students collaborate using tools such as discussion groups, electronic mail, or chat; however instructors need to give students a focus or project for the discussions (Dunlap, 1999).

The interest in the use of collaborative learning in online courses is increasing (O’Neill et al., 2011). Working with peers allows students to use and improve their metacognitive skills (Ally, 2008). If students are paired in groups based on their level of experience and proficiency, individuals with less proficiency benefit from the strengths of their more capable peers; individuals with a higher level of proficiency benefit from teaching their less capable peers (Vygotsky, 1978). Learners with varying levels of proficiency can benefit from the collaborative experience.

Online learning is best accomplished through participation and collaboration and this participation drives online learning according to Hrastinski (2009). Three separate studies on 26 online courses at the New Jersey Institute of Technology, determined that participating in collaborative learning is directly related to higher learning outcomes

when compared with those in traditional settings (Hiltz, et al., 2000). “When students are actively involved in collaborative (group) learning on-line, the outcomes can be as good as or better than those for traditional classes, but when individuals are simply receiving posted material and sending back individual work, the results are poorer than in traditional classrooms” (Hiltz et al., 2000, p. 117). Additionally, technologies that encourage interaction can be used to develop higher-order thinking skills and build knowledge when following a constructivist or collaborative learning model (Leidner & Jarvenpaa, 1995).

Severance and Teasley (2010) stated that “the most exciting aspect of enabling teachers to build, exchange, and use thousands or even hundreds of thousands of new tools is how we enable the exploration of an increasingly wide range of new ways to teach” (p. 758). Providing opportunities to students also allows for student building, exchange, and use of collaborative tools for learning. Vonderwell and Turner (2005) state that meaningful “social interaction is the foundation for constructing rich environments for active learning” (p. 68). Students in online courses miss the conversations in face-to-face courses when learning online, as the emotion, interaction, energy, and connections were lacking in some online courses, as reported in student interviews (Stodel et al., 2006). This is a challenge to online instructors and instructional designers. Interactivity in the online environment can be applied using the REAL and PBL model to promote student responsibility, by providing authentic learning activities, and affording the opportunities for collaborative learning.

Technologies and Tools for Online Collaboration

Advances in cloud computing and Web 2.0 applications provide the opportunity for collaboration and collaborative learning when learning activities are developed using sound instructional design. Cloud learning (cLearning) is defined as a collection of shared learning resources that are accessed by a computer or mobile device (Wang, 2011). However, cLearning may go beyond the resources and applications accessible through the cloud. Several reports discuss the use of cloud solutions for cooperative learning (Mircea & Andreescu, 2011; Wang, Brown & Ng, 2012). The potential for collaboration and collaborative learning with cloud solutions is significant (Pocatilu, Alecu, & Vetrici, 2009).

> Ideas move through the cloud at the speed of light. They are mashed together with other ideas, commented on, transmuted, embedded, enlivened, debased as they circle the globe. Unbundling, in this regard, in its most positive light, presents the academic with unprecedented access to other interested scholars—and amateurs (Katz, 2010, p. 37).

Instructors, researchers, and students are using the cloud application technology to write collaboratively and develop within online or cloud spaces (Schöch, 2014). Educators gain new ideas and inspiration as they connect with other educators (Crane, 2012), and using cloud computing applications, online students may benefit from this connection and collaboration as well. “The unbundling capacity of new cloud capabilities will make it possible for academics to assemble just-in-time collaborative environments and to assemble an infrastructure and open source tools that might be needed to facilitate a learning encounter or research effort” (Katz, 2010, p. 28).

Koutsopoulos and Kotsanis (2014) discourse a paradigm shift they believe stems from the movement toward a personalized or cloud student-centered teaching and

learning. This paradigm shifts the education process in a way that would alter the approaches used to catalyze learning and innovation, as well as the ways which complement and enrich the individual's personal learning space (Koutsopoulos and Kotsanis, 2014). This begins by a change in teaching roles and a more integrated approach, with personalized learning. A personalized learning environment is a digital space that has the ability to adapt to the student or learner (Ark, 2013). Learning in this environment is modified or customized to meet a learner's needs.

The use of mobile devices and cloud computing allow students to learn and work in this flexible environment. The instructional software that was once loaded on individual hard drives of personal computers or lab computers is now accessible online, through cloud computing. Learners can access instructional materials or data through their Internet browser, on a mobile device, without leaving the classroom. Cloud computing provides apply-on-demand and apply-in-time resources and tools to learners (Chao & Yue, 2013).

Applications for collaboration

Cloud computing applications emerged in recent years with benefits to online collaboration, media sharing, and student and teacher interaction. Many of these Web 2.0 applications are not widely utilized in education, though these solutions have the potential for encouraging creative interaction and informal communication (Moore & Kearsley, 2012). While it was determined that newer technologies like multi-user environments, group conferencing, and social networks are perceived to be of limited usefulness (O'Neill et al., 2011), these applications were alternatively predicted to have

a profound impact on education for future learners (Moore & Kearsley, 2012). This conflict is concerning, because the integration and use of these technology tools may foster interaction and because the potential for collaboration opportunities in online learning is great (Beldarrain, 2006; O'Neill et al., 2011). "If these technologies are to be fully optimized as an enabling factor in collaborative distance education then their educational benefits need to be more strongly highlighted to practitioners" (O'Neill et al., 2011, p. 945).

A recent IBM figure reports that 85% of new software today is being built for the cloud and around 75% of application developers report that they are currently using the cloud in apps they are developing (Bort, 2014). Microsoft, Cisco, and IBM are spending billions of dollars each year on research and development on cloud development (Bort, 2014). Cloud applications have "drastically changed technology access, use, and connection both inside and outside educational settings" (Blue & Tirotta, 2012).

A common use for cloud computing applications in recent years is collaborative writing. This allows experts from varied disciplines, institutions, and locations to collaborate on research projects and provides an improved solution over the use of one document, tracking changes, and emailing back and forth (Schöch, 2014). Educators gain new ideas and inspiration as they connect with other educators (Crane, 2012). The use of multiple cloud applications to collaborate on a book manuscript enhances a writer's workflow, creativity level, and increases efficiency, resulting in the creation of new knowledge (Green & Ruane, 2011).

Research studies on cloud computing applications and collaborative opportunities are emerging. Individuals who use, collaborate, and develop in these

environments regularly understand the benefits and opportunities of the use of cloud computing applications in online learning. A few studies examined the use of cloud computing applications in educational institutions (Donna & Miller, 2013; Aaron & Roche, 2012). For example, Google Drive, a cloud computing application, can be used to model collaboration facilitation and to support inquiry in the classroom (Donna & Miller, 2013). Small group collaboration with the use of cloud computing applications is one synchronous and asynchronous option available in tools such as Google Drive and Zoho. Artifacts can be co-created and peer review and feedback is uncomplicated with in-line, real time comments (Donna & Miller, 2013).

Pre-service teachers participated in a study to uncover the perceived barriers to integrating cloud applications in future classrooms. First and second-order barriers were identified regarding the usability, stability of the tools, the difficulty of managing group learning, and classroom management issues (Donna & Miller, 2013). Despite the barriers, if a teacher values the use of pedagogies that support collaborative learning, there is a greater chance they will integrate the tools to facilitate this type of learning (Donna & Miller, 2013). In another study, faculty identified different concerns including security, privacy and property rights. However, the study revealed that the non-cloud application users were, overall, more enthusiastic about the potential use in post-secondary education. A positive future for the acceptance of such tools by college educators is likely (Aaron & Roche, 2012).

Opportunities

Students are creating online content and collaborating with other students around the world (Crane, 2012). They engage with Web 2.0 tools, which foster communication

and information literacy skills—leading to new knowledge (Crane, 2012). A recent study found that more than a third of undergraduates were using web-based word processors, spreadsheets, presentations, and form applications such as Google Docs during the semester of this survey; more than half were using these tools to collaborate with other students (Smith & Caruso, 2010). Jabbour (2013) called this asynchronous learning approach a collaborative file. This is simply one file located on the Internet, which allows students to collaborate with each other and build a collaborative file. The file can be accessed from any computer or device and is stored in the cloud (Jabbour, 2013). Similar recommendations for students utilizing cloud tools in coursework include: developing a team project or presentation, collaborating within one document for revising ideas on a PBL project, gathering information in one location for group analyzing, or getting peer and instructor feedback much faster than the traditional approach. Students could be paired to work synchronously and asynchronously based on their individual schedules in these scenarios.

Another study looked at learners' perceptions regarding the effectiveness of information and communication technology (ICT) use, including those in the broad category of social media and Web 2.0 in higher education settings (Venkatesh, Croteau, Rabah, 2014). The role of ICTs in the overall learning experience is complex for several reasons. Students integrate ICTs into their studies based on the task at hand. This is based on the comfort level with the ICT, personal needs, and time needed to learn the technology (Venkatesh et al., 2014). Venkatesh et al. concurred that certain ICT tools can enhance social collaboration (2014). Web 2.0 tools allow students the opportunity to learn outside the online classroom and build communities (Popescu, 2012; Mendoza,

2009). However, students' knowledge of ICT tools and "their perceptions of how these tools promote their learning are crucial for determining digital technology's added value in higher education settings" (Venkatesh et al., 2014, p. 111).

Challenges

Challenges with cloud computing applications exist. Internet resources are often blocked to protect users from harmful web resources, which can limit exposure to some online technologies. Additionally, integration within the specific online classroom or LMS, copyright laws, and interruptions of Internet access can be a concern (Blue & Tirotta, 2012). Each tool has varied options and features. According to Schöch (2014) there is not one available technological solution that meets all needs within one package including: real-time collaborative writing, flexible word-level commenting, footnote support, version control, access rights management, publishing options and availability of the tool. Technology proficiency is another matter and Blue & Tirotta (2012) recommended providing opportunities for students to have guided hands-on use after modeling how to navigate unfamiliar technologies.

Privacy implications for students working online in open environments are something faculty who integrate this type of technology must consider (Diaz, 2012). Interpreting FERPA requirements is an obligation of the institution, but attempts to comply with FERPA vary when relating instruction in the online environment (Diaz, 2012). "Peer review, for example, may not fall under FERPA restrictions because the work is shared between students before it is turned into the instructor, at which point the review becomes part of a student's education record (see Owasso ISD v. Falvo)" (Diaz, 2012, p. 101). Instructors need to be cognizant and informed of these matters, no less.

The transition from the read-only Web 1.0, to the read-write Web 2.0 will soon be the portable Web 3.0. Web 3.0, the semantic web, is budding. Students will soon learn using adaptive technology videos with integrative internet-connected digital surroundings; students will be “doing” in a participatory web (Ertmer & Newby, 2013; Jabbour, 2013). This will be realized in education by shifting from teacher-centered, content heavy courses, to courses which are student-centered and in which the content is developed from a personalized type of learning with more project-based activities. While advances have been seen in the past few years, educational concepts have not been fully developed (Jabbour, 2013).

The Internet and Web 2.0 provide authentic learning experiences for students, “encourage global awareness, creativity, innovation, critical thinking, active participation, and collaboration” (Crane, 2012, p. 5). Cloud computing and the rapid advances in cloud tools are promising technologies for education in the near future. Venkatesh et al. (2014) recommended future research, which addresses the issues of how integration of emerging technologies can be made even more effective. Supporting pedagogical approaches appropriate to the objectives of the curriculum, along with “integration of ICT may be more effective when these tools support metacognition and the cooperative learning approach using collaborative learning devices” (Venkatesh et al., 2014, p. 101).

In their exploration and content analysis of integrating cloud resources into online classes, Liu and Lee (2014) discovered that the themes of education, teaching, learning, and instructional design are not often discussed in the literature reviews of cloud and cloud computing articles (Liu & Lee, 2014). The existing research of cloud computing in education is nascent and there is limited research on the successful

applications in the educational setting (Liu & Lee, 2014; Pranay kumar, Sumitha Kommareddy, & Rani, 2013).

Support for Online Instructors

Instructors' roles change in online classrooms (Anderson, 2008; Keengwe & Georgina, 2012). They assume the role as a mentor and coach to facilitate learning activities and help the students succeed academically by supporting the learner-centered context (Keengwe & Georgina, 2012). To engage in superior and innovative online teaching practices, online instructors require a different set of technical and pedagogical competencies (Bernard et al., 2004). Instructors prioritize the need for teacher training (Beck & Ferdig, 2008) and their willingness to participate in teaching online courses is positively impacted by increased training and comfort with technology (Lloyd, Byrne, & McCoy, 2012). The continual change in LMSs and emerging asynchronous and synchronous tools available to the online classroom presents the need for continued training (Sammons & Ruth, 2007).

There is a need to prepare faculty and instructors to teach in the online learning environment through faculty development programs (Oncu & Cakir, 2011). The need of training is examined in the Akdemir (2008) study where one faculty member expressed concerns about a lack of knowledge in designing instruction, untrained instructors, and overall quality of instruction. Knowledge about instructional design is an important competency for online course instructors to design quality online courses (Akdemir, 2008). Concerns are echoed throughout the study on the lack of training for online instructors and the lack of quality online courses, as a result. "Higher education

institutes should support workshops and trainings to increase the skills and interests of non-instructional design faculty members to design and develop online courses" (Akdemir, 2008, p. 97).

Instructors are more aware of the role shift of an online instructor and are seeking ways to engage students and provide interaction opportunities among peers (Thompson & Ku, 2006). Ajjan & Hartshorne (2008) found that the faculty who participated in their study was aware of the potential benefits for learning through proper integration of Web 2.0 applications. Student satisfaction increases in the online classroom from participating in the opportunities for learner engagement and collaboration (Ajjan & Hartshorne, 2008; Oncu & Cakir, 2011). The attitude of faculty regarding Web 2.0 applications is a predictor of intended use (Ajjan & Hartshorne, 2008). The researchers suggested additional efforts be placed into promoting the integration of Web 2.0 applications and best practices be developed to facilitate the adoption of such emerging technologies. Further examination is needed to explain the factors in place for supporting this integration into the course. Information such as faculty's participation in professional development, institutional support and training, peer, student or mentor support strategies are recommended for further research (Ajjan & Hartshorne, 2008). In a mixed methods study by Zhu, Valcke & Schellens (2010) on faculty perceptions of the social-constructivist approach applied to online learning, the authors recommended further investigation regarding institutional support for the integration of collaborative learning opportunities.

The instructor role is "significant in the enhancement of productive collaboration processes" (Hämäläinen, & Vähäsantanen, 2011, p. 179). The focus of current research

is on student learning, online collaborative learning from the student perspective, the tools used to support collaborative learning, and instructors' ability to respond to the needs of students in order to provide these learning opportunities (Capdeferro & Romero, 2012; Coll et al., 2014; Kai-Wai Chu & Kennedy, 2011; Thompson & Ku, 2006). Now, there needs to be more attention and research on how to support instructors "abilities to apply creative and collaborative working methods" (Hämäläinen, & Vähäsantanen, 2011, p. 179). There is also a need to offer teachers concrete resources to orchestrate collaborative teaching methods, support for collaborative teaching methods from administrators and the work culture, and a "need to highlight the autonomy of teachers' abilities to apply creative and collaborative working methods" (Hämäläinen, & Vähäsantanen, 2011, p. 179). The imminent need for research on online instructor support, training, professional development, and guidance on how to integrate tools for collaboration and collaborative learning is consistently recommended (Ajjan & Hartshorne, 2008; Hämäläinen, & Vähäsantanen, 2011; Kim & Bonk, 2006; Oncu & Cakir, 2011; Zhu et al., 2010).

Summary

The review of literature in this chapter began with a definition and synthesis of constructivism, social-constructivism, and online learning. Implementing the fundamental characteristics of constructivism into the online classroom is a substantial task. An online instructor must understand the theoretical principles, design for constructivist pedagogy, and be familiar with the approaches for providing a learner-centered rich environment for active learning. Interaction and collaboration are different in an online classroom, as compared to a face-to-face classroom, and best practices for

making this possible are emerging. Online instructors have used asynchronous learning activities since the inception of online college courses, which increase reflection and cognitive effort. However, synchronous learning opportunities are more available today because of technological advances.

The demand for citizens and workers to exhibit critical thinking skills, digital literacy and ICT literacy can be “connected to some of the affordances of Web 2.0 tools: active engagement, knowledge creation, independent learning, reflection, and innovation” (Diaz, 2012, p. 97). Current research on the use of cloud and Web 2.0 applications reports on the learning and collaboration potential they provide. Where the literature is currently lacking is faculty feelings and perceptions concerning the integration of such tools and the support or training required to take advantage of these emerging technologies, in ways that benefit online learning.

