DEVELOPING ONLINE COMMUNITIES: A STUDY OF THE PROCESSES THAT FACILITATE AND FOSTER ONLINE LEARNING COMMUNITIES

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by
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ABSTRACT

DEVELOPING ONLINE COMMUNITIES: A STUDY OF THE PROCESSES THAT FACILITATE AND FOSTER ONLINE LEARNING COMMUNITIES

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The purpose of this naturalistic case study was to investigate students' perceptions of community at a mid-size American college. This study sought to identify the learning environments, interactions, and activities that are most predictive of developing and fostering a sense of community in online courses. Study participants were full-time teachers, librarians, or instructional technology facilitators working in K-12 environments. Qualitative and quantitative data included interviews; online learners' experience surveys; transcripts of online discussions; recordings of synchronous sessions; and researcher observations. Data analysis was based in Charmaz's (2006) constructivist approach to grounded theory. Findings revealed that 1) age and experience with online courses did not make a significant difference in perceived sense of online community for these participants; however, gender did; 2) learning environments influenced students' perception of community; 3) shared

experience and common goals contributed to the development of a sense of community; and 4) online collaboration and activities were viewed by the participants as products that inadvertently served to build community. The significance of this study lies in that it confirms that online communities can be the ideal medium for constructivist online teaching with Internet and computer-mediated environments, thus ensuring success for adult learners in higher education.

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CHAPTER ONE

Introduction

The aim of this study is to identify the learning environments, interactions, and activities that are most predictive of developing a sense of community in online courses. Based in social constructivism, this exploratory research describes the events and types of usage of Internet technologies by students in online graduate courses at a mid-size university. This research is rooted in the following assumptions:

- Social constructivism is the method most beneficial to use for 21st century learning and technology integration in teaching and learning.
- Learning is a social act that is best accomplished through dialogue and exchange between teachers and students and between students themselves.
- Online learning is best achieved in a community-like setting.
- Communities are formed when there are ample opportunities for interaction.

As humans, we all have a need to feel welcomed, respected, and heard, to feel a sense of belonging wherever we are, be it at work or at school. Research, from both higher education and K-12, confirms the importance of that sense of belonging and deems it critical for a successful student experience, especially in an online course environment. Using data from eight graduate level courses, this qualitative study aims to describe and identify those online tool practices that promote, develop, and provide this sense of belonging for students in the online course environment.

This naturalistic approach study will explore data in the form of survey responses (both pre- and post- course), one-on-one interviews, discussion forum threads, observations of asynchronous classes and work sessions, as well as recorded synchronous group meetings and class sessions to identify those interactions that resulted in students perceiving a sense of community.

Context of the Issue

Since the days of one-room schoolhouses in the late 1800s, the classroom has been designated as the learning space where students congregated in pursuit of knowledge. With the advances in digital telecommunications and Internet technologies, the ease with which we can connect and interact in the virtual realm has increased. At the same time, learning spaces are working to keep up as online teaching and learning technologies give birth to new online educational environments. Online communities are becoming the alternative to face-to-face learning spaces (Palloff & Pratt, 2007).

With the growing reliance on online learning communities as learning spaces (Palloff & Pratt, 2007; Swan, 2005), the scholarship on online teaching and learning is rapidly increasing. These studies indicate that online learning communities play a crucial role in learning. Shin (2003) found that a sense of community helps students feel more connected to their peers and instructors. When individuals feel connected, they are more willing to actively engage and construct their learning in online settings (Hamdan, McKnight, McKnight, & Arfstrom, 2013; Ludwig-Hardman & Woolley, 2000). Feeling connected also reduces feelings of isolation, which often lead to students dropping out (Carr, 2000). Feeling connected, therefore, increases retention rates (Ascough, 2007; Brown, 2001; Cho, Gay, Davidson, & Ingraffea, 2007) and enhances a

student's overall online experience (Rovai, 2002a; Pate, Smaldino, Mayall, & Luetkehans, 2009).