CHAPTER 3

METHODOLOGY

Purpose of the Study

The purpose of this qualitative case study was to identify the perceptions and experiences that instructors in higher education have toward providing collaborative learning activities and opportunities in their online classroom. With synchronous, Web 2.0, and cloud-based applications such as web conferencing applications, blogs and collaborative document development opportunities the options for developing collaborative learning activities are expanding. It was central to this case study to identify how instructors in higher education that teach fully online courses offer collaborative opportunities to their students and to provide voices to these instructors.

Through semi-structured interviews, the researcher collected instructor experiences concerning their provision of collaborative opportunities in their online classrooms for this case study. Information concerning the meaning of collaborative learning to the individual higher education instructors was gathered. An inquiry was made regarding these instructors' preferences concerning collaborative learning practices and tools in the online classroom. Their primary, most often utilized and preferred emerging technologies surfaced through these interviews. Further, analysis through various coding processes including the constant comparative coding method was used to develop themes from the interviews.

Research Methods and Design

Qualitative research studies are naturalistic and use an interpretive practice to look at how social experiences are created (Denzin & Lincoln, 2005). There is not a distinct method or practice specific to this type of research, as multiple approaches can be used. Qualitative researchers use a range of materials during analysis, from interviews, observations, stories, and artifacts, to name a few. Qualitative research is like quilt making, piecing together small sections and creating patterns of information to create the full picture, or story, of gathered information. The term qualitative "implies an emphasis on the qualities of entities and processes and meanings that are not experimentally examined or measured (if measured at all) in terms of quantity, amount, intensity, or frequency" (Denzin & Lincoln, 2005, p. 10).

Stake (1995) identified three major differences between qualitative and quantitative: experiential understanding, the researcher's role, and the distinction between knowledge discovered and knowledge constructed. The experiential understanding or inquiry of quantitative research is on explanation and control, as compared to the particularity of the individual participants, the complexity of relationships and deeper understanding for qualitative researchers (Stake, 1995). The role of the researcher and knowledge construction specific to this study are discussed later in this chapter. While it is important to understand the differences of the two traditional paradigms, there are commonalities. Both approaches utilize empirical observations to answer research questions, describe information collected and results, and utilize approaches to minimize bias and confirm trustworthiness (Johnson & Onwuegbuzie, 2004).

Hesse-Biber (2010) recommended a comprehensive approach to research, as compared to a methods-centric approach where the methodology or theory is isolated. Using a comprehensive approach, the study is “firmly rooted within a research context with the intention that the method or methods used foster a richer understanding of the research problem under investigation” (Hesse-Biber, 2010, p. 11). To attain a comprehensive approach and more holistic impression or complete picture of the topics of inquiry, qualitative research was utilized for this study. In this qualitative study, the researcher explored questions and topics about experiences and lived realities. Because this study answered questions regarding collaborative learning, a form of learning grounded in constructivism, a qualitative focus and interpretive approach was appropriate for this study (Hesse-Biber, 2010).

Qualitative Perspective

“Qualitative research is conducted through intense and/or prolonged contact with participants in a naturalistic setting to investigate the everyday and/or exceptional lives of individuals, groups, societies, and organizations” (Miles et al., 2013, p. 9). A qualitative researcher seeks a holistic view of the problem being studied and is interested in the participants’ life experiences and their construction of meaning surrounding these experiences (Creswell, 2014; Merriam, 2009; Miles et al., 2013). Further, they “study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them” (Denzin & Lincoln, 2005, p. 3).

There are numerous strengths of qualitative research and gaining insight into natural occurring events. The study of a specific case allows the researcher to discover

latent or underlying issues of an area of inquiry (Miles et al., 2013). The use of thick, rich description found in qualitative research contributes to the depth of the study and may have an impact on the reader because of the real context provided. Additionally, qualitative research is flexible, emergent, and can be responsive as needed (Merriam, 2009; Miles et al., 2013). The use of an interpretive qualitative approach offers "enormous potential for generating new ways of understanding the complexities and contexts of social experience, and for enhancing our capacities for social explanation and generalization" (Mason, 2006, p. 10). Further, an interpretive qualitative framework gives voice to often silent participants in inquiry and stakeholders (Denzin & Lincoln, 2005; Howe, 2004) in the online educational setting being studied.

Theoretical Framework

A researcher's worldview affects the approach to research. An awareness of this worldview, the nature of reality (ontology), and how knowledge is constructed (epistemology) guides choices on the design and methods of a research study (Hesse-Biber, 2010; Lincoln & Guba, 1985; Teddlie.& Tashakkori, 2009). A consciousness of these beliefs and methodological standpoints is needed in planning and delving into a research project (Hesse-Biber, 2010, Green, Benjamin & Goodyear, 2001).

The researcher's worldview and review of the research literature guide the formulation of the topics of inquiry. A literature review serves as a framework for the study, guides the revision of the original research questions, and identifies deficiencies that will be explored further. Research questions imply a worldview or theoretical perspective that is either conscious or unconscious (Hesse-Biber, 2010). In a

comprehensive approach a particular area of inquiry, the researcher should be conscious of the theoretical perspective or the researcher's standpoint when designing, developing, and analyzing information—each phase of the research project (Giddings, 2006; Hesse-Biber, 2010).

The constructivist worldview is a philosophical underpinning of a qualitative methodology (Denzin & Lincoln, 2005). In the constructivist worldview, there are multiple participant meanings, and the researcher actively looks for numerous perspectives from the participants (Creswell & Plano Clark, 2011; Creswell, Shope, Plano Clark & Green, 2006). Through an inductive process of inquiry, the individual participants express understandings and views, which build to patterns, themes, theories and generalizations (Creswell & Plano Clark, 2011).

Constructivism is a rationalist philosophy based on a belief that "reason is the primary source of knowledge and that reality is constructed rather than discovered" (Smith & Ragan, 2005, p. 19). From this perspective, individual realities are created and are specific in nature (ontology); individual outcomes are created during the investigation process (epistemology), and refined through interaction between individuals, or peers (methodology) (Guba & Lincoln, 1994). A learner brings a unique set of experiences and beliefs about the world into the constructivist epistemology (Smith & Ragan, 2005; Tam; 2009). A learner cannot be directed or led to expand their understanding (Von Glasersfeld, 1989), the learner gains understanding "in" the interactions with the environment, a core concept of constructivism, according to Savery and Duffy (1995). What is learned and how it is learned are not separated in this view. All learning involves mental construction regardless of what is taught, according to

constructivists (Swan, 2005). Learners expand their understandings or construct new knowledge by building on what they already know and believe.

Social constructivists extend the constructivist viewpoint. “Social constructivists believe that groups construct knowledge, collaboratively creating a culture of shared meanings” (Barkley et al., 2014, p. 17). Students working in groups can pool their knowledge, as the knowledge of a group combined is greater than that of an individual. Through communication, collaboration and sharing within the group, the understanding is deepened (Barkley et al., 2014).

To be effective for learning and teaching, online learning should be rooted in epistemological frameworks (Bednar et al., 1991; Dabbagh, 2005). A course developer should have an awareness of the theoretical foundation upon which the course and activities are designed (Bednar et al., 1991). As Driscoll (1994) explained, because researchers in various fields approach certain aspects of constructivism differently, there is not a single constructivist theory for instruction.

Instructor presence and involvement in the online classroom is imperative. Instructors’ roles also change in the online classroom. Creating a learner-centered online classroom versus a teacher-centered classroom is part of this shift, which may be a different approach than some use when teaching in a traditional face-to-face setting. Active learning, such as found in a PBL or REAL that includes a level of collaboration among students appears to foster better achievement and attitude outcomes in asynchronous online learning (Bernard et al. 2004). Online students miss the interactions and informal communications found in a face-to-face college classroom. With advances in technology, connection speed, and availability of cloud-based tools,

the parallel move from Web 2.0 to Web 3.0 will continue to lead to new and improved ways to collaborate and foster collaborative learning.

Participants and Setting

Overview

The researcher utilized purposive sampling, a technique used to select participants who are representative of the area of interest (Teddlie & Tashakkori, 2009). The researcher looked for instructors who teach fully online courses and who are providing collaborative learning opportunities in their online classroom. These lived experiences and social experiences provided by instructors through responding to questions during semi-structured interviews allowed the researcher to explore the "how" and "why" of such happenings (Mason, 2006). The use of semi-structured interviews helped identify and further explain experiences, develop a deeper understanding, and a more thorough analysis of the overall perceptions and experiences online instructors have when providing collaborative learning opportunities. The use of coding permitted the researcher to observe themes from the interviews regarding definitions of collaborative learning, support strategies utilized, and used tools.

Setting

The participants for this study were recruited from two research universities. The first is a public research university in a small metropolitan area of the south central United States. The second is a small, public research university in the Rocky Mountain region of the United States.

Participants

The participants for this study are four higher education instructors who teach fully online graduate courses and use collaborative learning in their courses. Participants were contacted and recruited through e-mail. Purposive sampling was used to identify and recruit those instructors who (1) teach online and (2) provide collaborative learning opportunities in their online classroom for semi-structured interviews. Further, participants who teach at the graduate course level were recruited, as the class size of graduate fully online courses is potentially lower than undergraduate courses. To locate potential participants, peers and colleagues were contacted and discussions were held regarding the purpose of the dissertation study. Colleagues from both universities provided names and email addresses of potential participants. Two males and four females were contacted from the two universities. The four females recruited via email were the only respondents to the recruitment email. (See Appendix C) Further attempts were made to recruit at least one male to participate in an interview for this study, however this was unsuccessful after more than a month of attempts. Four female online instructors, two from each research university, were interviewed for this case study.

Assumptions

There are several underlying assumptions the researcher made. These assumptions include: the researcher would be able to locate four faculty members, both male and female instructors, in higher education teaching online courses who are providing collaborative learning opportunities for their students. Although instructors in higher education have time constraints, the researcher also assumed that instructors

would be able to commit to the time needed to conduct the semi-structured interviews, to the review of the transcripts from the interviews, and to the member checking or review of the written report for this study.

Ethics and Researcher's Role

This study involved human subjects and ethical considerations were a priority in every phase: the design, the beginning of the study, during collection of the information, analysis, and in reporting the results. Any researcher should be aware of the ethical considerations throughout the processes of the study and should self-monitor (Hesse-Biber, 2011; Creswell, 2014). An application was filed with the institutional review board (IRB) on the researcher's university campus and the IRB committee reviewed the proposed research. The university granted approval and the call for participation was released. Participants were informed of the study's purpose and anonymity and confidentiality processes as priorities were explained, especially that they were able to withdraw at any time (Simon, 2011). Permission and informed consent were obtained and provided to participants before they were interviewed. The researcher made all attempts to protect participants of this study, from any harm, loss of autonomy, identity, and protection of their privacy. The information from the semi-structured interviews was anonymized in preparation for coding, including all formal names and references to specific educational institutions. The researcher remained objective, sought to minimize bias, seeking trustworthiness during each phase of the study.

The researcher role was that of a human instrument; specifically, the primary research instrument (Erlandson, Harris, Skipper, & Allen, 1993). The researcher was an investigator using the participants' views to build broader themes, and to generate and

interconnect themes. The researcher was an auditor of all information, notes, and documentation, and stayed responsive to new insights that arise and an expansion researcher to confirm or enhance meaning from each phase of the study.

Resources Required

Participants were asked to participate in the interviews from a distance, so certain technological resources were required of the participants, such as a computer or mobile device and Internet connectivity. Participants were interviewed in Adobe Connect. This virtual online meeting space required a computer or mobile device and an Internet connection to the secure meeting space.

Procedures

A case study was used as the qualitative approach and design for this study. A case study is empirical inquiry that "investigates a contemporary phenomenon (the "case") in depth and within a real-world context, especially when the boundaries between phenomenon and context may not be clearly evident" (Yin, 2014, p. 16). The "particularity and complexity of a single case" are studied to further understand the importance of the case (Stake, 1995, p. xi). The topics and subtopics of inquiry were "how" and "why" questions regarding a contemporary phenomenon (collaborative learning in online learning), making a case study research a preferred method for this inquiry (Yin, 2014). Further, more than one source of evidence was used and four different instructors from two universities were studied and contributed.

The wealth of information derived from a case study and the closeness to real-life situations of such type of research is important for two respects, according to Flyvbjerg

(2005). First, case studies are “important for the development of a nuanced view of reality, including the view that human behavior cannot be meaningfully understood as simply the rule-governed acts found at the lowest levels of the learning process…”(Flyvbjerg, 2005, p.303). Second, case studies helped the researcher’s learning process and development of research progression. Further, case studies are fitting for learning and can be a “route to knowledge” (Campbell, 1975, p. 191) and more in-depth learning surrounding a phenomenon or case.

The researcher sought to discover such in-depth learning and understanding of the phenomenon of collaborative learning in online learning. To understand what this looks like, how it is happening, and how it is defined for online learning, a case study is appropriate. The “detail, richness, completeness…” (Flyvbjerg, 2005, p. 314) of such exploration of a phenomenon during a case study are the strengths of this type of research.

Semi-structured Interviews

An email was distributed to instructors requesting their assistance in volunteering to participate in the study and included a small incentive to participate. Interviews, utilizing a semi-structured interview protocol (see Appendix A) were the qualitative information collected to further explain the instructors’ opinions, perceptions, feelings, and experiences about and with collaborative learning in the online classroom. The semi-structured interviews allowed for a more complete analysis or picture of the process of providing collaborative learning in the online classroom, if training was provided, and the overall experiences of and tools utilized for collaborative learning. The interviews were held during three months in the fall semester. The participants

scheduled interviews at times convenient to them. The researcher provided an interview script with the topic and questions that would be the foundation for each interview. The participants were told that the interviews would take approximately 30-45 minutes. In actuality the interviews ranged from 45 minutes to two hours in length. Each interview was held in Adobe Connect, an online conferencing program. The interviews were recorded and then converted to .mp4 format in preparation for transcription. The transcriptions were emailed to each participant within one week of their interview. The participants reviewed the interview transcript for accuracy. Each participant returned the interview transcripts within one week of receiving and approved the accuracy of the transcript. If changes were made to the transcript, the participant utilized comments and/or the track changes feature in the word processing software program.

Analysis and Interpretation of Qualitative Information

The researcher used a combination of approaches for the analysis and interpretation of the information gathered from participants. To develop depth and breadth of the findings and accountability of this study, the researcher chose multiple coding methods and two phases of analysis (Saldaña, 2009). Coding is a common method for qualitative analysis (Packer, 2011). “A code in qualitative inquiry is most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing and/or evocative attribute for a portion of language-based or visual data” (Saldaña, 2009, p. 3). Categories and themes are the result of the coding process.

During the analysis of this qualitative study, the researcher aimed to “concentrate on the instance, trying to pull it apart and put it back together again more meaningfully—

analysis and synthesis in direct interpretation" (Stake, 1995, p. 75). It is from the collection of instances and codes, which meanings emerge (Stake, 1995). The analysis of the interviews began once each interview was complete such that the researcher journaled immediate reflections and thoughts within the first hours after each interview. Highlights of the interview, as well as surprising or interesting topics and discussions were noted in the journal. Although the interviews were recorded, the researcher kept notes during each interview and these were referenced to during the coding process of the analysis. Interviews were conducted remotely using Adobe Connect, a web conferencing program. The interviews were recorded and then transcribed. The transcriptions of the interviews were contained in digital word processing document format and later in spreadsheet format once they were anonymized using pseudonyms (Abby, Catherine, Susan, and Elizabeth) in preparation for coding and theme development. Multiple coding approaches in two phases were utilized and are detailed in the following section.

Phase 1

The first phase of analysis consisted of printing the individual interviews and reviewing each sentence line by line. In Vivo Coding or Literal Coding was used to honor the voice of each participant in the study (Saldaña 2009). Notes were handwritten in the margins of the printed documents. Word and short phrases, using the terms expressed by the interviewee were used for the development of preliminary codes. Meaningful and important passages and quotations were also highlighted on the documents. These highlighted passages were the researcher's subjective designation of the participants' significant contributions to the study. The printed documents with

handwritten notes and highlighting were referred back to during the entirety of the analysis process, as they held the first thoughts and interpretations of the researcher and the voice of the individual of the participant for the analysis process.