Designing an online environment that promotes interaction is designing from a social constructivist approach. Social constructivism is usually associated with the work of Vygotsky (1978) which focuses on society's role in the construction of knowledge and the role that the environment partakes in the process of learning (Swan, 2005). Social constructivism views learning as a social activity that is shaped by context, conversation, and collaboration (Brown, Collins, & Duguid, 1989; Dewey, 1963; Vygotsky, 1978). In a summary on the importance of social constructivism in online learning environments, Swan (2005) states that "learning is essentially a social activity, [and] that meaning is constructed through communication, collaborative activity, and interactions with others. Learning highlights the role of social interactions in meaning making... [and] knowledge construction" (p.5). To provide the social context for learning, scholars concur that building and sustaining an online community is vital to the development of a successful online learning experience (Hilz, 1998; Palloff & Pratt, 2007; Rovai, 2002a; Russell, 1999).

Current digital technologies, including information and communications technologies, provide opportunities to teach and learn that promote a social constructivist approach to learning that is collaborative, interactive, reflective, multi-disciplinary, self-directed, and global (Friedman, 2007; Palloff & Pratt, 2007; Partnership for 21st Century Skills [P21], 2011). Incidentally, those qualities are the very same as the standards identified by Partnership for 21st Century Skills as much-sought-after skills needed to succeed in today's global interconnected society (P21,

2011). In this global information-rich, technologically-based, and, to use the words of Thomas Friedman (2007), "flattened world," we are able to not only connect with places and people all over the world instantly and effortlessly but also interact, collaborate, and create a shared knowledge. In order to truly benefit from this flattening, a social constructivist approach to teaching and learning is needed as social constructivism's view that learning as not only a social activity but also a contextual one (Vygotsky, 1978) is useful in this new environment where interaction, language, and culture all contribute to the learning.

Researching and identifying those learning environments, interactions, and activities can offer insight for instructional designers, administrators, teachers, and students, giving them a roadmap of the best practices to build online learning environments that promote a sense of community.

Statement of the Problem

Growing concerns about high attrition rates in online courses, learner engagement issues, and low motivation are some of the most researched issues about online learning. Retention rates for online courses are significantly lower than those of traditional classrooms (Diaz, 2002; Lorenzetti, 2002; Murray, 2001). Isolation among learners is constantly being reported as one of the key causes of this high attrition rate (Ali & Smith, 2015; Kubala, 1998; Lee & Robbins, 1995; Rovai, 2002a, 2002b; Rovai & Downey, 2010; Shin, 2003; Van Tryon & Bishop, 2009; Wegerif, 1998). Not having access to support, resources, or fellow classmates, many students lose motivation and struggle to complete their coursework, eventually dropping out.

Low or no motivation, student isolation, and the high attrition rate have all been contributed to the lack of a sense of community in the online environment (Northrup, 2002; Palloff & Pratt, 2007; Rovai & Downey, 2010; Rovai, Wighting, & Liu, 2005). Research on the effects of online community have shown that online communities enhance learner connectedness with other students as well as the instructor, which increases student motivation and enhances the online learning experience (Ritter, Polnick, Fink, & Oescher, 2010; Rovai & Downey, 2010; Rovai et al., 2005). This social connectedness also helps to alleviate the anxieties and pressures that often result in students dropping out (Van Tryon & Bishop, 2009).

While the literature is replete with articles and books describing how communities contribute to student learning and student satisfaction with online learning environments, there are no studies that explicitly identify the activities and interactions in online courses that contribute to a sense of community.

Purpose of the Study

The purpose of this study is to investigate students' perceptions of community before and after completing a summer online course in a Master of Educational Media Program at a mid-size American college. In this study, I examine the relationship between teachers and students in the online environment to highlight which specific events and technologies contribute to the building of a sense of community.

Findings from this investigation will add to the literature information about the type of meaningful learner interactions and digital tool uses and practices that engage learners with the content, their peers, and their instructor, delineating how these interactions contribute to the building a sense of community in an online environment.

Research Question

Increased numbers in online learning and a growing reliance on online learning communities have resulted in a growing number of studies on the subject (Palloff & Pratt, 2007; Ritter et al., 2010; Rovai, 2002, 2002a, 2002b; Rovai et al., 2005). Thus far, however, the research and theory have focused on re-creating the physical classroom environment on the Web and, although agreement exists on the importance of having a sense of community in an online environment, there are no established guidelines that effectively outline how these communities can be developed and sustained. This study's research question focuses on identifying these guidelines by asking: "How do learning environments, interactions, and activities contribute to building and fostering online communities?"

The emphasis is not so much on the tools themselves but on the learning environment, interactions, and activities observed when interacting in the online course. Online learning environments include course design, learning spaces, e.g. course management systems, video conferencing tools, and social media. Internet technologies and digital communication tools are part of the learning environments and are used for communication, collaboration, connection, and interaction in and outside of the online course. Internet technologies will be used when referring to these modalities. By interaction, I am referring to exchanges between two or more individuals. By activities, I mean the conditions and events that are taking place in and outside of the online course.

Today, with current technologies and the Internet as they are, learning can be a participatory, interactive, multimodal experience that has yet to become the prevailing

teaching practices. At a time when methods such as flipped classrooms and student-led learning are being advanced, one still observes the traditional rows of desks behind which students sit passively observing the teacher lecturing at the front of the room, as one walks down the corridors of schools and higher education institutions. The loss of face-to-face communication, which was once a limitation of online learning, is no longer an issue. Creating online learning communities that can connect individuals is not only possible but, as current research shows, essential to the success of online teaching and learning; therefore, the learning environments, interactions, and activities that might lead to that sense of community are the focus of this study.

Methodology

This study employed a naturalistic case study approach (Stake, 1995) to document adult students' online learning experiences during a summer course semester. I collected data collected using both qualitative and quantitative techniques to collect course-related data generated from discussion forums, social media postings, online surveys, and interviews. I conducted synchronous online interviews using Zoom, a virtual video conferencing tool. I also developed and distributed a pre- and post-course online survey via Qualtrics, a web based online survey tool that is used university-wide for research.

Significance of the Study

Research studies conducted with today's learners show that despite the prevalence of digital communication and Internet technologies in students' lives, they still feel a craving for human interaction (Njenga & Fourie, 2010). In a study conducted by Stodel, Thompson, and MacDonald (2006), the authors examined students' feelings

about online courses that are perceived as outstanding based on criteria such as courses with zero attrition, courses that received awards, and courses where the learning objectives are being met. Interestingly, despite the perceived success of these online courses, learners often reported that they missed face-to-face contact when learning online because they felt it would be easier to connect face-to-face than online. When students' feedback is analyzed about what is most important for them in an online course, two of the dominant themes that emerge are interaction with peers and engaging discussions (with the third being timely constructive feedback from their instructors) (Betts, 2008; Ritter et al., 2010; Rovai & Downey, 2010). Arguably, this study implies that a sense of community and social interactions, two elements that are deemed as essential by students in online courses, are often missing, even from "successful" online courses. Creating a sense of community is then vital to the overall success of an online learning experience.

When a sense of community is felt, many of the issues and concerns with online learning are mitigated. Interaction, in an online course environment, is one of the key ingredients for establishing a sense of community. Examining the manner in which digital tools are used by both the teachers and the students to foster that sense of community is significant for a number of reasons. A sense of community gives learners ownership to direct their own learning experience (Anderson, 2003; Swan, 2005), raises student retention in an online course (Tinto, 1999), reduces feelings of isolation that can lead to a higher dropout rate (Allen & Seaman, 2014), and improves student motivation (Ritter et al., 2010; Wighting, Liu, & Rovai, 2008). Researching the manner in which these online tools are being used to develop and promote online communities is

essential, therefore, to ensure successful online course design and course delivery. The results of this study fill the gap in the literature by describing those types of interactions that can lead to a sense of community and the type of course design that promotes interaction and enhances the online experience for teaching and learning.