Next, all interviews were imported from word processing documents into spreadsheets, with each separate spreadsheet named and labeled with an assigned name for each interview. Attribute coding was used as a form of data management and organization (Saldaña, 2009). This form of coding was an approach to consolidate and record information on each participant before the data was anonymized. A new sheet was created and the full name of each participant followed by the pseudonym in parentheses was recorded. The institution the participant teaches for, the approximate age, culture identified with, and the current position held was recorded during attributing coding. This demographic information is "intended as coding grammar, a way of documenting descriptive 'cover' information about participants, the site, and other related components of the study" (Saldaña, 2009, p. 57). Once the original demographic data was recorded, the interviews were anonymized using the chosen pseudonyms for participants and references to their institution.

Initial Coding is the process of further breaking down the qualitative information of the study (Glaser & Strauss, 1999; Saldaña, 2009). This coding process was accomplished once the information was placed into spreadsheets and anonymized. The researcher again worked through the interviews line-by-line and typed codes to the right of the instance the code referred to. These codes were descriptive and theoretical codes that summarized the main topic(s) (Saldaña 2009). The codes used ranged from one to five words or short phrases. The difference between the In Vivo Coding

processes used in the prior step was the integration of the researcher's inferences into the codes during this Initial Coding. Rather than using the exact term or phrase the participant used (In Vivo), this phase utilized descriptive terms and phrases that described the information based on the researcher's understanding of the phenomena in an attempt to further narrow potential categories in preparation for the next phase of the analysis (Saldaña 2009). The researcher remained open to possible theoretical directions indicated through the information during this stage.

To the right of each Initial code in the spreadsheet, the researcher conducted a first pass of Descriptive Coding to summarize each Initial code passage in one to three words. Descriptive coding is also known as topic coding (Saldaña, 2009). During this process, the researcher thought of these codes as parent codes and attempted to summarize a passage with one word or a short phrase. The researcher used the Initial Code from the prior step as the baseline for an appropriate parent code. Descriptive Coding laid the groundwork for the next phase of the analysis and it was from the Descriptive Coding that the final categories and themes of the study were discovered.

Finally, Structural Coding was used to highlight specific sections of the interviews that directly answered the topics of inquiry. The highlighting feature of the software program was used to color organize each topic of inquiry. An instance in the interview that answered a topic of inquiry was highlighted in the color of that particular topic. Structural coding "both codes and initially categorizes the data corpus" (Saldaña, 2009, p. 67). This coding was useful to the researcher as a categorization method when writing the findings of the study.

Phase 2

The codes from the In Vivo, Initial, and Descriptive coding methods were combined into one spreadsheet for further analysis, comparison, and reduction or saturation following a constant comparative method. Over 500 short phrases and codes were included in Phase 2. The codes were organized in columns of a spreadsheet and a codebook was created for organizing the codes. The constant comparative method is an approach to qualitative analysis that combines a coding procedure with a style of theory development, as compared to a separate analysis (Glaser & Strauss, 1999). "The purpose of the constant comparative method of joint coding and analysis is to generate theory more systematically than allowed by the second approach, by using explicit coding and analytic procedures" (Glaser & Strauss, 1999, p. 102). The constant comparative method consists of four stages. The researcher examined the study's combined data corpus and sought further explanation and description of the first phases of coding. The researcher followed Lincoln's (1985) guidance when analyzing the information and developing categories and themes, focusing on the information processing aspects of the constant comparative method. Figure 1 displays the processes the researcher used for the multi-phase method. The dotted lines signify the flow between the two phases, as In Vivo, Initial, and Descriptive coding were utilized in both Phases to refine and to reach saturation of the codes.

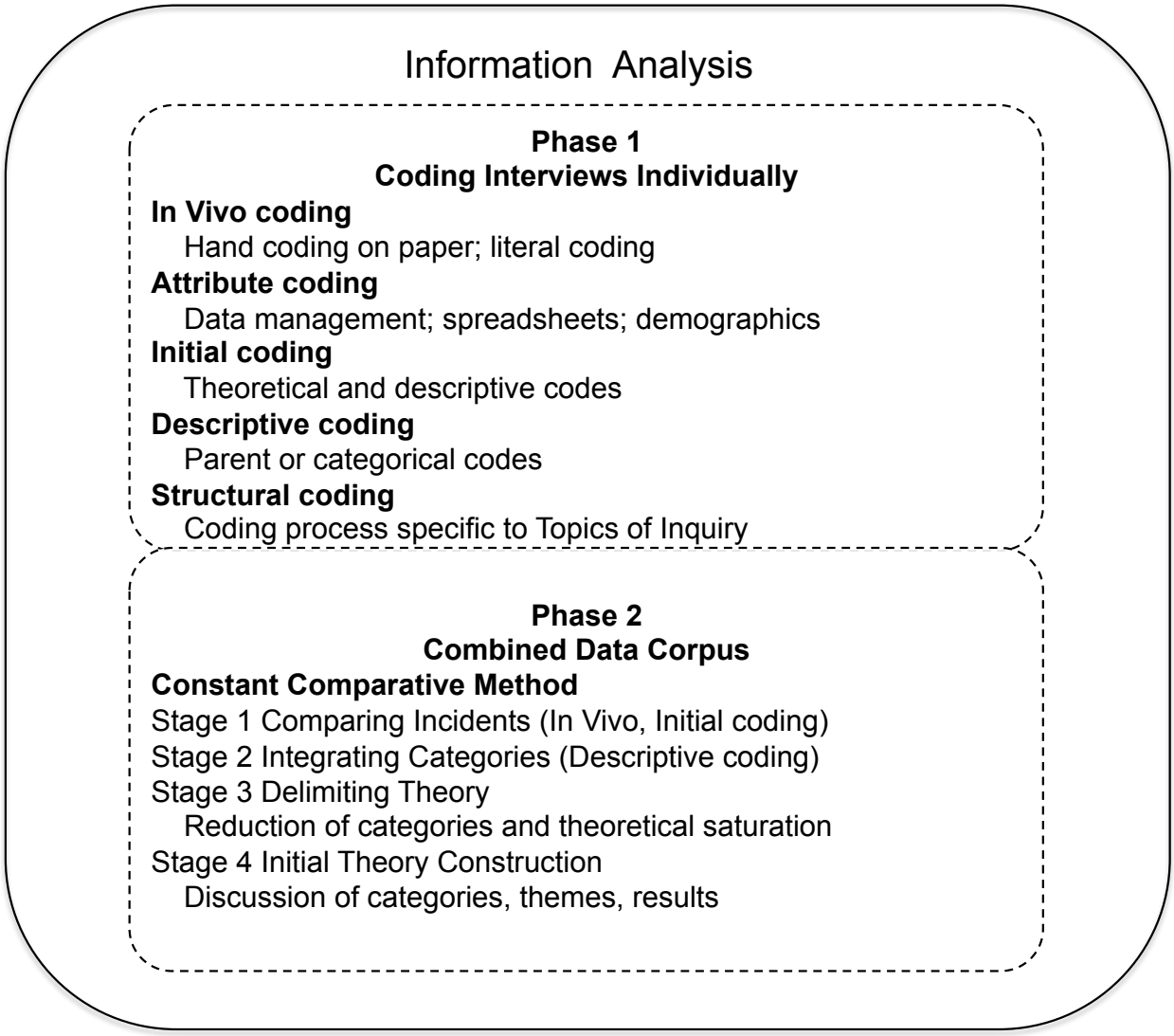

Figure 1: *Analysis and Interpretation Procedures of Qualitative Information for the Study*

In stage one of the constant comparative method, the researcher developed categories from the information; developing categorical names as each emerged (Glaser & Strauss, 1999). This was accomplished during the In Vivo and Initial Coding process described above in Phase 1, however an additional coding attempt or pass through the codes was done once all codes were combined for this phase. The researcher started with on-paper In Vivo coding that captured all incidents in the

participants' own words from Phase 1. These codes were transferred (typed) in a column next to all Initial codes from Phase 1. The phrase or passage from the interview, the In Vivo code column, and the Initial code column were reviewed once again during this second pass coding.

One defining rule for the constant comparative method was used when coding each incident: "while coding an incident for a category, compare it with the previous incidents in the same and different groups coded in the same category" (Glaser & Strauss, 1999, p. 106). This was one of the goals for employing the constant comparative method and the researcher's purpose for further breaking down and comparing the codes. To accomplish this, several colors were integrated into the spreadsheet (Codebook) to color code similar instances. This allowed the researcher to compare the codes, in an organized fashion, that were similar by looking at their original source (interview transcripts). Lincoln further suggests: "The investigator should not fail to draw on his or her tactic knowledge in making these judgments; errors made as a result of using such knowledge are correctable on successive review, but incidents recognized tacitly, once eliminated, are virtually impossible to recapture" (Lincoln, 1985, p. 340). Further, the process of comparing codes "stimulates thought that leads to both descriptive and explanatory categories" (Lincoln, 1985, p. 341).

In stage two of this phase; the researcher integrated the categories and their properties (Descriptive Coding). The comparison of incidents evolves to a comparison of incidents with "properties of the category that resulted from initial comparisons of incidents" (Glaser & Strauss, 1999, p. 106). It is during this phase that relationships become more evident, categories more coherent, and the information "begins to take on

the attributes of an explanatory theory, or at least (and more to the point for the naturalist) a particular construction of the situation at hand" (Lincoln, 1985, p. 343). During another pass through the Codebook, the researcher revisited the In Vivo and Initial codes and compared each to ensure the Descriptive code was representative.

The final stages of the constant comparative method consisted of delimiting theory and writing the theory (Glaser & Strauss, 1999). Through levels of coding, category modifications became fewer and themes emerged. Each phase of the analysis process guided the development of the subsequent phase (Lincoln, 1985). Stage three (delimiting theory) consists of uncovering uniformities, clarification and removal of non-relevant properties, and providing supporting detail of major themes. Commonalities between the two institutions were noted in the analytic memo and additional narrowing occurred as deeper interpretation occurred and themes clarified. The researcher identified the most common Descriptive codes to aid in identifying central themes from the combined interviews.

In the final stage, the researcher combined evidence from the previous phases to address the developmental theory from the constant comparative process (Glaser & Strauss, 1999). Lincoln (1985) referred to this process in terms of "construction" versus theory, as in an initial construction phase of potential theory development. Creswell (2013) explained the constant-comparative process and phases as a *zigzag process* surrounding one core phenomenon, during which the researcher moves back and forth between analysis phases. The entire data corpus was used when constructing the theory for this stage. As the categories were narrowed and major themes developed from the coding phases, they were used as section titles to organize the findings of this

case study. Further, the top themes were analyzed to determine how or if each related to a specific topic of inquiry and support was provided for each placement in the write up of the finding. Figure 2 provides a display (nonspecific to any code, category, or theme) of how the codes developed categories, categories were analyzed and combined to develop themes, and themes were then analyzed to determine how each could be placed under or related to a specific topic of inquiry.

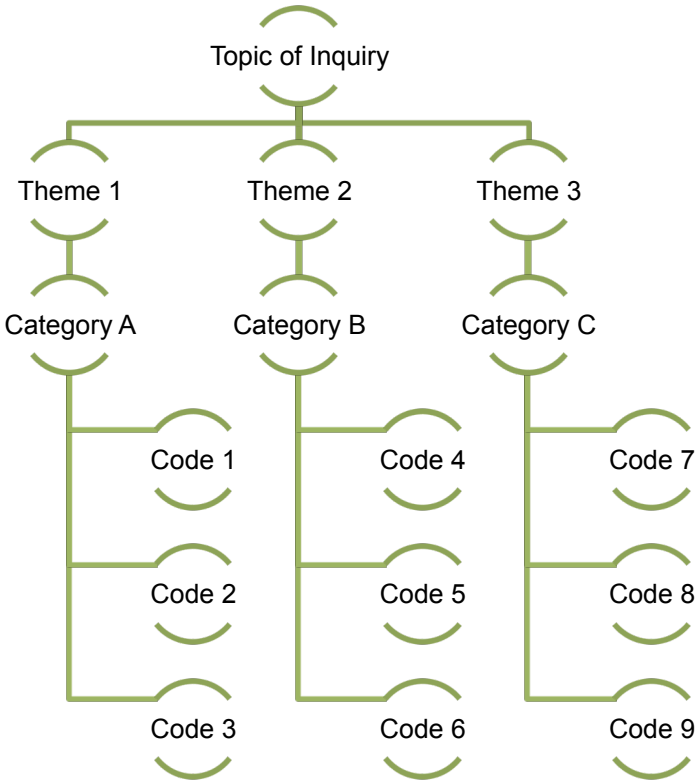

Figure 2: *Codes to Categories to Themes*

Limitations

The findings of this case study are specific to the case. Locating participants, both male and female, who teach online and integrate collaborative learning opportunities presented a challenge. The sample size for this case study was small and

all participants were female because of circumstances beyond the researcher's control. This may limit the transferability for male readers.

The researcher tested the interview questions on two peers, but was not be able to determine the exact time commitment necessary for the interviews. The estimated time commitment varied with each participant, as the researcher allowed the interviewees to respond to each question with as much time as they needed to fully express their thoughts, therefore some interviews were longer than others.

Delimitations

The delimitations of this study were the scope of the problem, the topics and subtopics of inquiry, and the use of participants in higher education. The participants of this study were limited to instructors in higher education. Further, purposive sampling was used to narrow those instructors to interview. The instructors must teach a fully online course and provide or have provided collaborative learning opportunities to their students in order to volunteer for semi-structured interviews. The researcher limited the scope of exploration to collaborative learning although there is many other important areas online learning that could be explored.

Trustworthiness

Analytic memo writing, in which the researcher answers certain questions about the analysis process and biases, and in the form of journaling was used to document and reflect upon the coding process (Saldaña, 2009). Memos and journal entries were dated and when a significant thought or development of a conflicting code or category occurred, this was written or noted in the memo immediately. A notes application for mobile devices was used for journaling and note taking when the researcher was

traveling or not at home to capture various thoughts and reflections. This process was used to relieve any such conflict of thought that arose in the coding process (Glaser & Strauss, 1999). The analytic memo was also used as a reflection piece for the development of themes, potential connections, and personal learning throughout the study. Monthly meetings, email exchanges, and other forms of communication were used to as peer debriefing efforts with the researcher's major professor and peer coder/colleague.

The researcher made every attempt to ensure validity and reliability of the information and knowledge produced from this study in an ethical manner. Strategies were employed to address potential concerns in information collection, analysis, and reporting of the information and findings. Some of these validations strategies used in this study include: identifying themes during the analysis of the qualitative information to determine if follow-up interviews were needed, peer assistance was used in coding the qualitative information, and inter-coder agreement for the qualitative information and coding process was utilized. Monthly meetings were held with the researcher's major professor and the peer coder. Codes were reviewed and discussed during these meetings. Three researchers had access to the information, codebook and spreadsheets. A subjectivity statement (see Appendix B) was provided to peer coders prior to coding and will be discoursed to further identify biases of each coder.

The researcher followed the recommendation of Lincoln (1985) with regard to trustworthiness: truth value (credibility), applicability (transferability), consistency (dependability), and neutrality (objectivity). To establish confidence in the "truth" (truth value) of the findings member checking was used once the interviews were transcribed

and again once categories and themes were analyzed and findings were written. Peer debriefing working sessions were used to discuss emerging themes and develop explanations aloud (Erlandson et al., 1993). These working sessions and discussions were also used to reach inter-coder agreement on any code or category that was questioned during coding. Applicability or transferability was established through the use of thick, rich description of each phase of the study. Further, transferability "takes the place of generalizability as a criterion for making a judgment regarding rigor in constructivist studies" (Lincoln & Guba, 2013, p. 80). The written findings reports accurate accounts of the semi-structured interviews, including the use of direct quotations of faculty members and instructors interviewed. Purposeful sampling was used in this study for transferability (Lincoln, 1985).

Consistency was executed in several approaches. The researcher coded and analyzed when well rested and not distracted. The coding process took several months and the researcher used one to two hour blocks of time daily to accomplish the multi-stage coding process. An audit trail was an important component of this study for organizing information collection and phases of the analysis (Merriam, 2009). An analytic memo was used during the interviews, during reflection the first few days after interviewing, and during the analysis and coding processes and phases.

Neutrality or objectivity was established during the analysis and writing of the findings. A subjectivity statement was developed so the researcher could better understand and reflect upon personal biases before interviewing and analysis and interpretation. The researcher answered the following questions:

What is learning and teaching?

What does this mean for my interviewing?

What do I expect to see?

What do I already know about this topic?