Definition of Key Terms

A foray into the literature reveals the plethora of definitions and the complex multi-faceted, multi-layered meanings, sometimes-controversial meanings that these terms carry. In an attempt to focus on the most frequent usage of these terms, definitions are provided to ensure that reader and writer are referring to the same concept.

Collaborative Learning: Collaborative learning involves team members working together to develop a joint solution to a problem (Curtis & Lawson, 2001).

Cooperative Learning: Cooperative learning involves the completion of a task by breaking it down into subtasks that team members solve independently (Curtis & Lawson, 2001).

Computer Mediated Conferencing (CMC) or Computer Mediated Communication: CMC is defined as any form of communication between two or more individual people who interact via computers (December, 1996).

Constructivism: Constructivism is "the co-construction of meaning in the learning environment" (Morphew, 2000).

Flipped Classroom: A pedagogical method that uses asynchronous video lectures and practice problems as homework, and active, group-based problem solving activities in

the classroom, thus flipping or inverting the traditional teaching techniques (Flipped Learning Network, 2014).

Internet Technologies: The transmission, exchange, and use of data transmitted over either analog signals (phone call or video signals) or digital (computer or keyboard) diffusion. This allows individuals to communicate, interact, and connect through different servers and systems, either actively in the form of file sharing and document loading, or passively in the form of non-interactive websites, Wikis, or blogs.

Learning Management System (LMS): Sometimes also called course management system, is a software application for the administration, documentation, tracking, reporting, and delivery of electronic educational technology courses over the Internet (Lane, 2008).

Online Discussion Forums: Also called threaded discussions, these web-based asynchronous communication tools enable students to post messages in a common line area for participants to read and respond (EDUCAUSE, 2015).

P21: Partnership 21 is a national non-profit organization made up of 21 business, government, and education leaders whose aim is to encourage the infusion of technology in teaching and to guide the transformation of the education system (P21, 2011).

3D Virtual Worlds: 3D virtual worlds are three-dimensional simulations (sims) running on an Internet accessed computer virtual reality (VR) in which avatars can move and interact with each other as well as their environment (Dickey, 2005).

Online Education: The emerging field of online education is known variously as "knowledge media," "distance education," "distributed learning," "technology-mediated

learning," "telematics," "resource-based learning," "e-Learning," "Web-based learning," and "flexible learning" or "Online Learning."

Online Learning: Online learning is "the use of the Internet to access learning material; to interact with the content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience" (Ally, 2004, p. 5).

Threaded Discussion: An asynchronous discussion in which students may post responses to a prompt at any time. Threaded discussions allow students to work at their own pace, allow the teacher to respond more thoughtfully since all the responses are not posted simultaneously, and are easier to coordinate than other forums which require all students to be online at the same time.

Organization of Study

The following chapters are a literature review, research methodologies utilized in this study, the findings of the research, and a discussion of those findings. The literature review in Chapter Two focuses on literature related to online education and the place of community in online learning environments. The conceptual framework for the study is also introduced. Chapter Three provides an overview of the methodology and research design that was employed. Chapter Four presents the research findings. Chapter Five includes a discussion of the findings, revisits the conceptual framework in relation to the findings, and presents limitations of the study, implications, recommendations for future research, and conclusions.

CHAPTER TWO

Literature Review

Classic Literature

This literature review looks at the scholarship for online learning, with a focus on studies that examined interactions and behaviors of learners in online environments and how these contributed to a sense of community. Based in social constructivist framework, interactions in an online environment and the role that the current digital telecommunications and Internet technologies have in higher education are explored and anchored within the existing scholarship of studies and research. Based in Vygotsky's Social Constructivist theory, this literature review will introduce research on the use of current digital telecommunications and Internet technologies for constructivist based adult online learning, with a focus on seminal work regarding interaction theories in online education.