What are the challenges of what I think I already know?

Topics in the subjectivity statement were discussed with the peer coder. The purpose of this was such that the peer coder would help to identify if the researcher is potentially inserting personal bias in the coding and analysis processes. The researcher was mindful of biases during analysis and used self-monitoring and online meetings with peers and the major professor to discuss thoughts and verbalize reflections. During the months of intense analysis, the researcher continued reading related theories of online learning, newly published research, and journaled on the findings of this study and the development or construction of theory.

Summary

This chapter presents the researcher's methodology for this case study. A qualitative researcher, such as in this study seeks out a holistic view of the problem being studied and was interested in the participants' life experiences and their construction of meaning surrounding these experiences (Creswell, 2014; Merriam, 2009; Miles et al., 2013). Further, they "study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, 2005, p. 3).

A case study was used as the qualitative approach and design for this study because the “particularity and complexity of a single case” helped explain the subject’s importance (Stake, 1995, p. xi). The topics and subtopics of inquiry were “how” and “why” questions regarding a contemporary phenomenon (collaborative learning in online learning), making a case study research a preferred method for this inquiry (Yin, 2014).

The participants consisted of higher education instructors who teach fully online graduate courses and use collaborative learning in their courses. Four faculty members from two researcher universities were interviewed. The researcher utilized purposive sampling, a technique used to select participants who are representative of the area of interest (Teddlie & Tashakkori, 2009). The researcher was looking for instructors who teach fully online courses and are providing collaborative learning opportunities in their online classroom. The use of semi-structured interview questions helped identify and further explain the experiences of, develop a deeper understanding, and a more thorough analysis of the overall perceptions and experiences online instructors have when providing collaborative learning opportunities.

Multiple coding phases and processes were used for information analysis in the study. This included In Vivo, Attribute, Initial, Descriptive, and Structural coding (Phase 1), and the constant comparative method of analyzing the combined codes for a second phase of analysis. The researcher used the guidance of Lincoln (1985), Glaser and Strauss (1999), and Saldaña (2009) while analyzing the information gathered from the interviews and developing categories and themes, focusing on the information processing aspects of the constant comparative method.

CHAPTER 4

RESEARCH FINDINGS

Introduction

This chapter details the findings of this qualitative case study. Information for this study was collected from semi-structured interviews with four participants. The interviews were conducted and analyzed over a five-month period. The four female participants teach fully online courses in similar areas of study including education, design, and instructional technologies. Two universities are represented in the study with two participants working at each university. Demographic information was gathered during the first part of the interviews. As the interviews progressed, each participant provided subjective information concerning their own view of online learning. Each interviewee provided her definition of collaborative learning and described the characteristics of collaborative learning in her respective online classroom.

The purpose of this qualitative case study was to identify the higher education instructors' perceptions concerning the provision of collaborative learning activities and opportunities in their online classroom. With synchronous, Web 2.0, and cloud-based applications such as web conferencing applications, blogs and collaborative document development opportunities, the options for developing collaborative learning activities are perpetually expanding. Central to this study was identifying how these online higher education instructors offer students collaborative opportunities and to lend voice to the lived experiences of these instructors.

Through semi-structured interviews, the researcher collected experiences that instructors report concerning collaborative opportunities in their online classrooms. It was therefore necessary to understand each instructor's subjective understanding of the

meaning of collaborative learning; as well as the respective practices and tools each utilize. Codes and inferences were developed through a series of analyses of the interviews with the participants. Further, the researcher developed categories and themes by utilizing a multi-phase analysis approach including a constant comparative coding process.

Topics of Inquiry

- What are the perceptions instructors in higher education have toward collaborative learning in the online classroom?
- What are the experiences faculty identify with providing online collaborative learning?

  Sub-topics of Inquiry

  - What tools are higher education instructors integrating into their pedagogy for collaborative learning in the online classroom?
  - How are online instructors presently providing collaborative learning opportunities in the online classroom?

Overview

In this qualitative case study, participant interviews and prolonged contact before, during, and after the interviews, were used to investigate the topics of inquiry. The researcher sought a holistic view of collaborative learning in the online classroom. To explore this subject and the topics of inquiry, interviews were conducted with four higher education instructors from two different research universities. Purposive sampling was used to select participants that were representative of the area of interest. The participants in the study teach fully online courses and provide collaborative learning

activities in their online classroom. The researcher sought both male and female participants for the study. After multiple unsuccessful attempts to secure at least one male participant for the study, the researcher continued the information collection with four female participants. Two universities are represented in this case study. The first is a public research university in a small metropolitan area of the south central United States. The second is a small public research university in the Rocky Mountain region of the United States.

The interviews were conducted and recorded in Adobe Connect, a web-conferencing program. The interviews ranged from 45 minutes to two hours in length. The researcher was open to any length of interview and while an interview script was used (See Appendix A), the participants were encouraged to expand on topics, as they felt comfortable. This allowed for a more natural discussion and open conversation about the topics.

This chapter provides demographic and historical information on each participant in the case study and the findings of the study specific to the topics of inquiry and the top themes from the multi-phase coding analysis.

Demographics

Abby earned her PhD in 2012 and is an assistant professor who has taught for three universities over a 13-year period, teaching fully online courses for much of this time frame. Abby teaches education and instructional technology courses, along with visual media courses. She appreciates the flexibility of teaching online, but finds that it requires extra effort to engage students and keep the students' attention. Her

colleagues and teachers in her department are an integral part of her work environment. She identified helping students as a principal work goal, along with continuing her research on virtual environments. Abby believes she has a good relationship with her students and those students know they can count on her.

Catherine is an assistant professor at her university and teaches undergraduate and graduate online courses in the area of study of instructional design and technology. She has worked in this position for over three years and has been in the field of instructional design for over 15 years. She earned a PhD in 2013 and her main goal is tenure and promotion. She is an award winning faculty member who creates weekly videos for her online students to provide weekly wrap ups, overview upcoming topics, to keep them organized and to instill a strong instructor presence in the online classroom. Catherine talked at length about mentoring and spoke fondly of her mentors at her university and the strong support and camaraderie in her department. She has a connected relationship with her online students and attributes this to the increased instructor presence and her online availability to her students. Her approach to providing a human element in her online classes is consistent with her personal beliefs about education in a formal environment.

Susan earned a PhD and has 42 years of teaching experience. She started teaching online courses in the early 1990s. She is pioneer in online learning and developed some of her first online courses in HTML code. She spent over a decade as a university administrator. Susan currently teaches courses in education and instructional technology. She works and researches with national and international colleagues in an effort to advance her field of study. She likes the flexibility offered by

teaching and collaborating online, but explained the challenges presented in the preparation time for online instructors and explains how the responsibility of teaching online includes meeting the needs of students beyond the typical work hours and outside the traditional three credit hour course. She currently teaches Master and Doctorate level courses and explained that her foremost goal is to provide and deliver quality instruction in these courses. Susan is a veteran faculty member at her university and has an intense interest in mentoring those in her department and in her field to continue the growth of the field. She believes that the relationships with her online students are very similar to that of a graduate student in a face-to-face setting. Her students are comfortable contacting her and her students appreciate having open communication. Susan is a wife, mother, and grandmother.

Elizabeth has been teaching in higher education since 1995 and earned a PhD in Applied Technology Training and Development. In addition to her full time position, she fulfills multiple roles and responsibilities at her university teaching Masters and doctoral level courses, being uniquely qualified as she holds a design degree. Her current work goals include a university-wide message design project and maintaining and increasing student enrollment and retention in her department. She strives to replicate the relationships in a face-to-face classroom in her online classroom. She is accessible and approachable, and as an instructor of record she holds a mentoring and leadership role.

Elizabeth appreciates meaningful conversations with her colleagues and the learning environment she is a part of. She welcomes the convenience of teaching online and teaching her online courses from home. She enjoys the challenge of working with gifted students and learning with and from her students. Additionally, Elizabeth enjoys

guiding her students through the process of navigating the system they are a part of. She is connected to her heritage, a busy professional, and an involved mother of two children.

Table 1

Participant Demographics

	Teaching Online	Online Learning	Present Work Goals
Abby, Ph.D.	8 years	Appreciates the flexibility of teaching online; extra effort is needed to keep students engaged	Primary goal is to help her students
Catherine, Ph.D.	8 years	Strives to provide a connected or human element to her online classes	Seeking tenure and promotion
Susan, Ph.D.	11 years	Likes the flexibility of teaching and collaborating online, but challenges are presented in the preparation time for online instructors	Mentoring those in her department and in her field to continue the growth of the field
Elizabeth, Ph.D.	10+ years	Appreciates meaningful conversations and learning with and from her students	Maintaining and increasing student enrollment and retention in her department

Online Learning

The online higher education classroom can resemble the physical classroom. This space is where learning happens and although students in an online classroom do

not share physical proximity, in many circumstances they do arrive in the same location online, ready to earn college credits. The four study participants enjoy teaching online. However, Elizabeth and Catherine mention that this is not the case for all online instructors and that online teaching may not be a good fit for every instructor. All participants discussed various challenges and obstacles that confront online instructors.

Abby explained that online learning offers flexibility for students and instructors. As an instructor it can be a challenge to engage students in learning because of the lack of physical proximity, but she finds creative approaches to keep her students participating. One of these approaches is through synchronous online meetings or classes. Abby and Elizabeth both use web conferencing software to hold online classes for their students. They each mention the importance and value of these online meetings. Although she does find some students are resistant to engaging during online sessions.

Susan elaborated on the expectations of instructors in the online classroom. There is often an increase in the amount of time needed to prepare the online courses for the instructor. The students also have an expectation that “they can get feedback and input from the instructor seven days a week, often 12 to 15 hours a day.” Elizabeth echoed these thoughts on the expectations that student have in terms of response time from their instructor. She has students who expect a rapid response to emails; and while she considers herself very accommodating, she acknowledges that rapid response is not uniform and is not necessarily an achievable standard. Catherine also discussed preparation time for her online courses. She asserted that her approach to teaching online is unique; and, further explained how she develops succinct videos for

her online students to keep them engaged. She develops video overviews to verbalize to students the objectives and expectations of the course and the upcoming week. Additionally, she uses key points made by her student's discussion postings in her videos to further explain topics and increase instructor presence.

Catherine believes the videos she creates for her students are essential to make a human connection with them. She provided an example of the impact of the videos. She met an online student at the elevator and the student said "I was in your class the other night." Catherine had to take a minute to make the connection because she does not teach night class. She explained, the student "had watched my course overview video, two nights before…she felt absolutely connected to me because she had seen the video and I was taken aback by that."

Collaborative Learning

Each participant defined collaborative learning during the interviews. Abby explained that collaborative learning is "working together to accomplish something…working together to learn." She further explained, "you can have experiences from other members of your group to learn something, and everyone nurtures each other." Catherine believes that collaborative learning or collaborative work needs to be something real, or authentic. "It is not me handing somebody a project and saying go pair up and put something together that is purely for heuristic purposes…we are building something together." Further, she thinks that everyone has individual strengths that they bring to the group. Elizabeth had similar thoughts on collaboration in

terms of working together and believes that we can achieve more when working and learning together. Elizabeth further stated that,

> [T]here are some things in which I am an expert, but when we sit down together and we are collaborating on something that's meaningful and real and rich, and I am saying to you I know that you are starting out, but you have something valuable that you bring to the table and I want to tap into that resource and infuse the unique characteristics you bring to the table into this collaborative thing that we are working on that's going to go someplace else.

Catherine explained that collaborative learning can happen online or face-to-face and in both formal and informal settings. Collaborative learning is social. She described a scenario where a group of people is looking at the same picture and one person may look at the actions in the picture, while another focuses on the colors…"when you bring that collaborative component and you talk about what each of you see, suddenly that pictures takes on a new dimension" and a learner is exposed to different perspectives in collaborative learning.

Susan discussed the work behind the scenes to make collaborative learning successful explaining that there is "pedagogical work" and structure behind developing collaborative learning activities. Further, she noted that an instructors need to consider the outcomes and relevance of a problem solving activity involving collaborative learning. "Otherwise learners feel like they've just been tossed out into the wind, and they do not learn anything from it." She also explained, students need help learning how to collaborate online. "It's not just about the content or the outcome from the content of the activity, but it's also about helping people learn how to work with each other." Elizabeth also touched on the specifics of collaborative learning. She explained that each student might have a vision of how they want to proceed with a collaborative

activity and that mutual understanding of what will be accomplished is important. She iterated that “everyone has something to contribute…everybody’s thoughts are valued and everybody is expected to participate.”

Findings

Categories

Nine categories were developed in the multi-phase analysis process of this study: (1) Working in Groups; (2) Nurturing, Helping, and Supporting Students; (3) Technology Tools; (4) Challenges in Online Learning; (5) Synchronous; (6) Scaffolding; (7) Relationships with Students; (8) Communication; and (9) Asynchronous. Figure 3 provides a display of these categories. The categorical placement flows clockwise in this figure from the most instances (Working in Groups) to the least (Asynchronous).

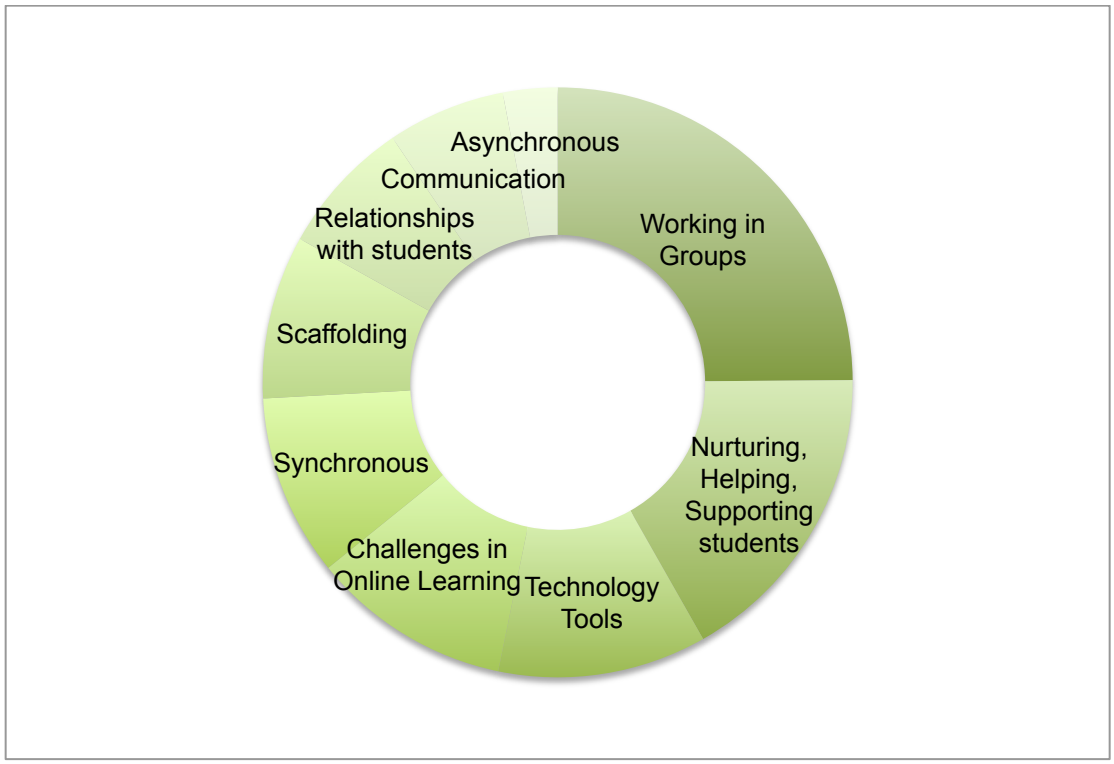

Figure 3: *Top Categories*

The top nine categories were each analyzed to determine how or if each related to a specific topic of inquiry. The categories are discussed herein based upon the topic of inquiry they were placed into and in order of thematic placement, not in order of frequency. See Table 2 for categorical placements.

Table 2

Categories developed from Phase 2 of coding that fall under specific topics of inquiry.

Topic of Inquiry 1 *Perceptions toward collaborative learning*	Topic of Inquiry 2 *Experiences of providing collaborative learning*	Sub-topic 1 *Tools integrated for collaborative learning*	Sub-topic 2 *Collaborative learning opportunities provided*
	Categories		
Challenges in Online Learning	Working in Groups	Technology Tools	Synchronous
Nurturing, Helping, Supporting Students Online	Communications		Asynchronous
Relationships in Online Learning	Scaffolding		

Topic of Inquiry 1: What are the perceptions instructors in higher education have toward collaborative learning in the online classroom?