Teaching and Learning Today

To meet the needs of modern life and make effective contributions economically, politically, and socially in this interdependent, increasingly digital world, we require competencies that, on the one hand anchor us and, on the other hand, render us adaptable and flexible, both at the individual and societal level (Zhao, 2012). The term 21st century skills is generally used to refer to those core competencies desirable to help prepare students to thrive in this interconnected global world (Bonk & Graham, 2006, P21, 2011). Whereas in the past, reading, writing, and arithmetic were the necessary skills to become contributing members of society, in today's global, interconnected world, individuals must be proficient communicators who can problem-

solve, think critically, collaborate, create, and adapt to diversity (P21, 2011). Teaching that is immersed in inquiry-based and authentic-active learning, motivational collaborative activities, and critical and creative thinking is how 21st century skills are conceptualized and achieved. Incorporating 21st century skills into education does not mean having to create new paradigms of teaching. Existing theoretical frameworks that embody the characteristics of 21st century skills, such as constructivism, or more specifically social constructivism, cultivate and foster the skills that produce a competent, global graduate (Gunawardena, 1995; Popplet, 2013).

Online Learning

With the infiltration, in the 1990s, of the Internet and the Web into education, different terms began to surface when referring to what was formerly called distance education. Terms such as e-learning, Web-based instruction, Internet-based education, computer-mediated learning, virtual learning, and online learning (Saba, 2003) were used to describe learning that occurs through a distance of time and space by way of computer and Internet-based technologies. Studies began to emerge that supported the implementation of online learning. These earlier studies however were concerned with comparing online environments with traditional classroom settings. As online learning grew in popularity, research on the effectiveness of online learning also grew (Bonk & Graham, 2006; Cohen & Ellis, 2004; Gunawardena & Zittle, 1997; Rovai, 2000, 2001, 2002a) and the need to further investigate effective design in online courses became evident (Moore & Anderson, 2003).

A meta-analysis funded by the U.S. Department of Education (2010) and one of the most cited meta-analyses to date (Lack, 2013) examined the different kinds of

instructions performed online. It found that, on average, students performed better online than with face-to-face instruction and that those who had blended courses – a combination of both online and face-to-face instruction – appeared to do best of all (Means, Toyama, Murphy, Bakia, & Jones, 2010). While this study provided a strong endorsement for online learning, it also revealed some findings about teaching techniques online and their effectiveness. One of these findings suggests that providing students with "control of their interactions" (p. 41) has a positive effect on student learning (Means et al., 2010). Another noteworthy finding revealed mixed results on the effects of instructor roles in an online environment. While some of the studies suggest that instructor moderation may not contribute to the learning outcomes of students (Bernard & Lundgren-Cayrol, 2001; De Wever, Van Winckel, & Valcke, 2008), studies by Zhang, Zhao, Zhou, and Nunamaker (2004) found instructor moderation to positively impact learning. Much of the success in online learning, according to this meta-analysis, is attributed to time devoted to the learning and not to the technology, stating that "despite what appears to be strong support for online learning applications, the studies in this meta-analysis do not demonstrate that online learning is superior as a medium" (p. 51). It goes on to state, "in many of the studies showing an advantage for online learning, the online and classroom conditions differed in terms of time spent, curriculum, and pedagogy. It was the combination of elements in the treatment conditions (which was likely to have included additional learning time and materials) as well as additional opportunities for collaboration that produced the observed learning advantages" (Means et al., 2010, p. 52). In other words, there were many factors beyond a different medium that could have contributed to the difference in learning results.