The instructors who participated in this study defined collaborative learning similarly and each was exposed to collaborative learning long before providing it to online students. They each explained challenges of collaborative learning in the online classroom, but have developed or honed approaches to overcome these and support their students to learn from one another in the online environment.

Elizabeth's perceptions of working collaboratively started from a very young age, as she grew up in "a collaborative environment where there was constant learning" in a real world familial setting. When discussing how this collaborative working environment transfers to the online environment, she explained, "I think it takes more time [online]. It

also takes a great deal of commitment on both parties to really develop a collaborative environment when you start online." She understands that students may not be comfortable working together in an online setting and is able to gauge this and accommodate her students to alleviate anxiety through a variety of methods--humor, versatility, and support were examples discussed. She believes her ability to do this "helps in terms of fostering collaborative learning and also just facilitating in an environment because it is hard when you are so fixed on one way of being."

Susan reaffirmed the idea that students may not be comfortable working together online. Her observations were that students do not care for collaborative activities, but she continues to provide these activities in preparation for future courses because she believes it is a type of learning that will continue online. She recalled group work (collaborative learning) from junior high that did not incorporate specific instructions or directives other than completing the assignment as a group. Susan's approach and beliefs regarding collaborative learning, whether face-to-face or online, is that "it has to be managed and/or coordinated by the instructor." The outcomes should be specified and consistent across groups, and she noted that "when you think about pedagogy in online settings versus pedagogy in face-to-face, it's not whether or not it's a good pedagogy, or a good instructional strategy, it's how you do it." She explains the same is true with collaborative learning online…it's how you do it that makes it effective.

Abby discussed the challenges of online students working in groups that result from the fact that "you cannot get together physically…to solve an issue or to just talk about something or to share materials." She believes that instructors providing collaborative learning must consider schedules and time zones. According to Abby,

when students are not living in the same country, accommodations should be made. She encourages the use of specific tools to help students accomplish their group learning and is respectful about not forcing students to work together if they do not want to. “I ask them to choose who they want to work with…I am very respectful of that.” Catherine handles the issue of different time zones by keeping groupings of students in pairs so not to “damper progress.” She also believes that the opportunities for collaborative learning online are more abundant because of the ways she structures her courses—systematic and sequential.

Challenges in Online Learning

The participants have a solid understanding of the research regarding online learning and openly described what providing collaborative learning in their online classroom means to them based on their perceptions and experiences. Each participant shared the benefits of teaching in the online environment, but Elizabeth and Catherine each made remarks that some teachers simply do not like teaching in an online environment. Although participants discuss the benefit of flexibility, there were multiple challenges conferred as well. The category of Challenges in Online Learning is the parent category for issues expressed for mixed time zones, scheduling concerns, technological concerns, and the lack of physical proximity. These challenges were identified as concerns for students and instructors.

Abby mentioned early on in her interview that it is a challenge “to keep students engaged…you have to find creative ways to keep students engaged.” Further, she explained that collaborative learning is “a little bit more challenging because you cannot get together physically” in the online classroom. Students located in multiple time zones

are a concern or challenge discussed by both Abby and Catherine. This is difficult to overcome at times, and Abby explained that instructor flexibility is needed when assigning group projects or scheduling synchronous meetings.

Nurturing, Helping, and Supporting Online Students

Nurturing, helping and supporting students in the online classroom and generally as instructors in higher education are topics of importance that each interviewee revealed during interviews. In her definition of collaborative learning, Abby states, "everyone nurtures each other" during a collaborative learning experience. Students learn from one another's experiences and support each other during that process. She believes that adult learners in the online classroom know how to work together and she tries not to intervene when they are working in groups, but makes it clear that she is available to help them when or if they need it. Abby explained that one of her main goals is to help students and mentioned her colleagues also prioritize this. Elizabeth stated as her top priority:

> Educating people for a career and taking care of people, which is an inherent part of my personality…I also think that I really enjoy helping students learn how to navigate the system because this whole thing is just nothing but a system, and it is [as] much about what you learn in terms of content as it is, and maybe more so, [as] it is about understanding how to navigate the system of the academy.

She also talked about working with her colleagues to provide her students with the best learning experience and best possible outcomes.

Relationships in Online Learning

Abby believes she has a good relationship with her online students. Students ask her for letters of reference and she enjoys engaging in discussions with her students and the type of relationship overall. Elizabeth states, “I think they are close to replicating the student instructor relationships I have with my face-to-face students.” Susan feels that the relationship she has with her online students is similar to that with face-to-face students, stating that

> I do not think that they're that much different than the typical relationships between a graduate student and a faculty instructor. We communicate frequently, sometimes as a whole group or small groups, and sometimes independently. I think students feel comfortable contacting me.

Topic of Inquiry 2: What are the experiences faculty identify with providing online collaborative learning?

The participants shared specific experiences they have encountered in their online classroom. They discussed particular activities and situations where collaborative learning went well and those where they did not. Catherine described a positive collaborative learning situation that occurred in her message design course. Her students worked on a real-world project for a client, designing fliers and other resources. During the final sharing of the projects, she saw culmination of the important objectives from the semester in the student critiques. Students were “critiquing each other’s work and providing criticism that is constructive” and identifying key design points learned during the semester. Elizabeth also uses collaborative critique sessions of her student’s work. She described this particular activity as a structured process, with set rules to follow. “I start out teaching people what it means to provide critique, what that looks like, what my expectations are…then I lead them through a couple.” She also

says this can be risky in an online setting, because of the lack of physical proximity and not seeing the reaction of the person receiving the critique.

Abby requires the delivery of a group project at the end of her online courses. She describes these deliverables that her students submit as “high quality” projects. The one change she has made for the projects is a required peer evaluation or peer report at the end of the project. She explained that this helps her understand group working behaviors. She asks students to evaluate their team members: “I know that sometimes some members of the group do not do anything…I need to find a way to be more aware of how they work together, who is doing what.” Her students know that the peer evaluation will happen and that it will also be part of their grade. Susan described a situation where a purposeful mixing of group members resulted in a misalignment of work by some members and group members not as experienced in the content area did not engage in the activity and “left all the work in that assignment to the instructional technology students” because of the online nature of the activity. She identified this as something to learn from regarding the needed management of online collaboration with groups. One approach that has worked well for her is the use of moderators in the online discussion units. A group of three to four moderators in one group has shared responsibilities for that particular discussion unit. The group determines how the responsibilities are divided.

Catherine discussed a situation that can arise in discussion threads—a student who tries to control the conversation in a discussion thread can be a distraction to other students in the online classroom. She takes this into consideration when designing collaborative learning, considerations that include different personalities, fostering equal

participation, and valuing the voice of each student. She says, “it is one of the reasons I like to call out particular students in my weekly videos because it rewards them for having that voice and placing that voice.” Elizabeth mentioned challenges or distractions that have be handled during learning activities such as students speaking over an open microphone and not realizing that they are live or that everyone can hear them, the possibility of students logging into the online synchronous session and then walking away, and students not participating with the use of a microphone or webcam during online synchronous sessions.

Working in Groups

Susan believes that consistency is needed for online group projects and that the instructor should assist in group management. There need[s] to be carefully specified outcomes for those collaborations and those outcomes need to be consistent across the groups that you define. How you define those groups matters for the type of outcome that you want. She also expressed concern with workhorses in every group and explained that graduate students are not great at working in groups. Catherine prefers to keep students in pairs when it comes to group work because of students being located in different time zones.

> While that might mimic certain business settings, it can also damper progress. If I do not need to put that restraint, I will not. I tend to try to assign any kind of project like that in pairs. Even then my collaborative group learning typically looks like service learning because the students are providing a service for someone else. They’re building something whether it’s advertising materials or instruction manuals or something along those lines.

Communications

Each interviewee talked about communicating with students and the importance of open communication. Communication in the online classroom happens in different ways for the instructors interviewed, but Susan explained that each of those communications takes more time in online learning. She stated:

> In the online environment because of the a-synchronicity, the asynchronous aspect, and because some of them are more comfortable communicating without the visual connections of the group, and others are not comfortable…communications seem to take longer.

Because most of her students are located in different places over a large state, "communication is a big thing." Abby also discussed the importance of communication in online learning. She explained that communication with her students happens via Skype, email, and having telephone conversations.

Scaffolding

Providing support for students in the collaborative learning process through pre-instruction, providing examples, and modeling are a few of the approaches the instructors discussed, which were coded in the scaffolding category. Susan explained that students do not have anything to transfer and need help learning to work in groups. Abby also mentioned that providing instructions and examples to her online students is important. Catherine utilizes video recordings, readiness activities, and quizzes on expectations as scaffolding for her students while Elizabeth models expectations for critique sessions.

Sub-topic of Inquiry 1: What tools are higher education instructors integrating into their pedagogy for collaborative learning in the online classroom?

The four participants use an assortment of tools for collaborative learning. These range from the tools within the LMS to three-dimensional virtual environments. Abby said early on in her interview that there are many tools to address the challenge of student engagement in online courses. She uses several LMSs (Blackboard, Moodle, Canvas) but explained that the LMS is just for the delivery of the course and delivery of instruction.

Abby admits that she may be biased on her feelings about using three-dimensional learning environments for collaborative learning. She believes these environments are great tools to integrate for this purpose. Abby explained further that some students are

> very shy and they really do not want to show their faces, they still have a presence online, they still have an avatar that represents them. You can do the same. You can even have an environment, [where] they are present in that particular space at the same time with everyone else…I love the three-dimensional virtual environments for that. You have the voice, you have audio, you have text, you have screens where you can display.

Susan also discussed her use of Canvas and the tools within the LMS to support collaborative learning. “I think as a whole…almost all the tools in Canvas could be used to support collaboration.” She mentioned the ability to group students in Canvas, and the need to help them use or explore side channels for communication in Canvas. She explained that the tool she uses depends on if she wants small groups or whole group collaboration to happen.

Technology Tools

The *Technology Tool* category contains codes for specific tools the participants' identified for collaborative learning and communicating with students and how the tools are used. Adobe Connect, GoToMeeting, and Skype were the tools that several instructors use for communicating with students and for holding online classes. Cloud-based applications were mentioned by Catherine and Elizabeth, including Google Docs, Google Drive, and Google Hangouts. Abby and Elizabeth have also used three-dimensional environments for collaborative learning. They named *Second Life* as one they utilized.

As explained above, Susan uses the Canvas LMS primarily.

> Even the use of announcements and the discussion boards [supports collaboration], depending upon how I think about the ways that I want my students to collaborate and whether I want them to collaborate in small groups or whether I really want that collaboration to be a whole group around certain topics. Any of those tools, I think, can be used to support collaborative learning. Part of it is on me as the instructor to think about, again, not what the tool does but how I best use that tool. How can I most effectively use that particular tool in a particular topic or content or assignment activity to help the students learn with that tool? Not from the tool, but with the tool.

Sub-topic of Inquiry 2: How are online instructors presently providing collaborative learning opportunities in the online classroom?

The collaborative learning activities and opportunities the four instructors presently provide were described during the interviews. Elizabeth noted a research study that her design students developed collaboratively, as well as the critique sessions described under the Topic of Inquiry 1 heading. She also recalled a course where she held weekly online collaborative discussions about research articles in

Adobe Connect. Students met in the online session to discourse theoretical pieces and current research on learning theory. “I thought those were really good. Everybody was committed to learning more…and wanted to be there.” Abby utilized three-dimensional virtual environments to engage students and for collaborative learning. She explained that each student has an avatar in this environment and they meet at a set time in one location. Within the environment, the students and teacher can discuss topics relating to the course of study by using voice and text. Students can also navigate to various locations in the environment to seek answers to questions posed by the instructor or meet and talk with members of their working group.

Catherine and Susan utilize the LMS to provide collaborative learning activities. Catherine has a systematic approach in her online classroom and believes that there are often more opportunities for collaborative learning online. She begins with a video sequence in the module. Once the student clicks the “Next” icon they are linked to additional resources. Catherine said that

> I might have videos for you to watch, I might be asking you to read a couple of chapters in a book or some research articles…My message design class gets kind of fun when we get to some of the units on packaging design and targeting specific audiences because I tell you to go to the grocery store and take pictures of the candy isle. Then you come back and you share your pictures on the discussion board and this is where it’s truly collaborative because everyone is sharing the pictures that they took and they are talking about the differences in colors and realistic versus cartoon and font selection. Again, one person sees something that somebody else does not.

Catherine has also used this approach to send students out in the real world to look for design *faux pas*, which they bring to the online classroom to critique. Another example she discussed is a complete restaurant design project; the design of the menu, name, branding, and signage. These are authentic projects where students share their design

for critique from their peers, Catherine explains: “I think that it [project] creates a more rich experience for the students. It lets them take a look at different perspectives.”

Synchronous and Asynchronous

The opportunities described by the instructors of this study were synchronous in nature, while others were asynchronous. Elizabeth and Abby described synchronous opportunities while Susan and Catherine spoke of activities that are asynchronous. For example, Abby and Elizabeth utilize synchronous online meetings. These meetings occur at one time, or students enter the virtual classroom at a set time for a course meeting. The activities that Abby described in the three dimensional environments are also synchronous. Students meet at a prearranged time in the virtual environment to complete a task or assignment. Elizabeth said “I like synchronous online meetings for purely online courses, whether it is Adobe Connect, GoToMeeting, Skype, whatever it is.” She prefers the real time connections.

The asynchronous activities described by Catherine and Susan allow students to complete the activity during a time that is convenient for them. While a deadline for completion may exist, students do not have to be inside the LMS at the same time to complete it. Catherine explained that her students are given a task in a collaborative design project, which they complete on their own time. They bring this information back to the online classroom digitally and then collaboratively critique it as a class or group.

Themes

Three themes emerged from the interpretive analysis of the nine categories. Nine categories were compressed into the three themes based on further evaluation of online collaborative learning. The three themes of this study are: online communication approaches matter, there are challenges and supports for online collaborative learning, and care is at the core of online learner support.

Online communication approaches matter. Effective communication with online students is critical, as explained by the participants. Elizabeth clarified that one central aspect of online learning is alleviating anxiety for students. “When you have students face-to-face, you can reassure them and they can read your body language, but when you are in an online setting, all you have is either the synchronous meetings that you hold or the written feedback you provide.” The instructors interviewed in this study utilize both synchronous and asynchronous activities and communications. Participants explained the benefits for each method: asynchronous communications allow for flexibility; synchronous communications remove the factor of delay. Communications with students occur through e-mail, videos, and within the LMS (asynchronous communication), but also in online course meetings or through conferencing software (synchronous communication).

“For communication, I use Adobe Connect.” Abby holds synchronous online meetings or classes for her students. Features such as the web camera, screen sharing, presentation mode, notes, and drawings are used during these online classes as well as when students present projects. Elizabeth also uses online synchronous meeting spaces (Adobe Connect, GoToMeeting, and Skype). She likes holding

synchronous meetings for fully online courses. “I think it is important to have as close to a real time connection as you can.” She also likes Google Hangouts, Google Docs and Google Drive. “I like anything where we can share things in real time.” While asynchronous is more common in online learning, it is the co-presence of instructor and student that is essential and is provided with synchronous communication.

There are challenges and supports for online collaborative learning. The participants discussed the challenges that influence online collaborative learning. Time, distance, technology and connectivity inadequacies affect students. Each instructor interviewed has a unique approach to overcome the inherent challenges. Elizabeth believes that technology failure and or technology difficulties can be challenges to online learning.

> It is just a wide open thing. Of course any time you are on the Internet, you always run into bandwidth issues…Every time you have a tool that requires a lot of bandwidth, I think you limit what you can do with it…because as much as we like to believe they (students) are placed on a level playing field, the bottom line is not everybody is.

Susan explained also that collaborative learning takes more time online. Collaborative learning can be successful in the online classroom and according to Susan,

> it takes lots of planning and preparation and lots of nurturing with those collaborative groups for it to be effective online, in an online setting. I think that's largely because students do not have much experience with it as graduate students in a face-to-face setting, so they do not have anything to transfer in terms of their skills [and experiences in] doing it. They do not know how to do it. They do not know what they're supposed to do in terms of communication, and they'll use technology as the barrier, when it's really not the barrier. They just do not know what to do.

Workings in groups--group work or projects are often used to facilitate collaborative learning. Each participant in the study spoke of a group project or students

working in groups. Elizabeth believes that each student has something unique to offer during group work. Abby believes collaborative learning is possible in the online environment and stated: “I usually ask my students to work in groups to generate a project or to solve something.” She expressed concern regarding issues with equal workload within the groups and recently incorporated a peer review process that students are made aware of at the beginning of the semester. Students evaluate the peers they work with during the semester through this evaluation.

When discussing particular tools for collaborative learning, Elizabeth said, “I think every tool has inherent benefits and inherent challenges associated with it. I think the key is using the tool appropriately for the circumstance.” The pedagogical work provided by the participants’ eases the transition into group work and working with new technology tools.

Care is at the core of online learner support. The participants portrayed relationships with online and face-to-face students similarly. Abby has a good relationship with her online students and stated that they know they can count on her. Susan explained that the relationships with her students in her online courses are not much different than those with her face-to-face students. “We communicate frequently, sometimes as a whole group or small groups, sometimes independently…students feel comfortable contacting me.” Elizabeth echoed these feelings and explained that she is accessible however, she does believe in the importance of establishing boundaries.

However, because online students are not in the same physical location and are learning at different times, additional support is necessary. The participants provide

scaffolding for the collaborative learning activities and online coursework. Elizabeth models expectations for critique sessions. She explained why, saying

> You also have to be strategic about that because if you have not laid the foundation for that, if you have not built the rapport, if you have not established yourself as an instructor, if you have not modeled what your expectations are. If you have not demonstrated the process at least once or twice, students are so terrified of doing it that they just do not quite know what to do. At particularly undergrad masters level, I do not like to just throw people into the deep end of the pool. I like to show them how to swim first.

Susan believes that her students do not have anything to transfer when it comes to collaborating online and they need extra support. She stated “I'm trying to help them get some experience in this for future courses because I know it's not going to go away for them, but they're not real crazy about it.” Catherine noted also that

> I try to make an effort to connect with students and if they do have a certain situation happening, I want them to reach out to me and let me know. It might not affect our coursework but if it does, at least I have a way to help guide them through both my class and how they can handle this outside issue.

Catherine is ardent about establishing a human connection with her online students. She explained, “you can have a class without that (human connection) but I feel like it’s different. It may not be better or worse but it’s not the same” and she strives to make this connection with her videos. She said “because of my videos, I think I also develop a different kind of relationship and this gets at some of the literature on instructor presence in an online class.”

Communication with their students is a priority, as well as being accessible and instilling instructor presence in their online courses. The instructor participants are committed to helping and being available to support their students. Abby, Susan, Catherine, and Elizabeth approach their instruction and design with a level of care. They

provide a strong instructor presence, are available to answer questions, provide affirmations and overall authenticity to their students.

Summary

The findings from the information analysis were presented in this chapter. Instructors' perceptions concerning the provision of collaborative learning activities and opportunities in their online classroom were described. The instructors' lived experiences of providing collaborative learning in their online classroom were told. Specific tools and activities presently used for collaborative learning were revealed. The top nine categories developed from the multi-phase analysis were evaluated to determine how or if each related to a specific topic of inquiry. Evidence was presented to support each of the nine categories and the placement within each topic of inquiry. Further, the top three themes were presented. The following chapter provides a discussion on these findings and the possible implications for the development and improvement of meaningful collaborative learning in online learning.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

Introduction

As technology adoption increases, pedagogical changes in online learning have gradually emerged. The interest in the use of collaborative learning in online courses is increasing. Kang and Im (2005) recognized that early online learning was lacking in meaningful interactions. Interaction between the student and instructor is a critical element in the overall student satisfaction level and learner's perceived learning outcome in an online course. Working with peers allows students to use and improve their metacognitive skills (Ally, 2008). If students are paired in groups based on their level of experience and proficiency, individuals with less proficiency benefit from the strengths of their more capable peers; individuals with a higher level of proficiency benefit from teaching their less capable peers (Vygotsky, 1978). Learners with varying levels of proficiency can benefit from the collaborative experience. More recent research on online collaborative learning looked at how the features of traditional collaborative learning evolve in the online environment. The same features of collaborative learning (intentional design, co-laboring of individuals, and meaningful learning) are approached differently in an online course versus a face-to-face course (Barkley et al., 2014, Major, 2015). Intentional design is potentially more important in the online classroom. Co-laboring or equal distribution of work and meaningful learning presents a challenge in an online course because of the physical limitations (Barkley et al., 2014; Major, 2015).

The purpose of this qualitative case study was to identify the higher education instructors' perceptions concerning the provision of collaborative learning activities and opportunities in their online classroom. With synchronous, Web, and cloud-based

applications such as conferencing applications, blogs and collaborative document development opportunities, the options for developing collaborative learning activities are perpetually expanding. Central to this case study was identifying how instructors in higher education teaching fully online courses were offering collaborative opportunities to their students and to provide voices to the lived experiences of the instructors.

A case study was used as the qualitative approach and design for this study. The "particularity and complexity of a single case" are studied to further understand the importance of the case (Stake, 1995, p. xi). The topics and subtopics of inquiry are "how" and "why" questions regarding a contemporary phenomenon (collaborative learning in online learning), making a case study research a preferred method for this inquiry (Yin, 2014). Further, more than one source of evidence will be used; four instructors from two different universities contributed to the case study.

Through semi-structured interviews, I collected the voiced experiences that instructors report concerning collaborative opportunities in their online classrooms. It was therefore necessary to understand each instructor's subjective understanding of the meaning of collaborative learning; as well the respective practices and tools each utilize. A multi-phase coding analysis was used to analyze this information. Codes and inferences were developed during the first phase of analysis of the individual interviews. During the second phase of analysis, I analyzed the combined data corpus using a constant comparative coding process for theme and category development and to seek further explanation and description of the first phase of coding.

Summary of Findings

Abby, Catherine, Susan, and Elizabeth enjoy teaching online and recognize the flexibility offered in this learning environment for themselves and their students. Elizabeth and Catherine mention that this is not the case for all online instructors and that online teaching may not be a good fit for every instructor. All four participants discussed various challenges and obstacles that confront online instructors. Collaborative learning is the heart of this case study and each participant defined and explained this type of learning. They described it as a process of working and learning together on an authentic endeavor, building mutual understanding and knowledge.

A multi-phase coding analysis was used to analyze the information. Codes and inferences were developed during the first phase of analysis of the individual interviews. During the second phase of analysis, I analyzed the combined data corpus using a constant comparative coding process for theme and category development and to seek further explanation and description of the first phase of coding. To explore the topics of inquiry for this study, I utilized a structural coding method during Phase 1 of the coding analysis. This type of coding was used to consolidate and organize the information gathered from the interviews that related directly to the topics of inquiry. The participants' lived experiences were weaved together to answer each topic of inquiry. The participants' perceptions of, and experiences with, collaborative learning in their online classroom were revealed. The tools they utilized for collaborative learning and the approaches presently integrated were portrayed in the findings.

During the multi-phase analysis, nine top categories were identified and further analyzed to see how each related to the topics of inquiry. Three categories developed in

the second phase of analysis fit under the first topic of inquiry on the perceptions instructors have toward collaborative learning: (1) Challenges in Online Learning; (2) Nurturing, Helping, and Supporting Students; and (3) Relationships in Online Learning. Three categories fit into the second topic of inquiry on the experiences instructors have providing collaborative learning: (1) Working in Groups; (2) Communications; and (3) Scaffolding. The sub-topic of inquiry regarding the tools used to provide collaborative learning contained the Technology Tools category, while regarding how instructors are providing collaborative learning opportunities included the categories of (1) Synchronous and (2) Asynchronous. The themes of this study are: online communication and approaches matter, there are challenges and supports for online collaborative learning, and care is at the core of online learner support.

This chapter explains these findings and discusses the possible implications for the development and improvement of meaningful collaborative learning in online learning. See Table 3 for a summary of findings overview.

Table 3

Summary of the Findings

Topic of Inquiry 1 *Perceptions toward collaborative learning*	Topic of Inquiry 2 *Experiences of providing collaborative learning*	Sub-topic 1 *Tools integrated for collaborative learning*	Sub-topic 2 *Collaborative learning opportunities provided*
Everything takes more time online	Critique sessions with objectives and modeling	3-D Environments	*Synchronous*
Students may not be comfortable working together	Moderators for group discussion topics	Adobe Connect	Online collaborative discussions
Students need the extra support	Projects are culmination of objectives met	GoToMeeting	Online collaborative student critiques
Lack of physical proximity makes it challenging	Use of scaffolding and modeling	Skype	Online meetings and projects in 3-D environment
Special considerations may be needed	Discussion threads	Canvas LMS	*Asynchronous*
Technological issues	Integrated instructor videos	Moodle LMS	Real-world design projects shared and student critiques in LMS
Increased instructor presence needed		Google Drive	Group discussion topics with moderators
		Google Docs	

Collaborative learning occurs in “a learning environment in which individual learners support and add to an emerging pool of knowledge of a group; emphasizes peer relationships as learners work together creating learning communities” (Moore & Kearsley, 2012, p. 305). The term collaborative learning corresponds with Vygotsky’s theory of learning, specifically the “zone of proximal development” (ZPD) in which a

shared understanding can be developed during this learning process (1978). “Online collaborative learning comprises the same indispensible features as onsite collaborative learning, but they typically unfold differently” (Barkley et al., 2014, p. 5). The participants identified such characteristics when defining collaborative learning. Collaborative learning is social. A deeper learning can occur when working with others to accomplish something.

Group learning occurs in a larger group as compared to collaborative learning. Collaborative learning groups are smaller, usually with less than six members. In collaborative learning, students work together to increase understanding and reach a common goal with support from the instructor, and as group members share various perspectives, awareness develops of an individual’s thinking process (Arvaja et al., 2007; Bento & Schuster 2003). Susan suggested the ideal number of group members for online collaborative learning is never less than three or more than four.

Recent research on online collaborative learning looked at how the features of traditional collaborative learning evolve in the online environment. The same features of collaborative learning (intentional design, co-laboring of individuals, and meaningful learning) are approached differently in an online course versus a face-to-face course (Barkley et al., 2014; Major, 2015). Intentional design is potentially more important in the online classroom. Co-laboring or equal distribution of work and meaningful learning presents a challenge in an online course because of the physical limitations (Barkley et al., 2014; Major 2015). Abby, Catherine, and Elizabeth identified physical proximity as a challenge in online learning and the considerations that instructors take when considering collaborative learning activities. The participants’ described the use of

modeling, scaffolding, and a more structured design approach to online collaborative learning.

Discussion

This section provides a discussion on the findings from the second phase of coding analysis and is organized by Topic of Inquiry.

Topic of Inquiry 1. What are the perceptions instructors in higher education have toward collaborative learning in the online classroom?

The overall perceptions that the participants' expressed regarding collaborative learning in the online classroom is that there are challenges to overcome, but it is achievable. Collaborative learning online can be as effective and occur in the same manner as face-to-face collaborative learning. However, there are accommodations that need to be made because of the nature of being at a distance and overcoming the various challenges of online learning. Each participant in this study continues to refine her approach to providing and improving online collaborative learning.

Susan and Catherine work for the same university. They are systematic about their approach to collaborative learning. Their collaborative learning occurs in an asynchronous manner and they utilize an organized and more structured approach. Susan explained that a management-oriented approach works for online collaborative learning. The pedagogical work and clear outcomes Susan provides students supports them in a manner that allows successful completion of collaborative learning activities. The videos that Catherine uses in her courses to introduce and conclude topics has helped her establish a human connection with her online students and provides an

increased instructor presence. These approaches are consistent with prior research (Anderson, 2008; Aragon, 2003; Barkley et al., 2014). Delivering an environment where students feel supported and confident is one way to increase teacher presence in the online classroom (Anderson, 2008). Aragon (2003) suggested the following to increase social presence: a. limiting the class size of an online classroom, b. including collaborative learning activities, and c. sharing personal stories and experiences in discussion threads.

Instructors shift roles in online learning, with more emphasis placed on being a facilitator and mentor (Barr & Tagg, 1995; Rovai & Jordan, 2004). Abby and Elizabeth approach collaborative learning from this perspective. While structure in the form of establishing norms, discussing expectations and objectives are a piece to this process; the real time social interactions are essential to their approach. Their students work on projects and they facilitate; working together for learning. Using synchronous communication and activities through online meetings helps facilitate this approach.

The four participants were exposed to face-to-face collaborative learning in their childhoods. They had to learn how to transfer this to the online environment and because of this, understand that students may need extra support in transferring to online collaborative learning and to a less direct instruction approach, as is collaborative learning. Susan believes that extra preparation and nurturing is needed for group work or collaborative projects because graduate students do not have the skills or experience working in this way. Abby approaches group projects using a facilitator role and believes that adult students know how to work together to collaborate online. She does not want to intervene in this process, but offers support if they need it.

Mixed time zones, scheduling concerns, the lack of physical proximity, and technological issues were identified as concerns and challenges for students and instructors. Online group projects, which facilitate collaborative learning, can present challenges because students are not as close. Students may be uncomfortable working together as a group. These beliefs are not barriers that stop the use of collaborative learning for the participants of this study. Each participant discussed barriers and situations where a collaborative learning activity did not go as anticipated, but these became learning experiences for the participants and opportunities for each to reflect on the situation and improve their method for the benefit and success of their students.

The participants' described relationships with students in online learning as not much different than those with face-to-face students. They each approach the level of connecting with online students differently, but each make it clear that they are available for their students and want to have an open line of communication. Each participant in the study has a unique way to overcome the inherent challenges of the lack of physical proximity in the online classroom. Communication with their students is a priority, as well as being accessible and instilling instructor presence in their online courses. They are committed to helping, supporting, and being available for their students.

Topic of Inquiry 2. What are the experiences faculty identify with providing online collaborative learning?

The description of the collaborative learning happening in the participants' online classrooms parallels the definition in the literature surrounding collaborative learning. Students work in small groups with less than four members on authentic and real-world

problems and projects. Although the level of structure provided varies between the participants, all participants utilize scaffolding and/or modeling. Pre-instruction, examples, videos, and critique modeling are used. "…An instructor should provide the guidance required for learner to bridge the gap between their current skill levels and a desired skill level" (Driscoll, 2005, p. 258). The lack of physical proximity makes collaborative learning a challenge, but this can be remedied with increased scaffolding and modeling—creating a foundation for students upon which to build knowledge.

Working in small groups on projects within the online classroom (LMS) and outside the LMS are described in the findings. Elizabeth and Catherine both use critique sessions as collaborative learning activities and both use scaffolding to provide students the foundation for this to be successful. Even though the critique sessions are held synchronously and asynchronously, respectively, their approaches are similar.

Abby's students develop high quality group projects and she integrates a peer review process into the evaluation, which sets expectations that group members will contribute equally and also helps her understand group working behaviors. Susan uses online discussion units with group moderators; or asynchronous group work. Participants identified specific situations where equal workload issues arose. The perception of one person not carrying their weight, or a misalignment in workload is consistent with previous research on online group work (Barkley et al., 2014; Yamagata-Lynch, 2014). Abby's students are advised about her use of peer evaluation on collaborative learning projects to help deal with this challenge.

Vonderwell and Turner (2005) reported that students want clear and effective communication of online messages and instruction. Open communication and the use

of multiple forms of communication with students were reported in the findings. Susan discussed the issue with communications taking longer in the online environment because of the asynchronous aspect associated with online learning. A student located across the world is another concern. The synchronous communication via Adobe Connect, Skype or telephone described by Abby and Elizabeth is one way to lessen the delay factor that online students face. Scheduled synchronous online meetings provide a common place for students to communicate, ask questions, clarify instructions, and work together. The development of group dynamics, dividing up the work among groups is another potential benefit. The student participants in one recent study reported "a stronger connection to other students while engaged in spontaneous conversations during synchronous meetings that they did not experience in the asynchronous discussions" (Yamagata-Lynch, 2014, p. 203). Hrastinski (2010) referred to this as personal participation; synchronous discussions support this type of participation because of the immediate response to ideas and communications. The described experiences, challenges and successes, shape the progress of collaborative learning in online classrooms. Instructors learn from these experiences through trial and error and are therefore able to better support their students in the learning process.

Sub-topic of Inquiry 1. What tools are higher education instructors integrating into their pedagogy for collaborative learning in the online classroom?