What is most striking in the report is the number of studies the meta-analysis initially considered and the number of studies it actually included in its final analysis. The researchers identified more than 1,000 empirical studies of online learning, published between 1996 and 2008; however, they only examined 45 of these studies, focusing on those that contrasted online teaching with face-to-face, and those that used "rigorous research design" and provided adequate information to calculate the differences (Means et al., 2010). This is indicative of the quality of research that is available on the subject of online learning, a subject that is still in its infancy and would greatly benefit from thorough research. Although the focus of research on online learning began to shift from the acquisition of high tech technologies to creating stimulating and interactive environments (Miltiadou, 2001; Palloff & Pratt, 2007), the focal point of most of the studies remained on exploring online learning by comparing online environments with face-to-face and/or judging the success of a learner's experience on learning outcomes as measured by test scores.

There are a few studies that focus on the online learner characteristics and demographics in correlation to student satisfaction with online learning. Studies by Cattan, White, Bond, and Learmouth (2005) and Yeh and Sing (2004) examined the relationship between age and social isolation and found that increase in age results in an increase in higher levels of social isolation, thus suggesting possible variations in the sense of community or connectedness by age group. Similar differences have been found in regards to gender, with females being less socially isolated than males, suggesting possible variations in scores for sense of community or connectedness by gender (Bostock & Lizhi, 2005; Vandervoort, 2000). The duration of a course is yet

another factor that has been found to affect a participant's sense of community with longer courses providing greater opportunity for creating bonds (Brown, 2001). Though there are few longitudinal studies, one in particular looked at cohort models and sense of community. A study by Lee, Carter-Wells, Glaeser, Ivers, and Street (2006) found in its first year of a three-year longitudinal study that online community among cohort students in an Instructional Design and Technology Master's degree program was developed as a result of positive interactions among all community members, including instructors, students, and support staff. In other studies, flexibility was reported as one of the strengths of online learning (Schrum, 2002) and convenience as another (Poole, 2000). These studies confirm the complexity of research on online learning and remind us that the question of how to effectively design and conduct online courses is still unanswered. What is becoming more evident is that interactivity and a sense of community within an online environment impact the success of the online learning experience (Brown & Peterson, 2008; Garrison & Arbaugh, 2007; Haythornthwaite, 2002, 2005; Mellon & Kester, 2004; Moore, 2014; Palloff & Pratt, 2007; Shackelford & Maxwell, 2012; Vesely, Bloom, & Sherlock, 2007).

Online Learning Communities

Evidence that sense of community is positively related to other variables such as perceived learning (Liu, Magjuka, Bonk, & Seung-Jee, 2007; Shea, Li, & Pickett, 2006; Top, 2012), satisfaction (Drouin, 2008), engagement (Young & Bruce, 2011) and achievement (Harvey, Moller, Huett, Godshalk, & Downs, 2007; Wighting, Liu, & Rovai, 2008) is well established today. However, developing and sustaining an online community has been found to be more difficult than developing community in face-to-

face learning environments and must be consciously supported (Rovai, 2002). Building on the work of Sarason (1974), who introduced the term sense of community as a way to study communities, McMillan and Chavis (1990) advanced a theory of sense of community that is the basis for most of the recent research on online communities. McMillan (1996) explains, "Sense of community is a feeling that members have of belonging, of members' mattering to each other, and a shared faith that members' needs will be met through their commitment to be together" (pp. 11-12). The four elements that define sense of community are membership, influence, integration and fulfillment of needs, and shared emotional connection (McMillan & Chavis, 1986). In 1996, McMillan expanded on the original principles of the sense of community proposed by McMillan and Chavis (1986). The original elements were renamed and reorganized. Sense of community was now defined as "a spirit of belonging together, a feeling that there is an authority structure that can be trusted, an awareness that trade, and mutual benefit come from being together, and a spirit that comes from shared experiences that are preserved as art" (McMillan, 1996, p. 315). In McMillan's revisions, the first element, membership, was renamed spirit, with greater prominence placed on friendship. Influence was renamed trust, with importance placed on order, decision-making, authority, and group norms (McMillan, 1996). The element of integration and fulfillment of needs was viewed as a social exchange and relabeled as trade. The final element, shared emotional connection, was retitled art. The element of art expands the idea of "the basic foundation of art is experience" (McMillan, 1996, p. 322). For experience to occur there must be contact.