Severance and Teasley (2010) stated that "the most exciting aspect of enabling teachers to build, exchange, and use thousands or even hundreds of thousands of new tools is how we enable the exploration of an increasingly wide range of new ways to

teach” (p. 758). The participant instructors identified numerous tools they use for collaborative learning: LMSs (Canvas and Moodle) and the tools within the LMS, cloud application technology (Google Docs, Google Drive), three-dimensional environments (Second Life) and communication and conferencing tools (Adobe Connect, GoToMeeting, Google Hangouts, Skype). Abby explained that when evaluating a new potential tool for the online classroom she investigates the capabilities of the tool. “I see what are it's affordances, see how it can be used. I also try to read what everyone else is saying about the tool…[and] how teachers are using it in the classroom.”

While the participants easily identified the tools they use and responded to questions regarding specific tools, there were important discussions surrounding a tool being just a tool. Susan explained that it is “not what the tool does, but how I best use that tool. How can I most effectively use that particular tool in a particular topic or content or assignment activity to help the students learn with that tool. Not from the tool, but with the tool.” Elizabeth explained that, for her, each tool has different affordances and she said: “I think every tool has inherent benefits and inherent challenges associated with it. I think the key is using the tool appropriately for the circumstance.”

First and second-order barriers were identified regarding the usability, stability of the tools, the difficulty of managing group learning, and classroom management issues (Donna & Miller, 2013). Despite the barriers, if a teacher values the use of pedagogies that support collaborative learning, there is a greater chance they will integrate the tools to facilitate this type of learning (Donna & Miller, 2013). Abby, Elizabeth and Catherine mentioned the challenges that are inherent with the use of technology in an online learning environment; bandwidth issues, Internet connections, and lag during online

synchronous meetings. Susan explained that most tools within the Canvas LMS support collaborative learning. Abby uses the LMS in a different way—as delivery of instruction. Synchronous tools are her choice as opposed to the LMS.

Each participant discussed items that could potentially be barriers with technology tools, such as technology difficulties and failure. These items were mentioned, but considered an understood condition of online learning. The mishaps that could occur because of technology did not appear to deter the use of or integration of such tools.

Sub-topic of Inquiry 2. How are online instructors presently providing collaborative learning opportunities in the online classroom?

The delay factor and lack of interaction in asynchronous communication can negatively influence student learning (Kang & Im, 2005; Vonderwell & Turner, 2005). The presence of the instructor in an online classroom is essential for improved communication and motivation (Vonderwell & Turner, 2005). The differences in the findings were prominent for this sub-topic of inquiry. There was an equal divide among synchronous and asynchronous collaborative learning opportunities and communications provided by the instructors. Catherine and Susan reported providing more asynchronous activities while Abby and Elizabeth offer more synchronous activities and communication.

As discussed, Susan uses the tools within the Canvas LMS for collaborative learning. She describes the use of online discussion units with groups of three to four students with shared responsibilities for moderating the particular discussion unit. The

group determines how the responsibilities are divided. Catherine described authentic collaborative design projects and critiques that happen asynchronously. The asynchronous activities described by Catherine and Susan allow students to complete the activity during a time that is convenient for them, maintaining flexibility for their students. Hrastinski (2008) explained that many students take online courses for the flexible and asynchronous nature that this type of learning provides.

Abby and Elizabeth provide collaborative learning activities using synchronous connections and communication. They hold online synchronous meetings and use break out groups and tools within the software to allow students to speak and text. Elizabeth has held weekly online collaborative discussions of research articles in Adobe Connect. They both utilize three-dimensional learning environments for synchronous meeting and group learning projects. Synchronous online meetings bring as much of real-time connection to the online classroom as possible—it removes the delay factor.

Care Theory

Upon reflection and journaling after each interview and early in the analysis process, the number of references to the participants helping and supporting students surprised me. Further, discussions during the demographic portion of the interviews revealed a strong appeal for mentoring and camaraderie; growing and supporting the field and one another. The term nurturing was used in several of the interviews when participants were describing collaborative learning in the online environment. The category of nurturing, caring, and supporting online students is interwoven through the findings of this study and is one of the top categories.. As I was conducting interpretive

analysis it was recommended by a peer coder to further examine care in online learning and care theory, as the topic did not appear during the synthesis of the literature review.

Literature and research surrounding nurturing and supporting online students come from the research on creating and building online communities within the online classroom (McInnerney & Roberts, 2004; Ryle & Cumming, 2007). Ryle & Cumming (2007) explained that the establishment of a community during a semester long course required the instructor to nurture the process. The strategies recommended for the community building process included increased instructor presence during the semester and the use of synchronous and asynchronous methods of engagement. The use of synchronous communication in an online course is one way an instructor can evoke a feeling of trust among students (McInnerney & Roberts, 2004). Open communication and having communication guidelines in the online classroom is also recommended.

In a study by Mastel-Smith, Post & Lake (2015), online caring presence was identified as one emerging theme in a qualitative study with six nursing faculty participants. The interviewed faculty defined online caring presence for the researchers and the three considerations that fell under the category were: student success, affirming, and caring feedback. The participants of this study were concerned with their students' success, but being overly nice was not the tactic they utilized. Communicated affirmations and providing positive feedback were the two additional categories that fell under online caring presence; alleviating fears through communicating with students and providing encouragement are examples of communicating affirmations (Mastel-Smith et al., 2015). Students appreciated the positive feedback from their instructor and one participant in this study explained that even though some feedback is negative, an

instructor should always include some positive feedback with the negative (Mastel-Smith et al., 2015). The definition provided for online caring presence based on the findings of the study was: “faculty and students, mutually present and engaged, create a connection promoted by faculty’s affirmations and sensitive feedback in a safe environment for the purpose of student success” (Mastel-Smith et al., 2015, p. 151).

Another study on the phenomenon of care looked at the experience of caring in a technology-mediated context in an online high school (Velasquez, Graham & Osguthorpe, 2013). This study looked specifically at caring in the online environment as opposed the Mastel-Smith et al. study where the theme emerged. Two teachers were selected for the study based on a recommendation because they exhibited caring attitudes and two students were also interviewed, selected based on recommendations. The study findings revealed that continuous dialogue, promptness and clarity of the communications are a part of caring pedagogy. Other emerging themes included: shared experience (synchronous work was noted), vigilant observation, structuring learning environment, attending to students’ individual academic needs, attending to students’ well-being, and student reaction (Velasquez et al., 2013).

Care is at the core of online learner support. Care theories emerged in the 1980s with the works of Noddings (1984) and Gilligan (1982), centered on the experiences of women. Care ethics and care theories have been applied in the areas of education, communities, families, and more recently in to global affairs and justice (care-driven theory of justice) (Noddings, 2012). The root of care theory is the fundamental responsibility we have for one another (Noddings, 2012). In the education setting the care for students is demonstrated (*modeling)*; it is genuine. There is *dialogue* about

caring and the process is practiced. Noddings explained that cooperative learning is an example of *practice*. This type of collaborative work, such as collaborative learning, is grounded in working together to learn; sharing and supporting one another in the learning process. *Confirmation* is the fourth component and is the manner of encouraging the development of a better self (Noddings, 2012). The four components of moral education from the care perspective are supported in recent studies and will be applied to the findings in this study in the following discussion of each component. Simply, the following discussion refers to a type of education that enhances "the ethical ideals of those being educated" where a teacher holds a specialized caring relation beyond just a teaching role (Noddings, 2013, p. 171).

Modeling

Noddings explained that modeling is used for the growth of students to understand and experience care (2012). This is accomplished when the teacher demonstrates or shows her students what care looks like. This is a genuine act. A participant (instructor) in the Mastel-Smith et al. study explained that caring in the context of student success is not acting "too sweet and nice" (2015, p. 149). Another participant (student) explained that a "nice" teacher is one who is accessible and gives students the time needed to fully understand a topic and ask questions (Velasquez et al., 2013). Noddings (2012) explained that students might not always see the actions of their teacher as caring conduct. She queried, if a teacher asks her students to do something they dislike because she believes it is good for their learning growth, is this caring? Susan explained that her students dislike working in online groups, but she

believes she is preparing them and giving them the foundation to succeed at what they will continue to encounter as online learners.

Providing support for students in the collaborative learning process through pre-instruction, providing examples, and modeling are a few of the approaches the instructors of this study discussed, which were coded in the scaffolding category. Elizabeth specifically speaks of modeling synchronous project critiques to demonstrate the process and expectations of what a critique should look like. She does so to alleviate fear, stating that "students are so terrified of doing it that they just do not quite know what to do."

Dialogue

Conversations and discourse are held surrounding care and are essential (Noddings, 2012). Students are invited into these conversations; it is natural and communications are open. Noddings (2012) discussed this component beyond dialogue specific to the term and meaning of care. Dialogue is about "talking and listening, sharing and responding to each other…the purpose of dialogue is to come into contact with ideas and to understand, to meet the other and to care" (Noddings, 2013, p. 186). Listening is fundamental in caring and care theory, hearing the ideas of students is important pedagogically (Noddings, 2012). Listening to the voiced concerns of students can help students work through challenges and difficult topics.

Communication with online students was a key finding in this study. It is a priority for the participants along with being accessible and instilling instructor presence in their online courses. They are committed to helping and being available for their students as noted by Velasquez (2012),

> When teachers communicated that they were accessible to students, students felt respected and acknowledged. Communicating accessibility demonstrated to students that the teacher was willing to be receptive to them. Accessibility was also communicated through the teachers' attitudes. Students explained that their teachers were nonjudgmental, willing to give them the benefit of the doubt, polite, and eager to connect. This attitude communicated accessibility to students and a willingness of the teacher to receive them (p. 105).

Practice

Practicing care is the third component of the care perspective in education. Noddings (2012) provides an example of how cooperative learning can promote care through working together, sharing, helping, and supporting one another in learning. Cooperative learning utilizes a division of labor approach in which members of a group choose certain tasks to complete individually (Henri & Rigault, 1996). Collaborative learning occurs in "a learning environment in which individual learners support and add to an emerging pool of knowledge of a group; emphasizes peer relationships as learners work together creating learning communities" (Moore & Kearsley, 2012, p. 305). Mutual respect of group members and recognition of the individual abilities that each group member possesses is an essential component of a collaborative learning process (Hathorn & Ingram, 2002). Collaborative learning is an ideal approach for the practice of working together, sharing, and supporting each other.

Confirmation

"When we confirm someone, we identify a better self and encourage its development" (Noddings, 2012, p. 239). For confirmation to be successful, students should be comfortable with the other person. "Trust and continuity are required for confirmation. Continuity is needed because we require knowledge of the other. Trust is

required for the carer (sic) to be credible…" (Noddings, 2012, p. 240). This process takes time and builds upon the prior three components discussed above.

The participants in this study voiced concerns inherent with groups and workload issues. Catherine discussed trust concerns of a collaborative learning activity from high school and recalled wanting to confirm the accuracy of her peer's work. Susan explained that collaborative learning in the online environment takes more time, as well. Building trust and rapport with a group can take time and with a typical 16-week semester length, confirmation in the online setting may require extra facilitation beyond the foundation of the prior three components.

Noddings' work as a care theorist is primarily in K-12 education, not in online learning. However, she explained that her suggestions are illustrative and invites dialogue on the application of care theory. She prompted discussion "that embody dialectics between feeling and thinking, between concrete and abstract, between present and future, between community and school" (Noddings, 2013, p. 200). Her four components of moral education from the care perspective align well with collaborative learning and social constructivism.

Creating better adults is one great goal of education (Noddings, 2015) and with the emerging category of *Nurturing, Helping,* and *Supporting Students* and the theme of care at the core of online learner support from this case study, a deeper investigation into the research of care theory in online learning was defensible. The Velasquez et al. (2012) study looked directly at care pedagogy and how caring is experienced in a technology-mediated setting in an online high school. The theme *Online Caring Presence* emerged in the Mastel-Smith et al. study. These two studies and this case

study support similar findings on communications, affirmations, availability and presence of the instructor, and a human connection in an online setting.

Implications for Practice and Future Research

Collaborative learning in online learning is the phenomenon under inquiry for this research study. The surprise finding of care and nurturing in the collaborative learning process further supports the overall understanding of this learning experience. It also provides more depth and complexity to this case study. Overall, it is challenging to provide collaborative learning pedagogy in the online classroom, it takes extra time, attention, and care by instructors to facilitate this type of learning.

Exposing students to activities where they are working closely with their peers in online classes through meaningful collaborative learning and informal conversations leads to deeper thought development and knowledge construction (Barkley et al., 2014; Swan, 2005; Vygotsky, 1978). Approaches beyond direct instruction were integrated into the successful online instruction used by this study's instructors. Therefore, courses should include "some invitation to gather and apply both intellectual and practical knowledge" (Noddings, 2015, p. 235). In an online environment, the manner of "gathering" is different. As discovered here, the general challenges in online learning, including the lack of physical proximity, are a hurdle for online collaborative learning. Catherine explained that: "we often think about collaborative learning as being distinctively tied to group work, but I really think that in an online classroom that definitely takes on a different meaning." The participants explained that there are many

considerations that are included in developing successful online collaborative learning beyond group work.

Students who work individually and are taught individually miss out on the value of collaborative learning and do not develop fundamental skills necessary for future collaborative work (Brown, Collins & Duguid, 1989). Collaborative learning is likely to endure and evolve in online learning settings. Susan believes that students need to be prepared for future courses with collaborative learning and explained that part of this preparation is students working together, which they do not typically like to do online. Teachers may need to set the expectations for how students can connect and work. These social interactions that occur within groups are at the center of the collaborative learning process. Further research is needed to understand if there is a progression that occurs with instructors moving toward the use of collaborative learning in online learning. Further, it would also be valuable for instructors to understand if a progression happens for students learning to work together online and what their concerns are (i.e. fear of technology, anxiety, technology proficiency).

The divide between instructor use of synchronous and asynchronous instructional approaches was prominent in the findings. Hrastinski (2008) found that while synchronous and asynchronous learning complement each other, asynchronous online learning better supports cognitive participation such as increased reflection. A more recent study explained that past and even current research “may no longer be the status quo and online learning environment scholars need to be willing to conceptually change their understanding related to synchronous online learning” (Yamagata-Lynch, 2014, p. 204). Yamagata-Lynch used synchronous communications to engage students

in spontaneous discussions and asynchronous communications that allowed students time to reflect and prepare a response to the discussion topics that were designed a particular week (2014). In another study, it was found that the use of instruction with online constructivist theories that supports synchronous and asynchronous learning fulfills the need for interactive online learning and to mitigate the isolation of online learners (Larreamendy-Joerns & Leinhardt, 2006). The use of both synchronous and asynchronous activities and learning are recommended for online learning, but synchronicity may be the best approach to alleviate the concern of "time" expressed by participants. Specifically, the challenges expressed regarding the extra time needed for communications in the online environment and the issue of time or delay in interactions. Synchronous tools and online synchronous meetings remove the delay factor. Future research is recommended on how synchronous and asynchronous collaborative learning can be used together to better support collaborative learning opportunities.

The Velasquez et al. study suggested, "the technology-mediated context is sufficiently robust to facilitate caring interactions. It demonstrates how caring may be experienced online, including considerations that may differ from face-to face settings" (2013, p. 114). Future research on collaborative learning in online learning explored from a care perspective or "through the lens of care" (Noddings, 2012, p. 244) is recommended. Looking at the perceptions and experiences with care at the core of this process including the components of modeling, dialogue, practice, and confirmation may provide additional perspective to help improve collaborative learning in online learning. Further, this future research is needed in order to develop a model of care in

online teaching. This model would be valuable for institutions to implement academic coaching and professional development opportunities for online instructors.

Lastly, one of the limitations of this study was the possibility of limited transferability for male readers. It is recommended that the same study be conducted with equal participation of male and female participants.

Based on the findings of this study the following are recommended for the practice of online collaborative learning:

- If you are instructing courses in the area of design (message or instructional), such as Catherine and Elizabeth discuss, consider an authentic or real-world design project that combines peer critique. Modeling and scaffolding should be used with this approach to provide students with specific examples of the critique process to alleviate the fears of students new to peer critique.
- Keep groups small, with only three to four students per group, as Susan does. Be flexible on how groups are formed and take into consideration varied time zones. To support workload concerns, peer responsibilities, and understand the effectiveness of group work, consider a peer evaluation. Make students aware that their group members (peers) will evaluate them; such as the approach Abby takes.
- To increase instructor presence in predominantly asynchronous learning and to deliver a human component to your online classroom, consider using short instructor videos for your students, as Catherine does for introducing topics and for topic wrap-ups.