The ability to share background information and learn about one's classmates is another element that is frequently cited in the literature as critical to building a sense of community in an online environment. Even if it is simply having students introduce themselves to their peers. Stallings and Koellner-Clark (2003) found that when learners were given opportunities to introduce themselves and get to know others in their course, they were able to build connections and find commonalities with one another. Another study conducted by Cheng (2004) looked at students' perceptions of sense of community related to various aspects and experiences in their college life at a four-year predominately residential campus. The study revealed that "students' feelings of being cared about, treated in a caring way, valued as an individual, and accepted as a part of community contribute directly to their sense of belonging" (Cheng, 2004, p. 227). Cheng identified "sharing a commitment to the same goal of teaching and learning" as one of the most noteworthy components of community" (p. 227). Significant relationship between students' sense of community, engagement, satisfaction, and perceived learning have been revealed by studies by McKinney, McKinney, Franiuk, and Schweitzer (2006) and Vesely et al. (2007). These studies conducted similar research, which focused on student perceptions about their online learning experiences. The survey instrument included items that looked at students' overall perceptions and attitudes toward online learning. In a mixed methods study by Liu et al. (2007), interview results indicated that opportunities for social interaction boosted interpersonal relationships and supported positive communications among students. These results all point to the importance of interaction in an online course and provide evidence for the link between overall student online success and sense of community.

However, studies by Rovai (2002, 2002a, 2002b), and later by Nicholson (2005), posited that it is only when the interaction is purposeful do students feel a sense of community and are thus motivated to share and actively participate in the community. A similar study with graduate students in an online instructional design course, used an asynchronous social discussion area to express support and encouragement for other students, to discuss similarities, and to share the challenges they faced (Stepich & Ertmer, 2003). While some students in Conrad's (2002) interpretive study of adult learners expressed appreciation for the opportunity to communicate socially, others said there was a limit to how much time they were willing to spend reading social comments. Participants in Gallagher-Lepak, Reilly, and Killion's (2009) study reported that informal conversations helped them build friendships and camaraderie. They found this communication outside the boundaries of the academic requirements to be important for establishing social bonds and facilitating learning. These studies with their focus on the different elements that lead to a sense of community have led to the identification of a learning community as one of the ways that can enhance students' overall online learning experiences stating that online learning communities help students feel more connected to their peers and instructors (Simonson, Smaldino, Albright, & Zvacek, 2012; Snyder, 2009).

Swan (2002) defines a community of learners as a group of learners who communicate and collaborate with their peers and faculty for the purpose of learning from one another. This definition recognizes that student interactions in educational activities are a precursor for educational effectiveness. However, while researchers agree that online learning is more effective when communities of learners are present,

empirical studies are still unable to produce reliable results regarding the role of community in teaching and learning online (Bernard et al., 2004; Biocca, Harms, & Burgoon, 2003; Lessiter, Freeman, Keogh, Davidoff, 2001; Reeves, Herrington & Oliver, 2004; Russo & Benson, 2005; Tu, 2002). Questions about how communities are formed and sustained are yet to be confirmed. One study by Brown (2001), examined the processes through which community building goes through. It identified three stages. The first stage consists of making friends online which results in an increase in interaction. The second stage occurs when students become more involved in participating in discussions, and the third stage is camaraderie, which is achieved when students incorporate personal information in their course-related communication. As students move from one stage to the next, their engagement and commitment to the online environments increases. Brown stipulated that his findings suggest ways in which an online community can be developed and supported by course designers and facilitators.