- If you want to utilize a new tool or collaborative learning activity, remember the pedagogical work needed for successful integration. The tools being integrated are needed to accomplish collaborative learning activities, but it is planning and pedagogical work that was deemed more important than the tool itself.
- Consider the use of some form of synchronous learning in online courses. Synchronous online meetings improve real-time communications, provide a space for groups to meet and interact, and are useful for providing the scaffolding and modeling that is essential to online collaborative learning.
- Approach the instruction and design of online collaborative learning mindfully, with an overall caring attitude and consideration for the learners' experience.

Conclusions

In this qualitative case study, I sought a holistic view of collaborative learning in the online classroom. Collaborative learning is nurturing: students are working together in groups toward a goal or on a project, learning from one another's experiences, and supporting each other during this process. As Catherine explained collaborative learning, it is not simply handing somebody a project and saying go pair up and put something together that is purely for heuristic purposes…we are building something together. The individual strengths of each group member are combined when working together and more can be achieved when working and learning together. Further, it was established that the instructors' core care actions are a crucial aspect in these online classrooms to nurture the process of collaborative learning.

This study's findings suggest that the general challenges presented by online learning influence collaborative learning efforts of the participants in this study.

Challenges such as time, distance, technology failure, and student engagement present hurdles for collaborative learning, but do not impede this type of learning in the online classrooms of the participants. The way collaborative learning unfolds in the online classrooms of the participants varies from synchronously, asynchronously, structured, to less structure. Each approach to learning is supported in previous research. There was a difference, however in the use of more synchronous and asynchronous activities between the two institutions. Two participants described their preference for synchronous learning and activities for collaborative learning.

The experiences of collaborative learning the participants' voiced have shaped the approaches they use. Instructors learn from these experiences through trial and error and are therefore able to better support their students in the learning process. The description of the collaborative learning happening in the online classrooms of the participants of this study parallels the definition in the literature surrounding collaborative learning. Students work in small groups with less than four members on authentic and real-world problems and projects. Although the level of structure provided varies between the participants, all participants utilize scaffolding and/or modeling. Pre-instruction, examples, videos, and critique modeling are used to support students.

The tools integrated for collaborative learning are identified and described in the findings. Cloud-based applications, three-dimensional environments and LMSs are utilized, but the participants' voiced important details regarding the pedagogical use of the tools. The tools being integrated are needed to accomplish collaborative learning activities, but it was the planning and pedagogical work that was deemed more important than the tool itself. The synchronous and asynchronous learning activities

integrated in the online classrooms of this study are collaborative and authentic. The use of the synchronous online meetings brings as much of real-time connection to the online classroom as possible—it removes the delay factor, which is identified in prior research as a negative influence on student learning.

The unique contribution provided by this study is the emergence of care at the core of online learner support and the topic of nurturing, helping and supporting students in collaborative learning. The emerging theme is an under-researched area of online learning. The presence of online care and online learning from the care perspective is weaved throughout the findings and top themes in this study. Noddings' work on care theory is robust and expands over numerous decades and various fields of study. Care in collaborative learning is embedded in the genuine acts and authenticity of the participants of this study. The care perspective, when applied to online learning, is about helping students find their full potential and supporting them by looking for the individual qualities, and building upon these strengths to aid in the overall success of the individual.

It is because of the caring nature of the participants in this study that there is a desire to know their students, have similar relationships as with face-to-face students, be accessible, and be a supporter. Abby, Susan, Catherine, and Elizabeth want their students to succeed and grow. They strive to be better educators for their students and mentors to their colleagues. These qualities radiate into the online classroom of the participants and are at the heart of the collaborative learning opportunities being provided.

APPENDIX A

INTERVIEW QUESTIONS

Faculty Experiences with Collaborative Learning in the Online Classroom

Topic of Inquiry A: Demographics

1. Please tell me about yourself, your educational background, and current position.
    a. What are your hobbies and other interests outside of teaching?
    b. For what other institutions have you taught?
2. How would you place yourself in age?
3. What culture do you see yourself a part of?
4. How long have you been teaching?
    a. Do you enjoy teaching in higher education?
5. How long have you been teaching fully online courses?
    a. Do you enjoy teaching online?
    b. What do you like best about teaching online?
    c. What do you like the least?
6. Please tell me about your work environment. Specifically,
    a. How long have you been at X University?
    b. What department or program area?
    c. What do you like best about your program, department?
    d. What are your current work goals?
    e. Does this location meet your growth needs?
7. Please tell me about the online courses you teach?
    a. How many students do you have on average in your online course?

8. Please tell me about the student/instructor relationships in your online courses.

Topic of Inquiry B: Collaborative learning in the online classroom

9. Please tell me what collaborative learning means to you and why you believe this.
    a. When was your first exposure to collaborative learning either online or face-to-face?
    b. Who was providing the collaborative learning activity or opportunity?
10. Please give me your thoughts on the use of collaborative learning in online course setting.
    a. What are your overall feelings about providing collaborative learning opportunities in the online classroom?
11. Please describe your approach to implementing collaborative learning in your online classroom.
12. Please describe your experiences with providing collaborative learning opportunities in an online setting.
13. If you can, please describe one or more situation(s) in which a collaborative learning experience went well.
14. If you can, please describe one instance where it did not.
15. Please describe the tool or tools you use in the online classroom for collaborative learning.
    a. Can you discuss some of the benefits of particular tools you have integrated?

b. Can you discuss some of the challenges of particular tools you have integrated?

Topic of Inquiry: Support strategies for online collaborative learning

16. Please tell me about any support strategies you use when integrating new collaborative tools or collaborative activities in online settings or your online classroom.
    a. Was this beneficial to the activity?
    b. If so, please explain.

APPENDIX B

SUBJECTIVITY STATEMENT

What is learning and teaching?

Learning is the process of developing knowledge. This understanding happens over a period of time and as learning occurs, knowledge continues to build on prior knowledge. This building block approach is an interpretation of the constructivist theory, where a learner creates or constructs knowledge from meaningful experiences.

I identify with the constructivist philosophy and have researched and used various constructivist-based learning models in coursework, course development, and research studies. The setting for my personal learning theory is the online classroom. This is the setting in which I teach and learn as a student. In this setting, knowledge is best constructed through authentic experiences. In this active learning process, the instructor acts as a guide, providing direction to students and participating in the learning process.

The two characteristics fundamental to the constructivist learning process are: problems and collaboration—solving real-life problems and interacting with peers and the instructor. Bringing this into the online classroom requires more than accommodating these processes. The design practices should also support the creation of powerful learning environments that optimize the value of the underlying epistemological principles, according to many researchers and experts in this area. Developing an understanding and awareness of the theoretical principles must come before the design.

I have experience training computer and technology users and my experience teaching in higher education includes face-to-face and fully online courses. Teaching

strategies require adjustments for the online classroom. Instructors' roles also change in the online classroom. Creating a learner-centered online classroom versus a teacher-centered classroom is part of this shift, which may be a different approach than some use when teaching in a traditional face-to-face setting.

What does this mean for my interviewing?

When interviewing, it is important to look for the whole story. The use of semi-structured interviews allow for flexibility in the interview. Developing a framework with themes is essential, as is the use of field notes and audio/video recording. The interviewer must be a good listener who identifies additional areas and questions to explore based on the responses of the interviewee. I am an active participant in the interview.

What do I expect to see?

Now that I am teaching solely online, I converse with my students primarily asynchronously. Email, forum postings, and announcements are common methods I use. In the past several years, I have started using synchronous course meetings to communicate with my colleagues and students. My comfort level with this form of communication may influence the way I interpret communication in this form and my perceptions regarding this form of communication and collaboration. I expect to see an increase in the use of synchronous collaborative opportunities being provided to online students. I will be self-aware and separate my experiences and biases that may exist as a student, teacher, parent, and business owner.

What do I already know about this topic?

I have years of experience with collaborative tools and collaborative learning

online, as a student and online instructor. I am aware of the synchronous and asynchronous options for collaborating online. My exposure and research on this topic is vast. I am very comfortable presenting, teaching, and collaborating using web conferencing and other cloud application software, such as Google Docs and Google Hangouts. I have some negative experience with technological issues, bandwidth, echoing during speaking, and general delays in communication. However, my overall experience using and navigating collaborative environments is positive. This is a research interest and I have written and read a large amount on the topic.

Challenge of what I think I already know?

The challenges that may exist are those surrounding my prior experience with a variety of collaborative applications or tools. As an online instructor, I try to provide multiple collaborative opportunities throughout a semester. I am aware of the challenges I have encountered with doing so. The affordances of collaborative tools, training of online instructors, and teaching philosophies vary. Placing my perspectives aside while researching this topic is important. Taking a neutral position to reduce subjectivity is essential. I need to examine the information collected when well rested and be mindful of my biases. Utilizing inter-rater agreement will increase overall consistency and reliability.

APPENDIX C

RECRUITMENT E-MAIL

Dear :

I am a doctoral candidate at the University of North Texas in Learning Technologies. I live in [redacted] and teach online courses for [redacted]. I am writing to ask for your assistance with my dissertation. I would like to interview two faculty in your department who teach fully online courses and provide collaborative learning activities and opportunities in their online classroom. The interview will take around 20-30 minutes and would occur sometime this September. I recently contacted the [redacted] IRB office regarding the study and did provide them with my letter of approval for the study.

Please see the following information on my study:

Faculty Experiences with Collaborative Learning in the Online Classroom

Purpose:

The planned purpose of this study is to identify the perceptions and experiences that instructors in higher education have toward providing collaborative learning activities and opportunities in their online classroom. With synchronous, Web 2.0, and cloud-based applications such as web conferencing applications, blogs and collaborative document development opportunities the options for developing collaborative learning activities are expanding. It will be central to the study to identify how instructors in higher education teaching fully online courses are presently offering collaborative opportunities to their students and to provide voices to these instructors.

Through semi-structured interviews, the researcher will gather experiences that

instructors report concerning their provision of collaborative opportunities in their online classrooms for this case study. Information will be gathered concerning the meaning of collaborative learning to the individual instructors. An inquiry of these instructors' preferences concerning collaborative learning practices and tools in the online classroom will then be conducted. Additionally, the researcher hopes to explore and identify what support strategies are pursued when utilizing collaborative learning or collaborative tools. Emerging solutions may surface through a series of interviews with higher education online instructors. Further, theme development through a constant comparative coding process will determine emerging themes.

Topics of Inquiry

· What are the perceptions instructors in higher education have toward collaborative learning in the online classroom?

· What are the experiences faculty identify with providing online collaborative learning?

Sub-topics of Inquiry

· What tools are higher education instructors integrating into their pedagogy for collaborative learning in the online classroom?

· How are online instructors presently providing collaborative learning opportunities in the online classroom?

The attached consent form provides additional information on the study. If you are willing to participate, please sign the consent form and return it to me.

I realize the timing of my request is not ideal with the new semester starting.

However, as I just received IRB approval I did not want to delay this invitation any longer. Please contact me with any questions or concerns. Thank you again for your time and consideration.

APPENDIX D

IRB APPROVAL LETTER

UNT

A green light to greatness.

OFFICE OF RESEARCH INTEGRITY AND COMPLIANCE

August 12, 2015

Supervising Investigator: Dr. Scott Warren
Student Investigator: Heather Robinson
Department of Learning Technologies
University of North Texas

Re: Human Subjects Application No. 15338

Dear Dr. Warren:

As permitted by federal law and regulations governing the use of human subjects in research projects (45 CFR 46), the UNT Institutional Review Board has reviewed your proposed project titled "Faculty Experiences with collaborative Learning in the Online Classroom." The risks inherent in this research are minimal, and the potential benefits to the subject outweigh those risks. The submitted protocol is hereby approved for the use of human subjects in this study. **Federal Policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only, August 12, 2015 to August 11, 2016.**

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. The IRB must also review this project prior to any modifications. **If continuing review is not granted before August 11, 2016, IRB approval of this research expires on that date.**

Please contact Shelia Bourns, Research Compliance Analyst at extension 4643 if you wish to make changes or need additional information.

Sincerely,

Chad R. Trulson, Ph.D.
Professor
Department of Criminal Justice
Chair, Institutional Review Board

CT/sb

UNIVERSITY OF NORTH TEXAS
1155 Union Circle #310979 Denton, Texas 76203-5017
940.369.4643 940.369.7486 fax www.research.unt.edu

University of North Texas Institutional Review Board

Informed Consent Form

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

Title of Study: Faculty Experiences With Collaborative Learning in the Online Classroom

Student Investigator: Heather A. Robinson, University of North Texas (UNT) Department of Learning Technologies

Supervising Investigator: Dr. Scott Warren, University of North Texas (UNT) Department of Learning Technologies

Purpose of the Study: You are being asked to participate in a research study, which involves the following:

The purpose of this study is to identify the perceptions and experiences that instructors in higher education have toward providing collaborative learning activities and opportunities in their online classroom. With emerging synchronous, Web 2.0, and cloud-based applications such as web conferencing applications, blogs and collaborative document development opportunities the options for developing collaborative learning activities are expanding. It will be central to the study to identify how instructors in higher education teaching fully online courses are presently offering collaborative opportunities to their students and to provide voices to these instructors.

Through semi-structured interviews, the researcher will gather experiences that instructors report concerning their provision of collaborative opportunities in their online classrooms for this case study. Information will be gathered concerning the meaning of collaborative learning to the individual instructors. An inquiry of these instructors' preferences concerning collaborative learning practices and tools in the online classroom will then be conducted. Additionally, the researcher hopes to explore and identify what support strategies are pursued when utilizing collaborative learning or collaborative tools. Emerging solutions and best practices may surface through a series of interviews with higher education online instructors. Further, theme development through a constant comparative coding process will determine emerging themes.

Topics of Inquiry

What are the perceptions instructors in higher education have toward collaborative learning in the online classroom?

What are the experiences faculty identify with providing online collaborative learning?

Sub-topics of Inquiry

What tools are higher education instructors integrating into their pedagogy for collaborative learning in the online classroom?

How are online instructors presently providing collaborative learning opportunities in the online classroom?

Study Procedures: Those participants who (1) teach fully online courses and (2) provide collaborative opportunities to students in their online classroom will be asked to volunteer for semi-structured interviews. The interview may take place over the phone, videoconference, or in person. The estimated time to read the informed consent and participate in the semi-structured interview will be around 20-30 minutes. If follow-up interviews are conducted, based on theme development, these will take approximately 15-20 minutes. To ensure validity, representativeness, and reliability, the participants will be asked to review the interview transcripts and scholarly writings to confirm accuracy of recorded conversations. This may add an additional hour to the overall participation time.

Foreseeable Risks: No foreseeable risks are involved in this study.

Benefits to the Subjects or Others: This study is not expected to be of any direct benefit to the participant, but we hope to learn more about faculty experiences with collaborative learning in online learning. The results and findings produced from this study will aim to provide instructors in higher education insights to the approaches and tools to provide collaborative learning in the online classroom. The stories, voices, and lived experiences of the instructors providing collaborative learning opportunities in their classroom will be analyzed and reported in this study.

Compensation for Participants: The participant will receive a thank you gift for their participation with an estimated value of $25.00.

Procedures for Maintaining Confidentiality of Research Records: The confidentiality of your individual information will be maintained in any publications or presentations regarding this study. The researcher will protect participants of this study, from any harm, loss of autonomy, identity, and protection of their privacy. The researcher will be objective, minimize bias and confirm and deliver trustworthiness in each phase of the study. All interview data will be anonymized in preparation for coding. Names, locations, and employer information will be changed. All data from each phase will be stored in the office of the supervising investigator.

Questions about the Study: If you have any questions about the study, you may contact Heather Robinson at heatherrobinson2@my.unt.edu or Scott Warren at Scott.Warren@unt.edu.

Review for the Protection of Participants: This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT

APPROVED BY THE UNT IRB
FROM 8/12/15 TO 8/11/16

IRB can be contacted at (940) 565-4643 with any questions regarding the rights of research subjects.

Research Participants' Rights:

By choosing and clicking on the Next Arrow, you indicate that you have read or have had read to you all of the above and that you confirm all of the following:

- *Heather Robinson* has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as a research participant and you voluntarily consent to participate in this study.
- You have been told you will receive a copy of this form, if requested.

_____
Printed Name of Participant

_____ _____
Signature of Participant Date

For the Student Investigator:

I certify that I have reviewed the contents of this form with the subject signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

_____ _____
Signature of Student Investigator Date

APPROVED BY THE UNT IRB
FROM 8/12/15 TO 8/11/16

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