This point is refined in the work of Rovai's (2002b) Sense of Classroom Community (SCCI) Index, which measures students' perception of community in both online and face-to-face classroom settings. Using this scale, Rovai collected data from 375 students enrolled in 28 different courses. His findings validate the SCCI as an appropriate scale to measure sense of community. One of Rovai's findings stipulated that it is the methods used in teaching that matter, and not the media tool, when researching learning effectiveness. However, this finding was not supported in later studies which found that online students do not only feel strongly about the amount of

interaction they desire but also the type of tool that is used for the interacting with their peers in an online course.

To date, studies about online communities lack clear guidelines on how to build learning communities in online environments (Biocca et al., 2003; Tu, 2002). Reeves et al. (2004) claim that so few research studies have examined the formation of learning communities due to the many ambiguous factors regarding the subjectivity of certain constructs and the resulting conflicting interpretations. Therefore, although everyone talks about community and agrees that community is important, there is no tangible common definition of what is meant by community nor on the ways to build one. This is a gap in the literature, and examining the type and levels of interactions, therefore, is one tangible way of defining and evaluating an online sense of community to address this gap.

Interaction Theories. The importance of interaction in an online learning environment is generally acknowledged as the impetus for a sense of community (Cameron, Morgan, Williams, & Kostelecky, 2009; Dawson, 2006; Drouin, 2008; Ouzts, 2006; Shen, Nuankhieo, Huang, Amelung, & Laffey, 2008; Swan, 2002) and is often seen as paramount to the development of meaningful and memorable learning experiences (Brewer & Klein, 2006; Lee, Carter-Wells, Glaeser, Ivers, & Street, 2006). Learner-learner interactions, for example, were found to have an impact on developing students' sense of community in an online course through the following activities, in order of relevance: introductions, collaborative group projects, contributing personal experiences, entire class online discussions, and exchanging resources (Shackelford & Maxwell, 2012).

In spite of the importance of interactivity and interaction in an online environment, these concepts are hardly well defined and are often used interchangeably or confused when referring to the dynamic of online learning (Sims, 2000). In fact, Bannan-Ritland (2002), while conducting a meta-analysis of 132 studies, between 1995 and 2000, in which interaction was a variable, found 20 different operational definitions of the term interaction.

According to Wagner (1994) interaction involves behaviors where individuals directly influence each other, whereas interactivity tends to focus on the aspects of the technology system. Sims (2000) elaborated further, defining interactivity as "those functions and/or operations made available to the learner to enable them to work with content material presented in a computer based environment" (p.46). Palloff and Pratt (2007) draw additional distinction between these constructs by defining interaction as interpersonal communication while referring to the inclusion of materials helping to create an active learning environment as interactivity. Despite attempts such as these to clarify and standardize the terminology, these terms are invariably used interchangeably in the literature.

Much of the research on interaction in the online learning environment builds on the work of Moore (1989), who defined interaction between (and among) learners, between learners and instructor, and between learner and content. Anderson and Garrison (1998) advanced an interaction framework that extended Moore's (1989) interaction model and called it the Modes of Interaction to reflect the available digitally networked learning environments of the time and their affordability to realize a much greater degree of interaction. In 2003, The Interaction Equivalency Theorem posited by

Anderson provided a theoretical framework for the appropriate amounts of each of the various forms of interaction, namely student-teacher, student-student, or student-content. It proposed that although having more than one of these three modes of interactions would greatly enhance the educational experience of a student, deep and meaningful learning can occur as long as one of the three forms of interaction is at a high level. In other words, if a student were to have meaningful interactions with other course members (e.g., a collaborative learning scenario), he or she could achieve a high quality learning experience even if the teacher is unavailable or the course content is inappropriate.

Warden, Stanworth, Ren, and Warden's (2013) research and findings do not support this view. After conducting a nine-year action research study that incorporated over 3630 students, he concluded that learning takes place best when the online learning environment is centrally controlled by the instructor. Contrary to what others are promoting, namely that student control of their learning environments results in increased interaction (Garrison & Anderson, 2003; Moore, 1989), the Warden et al. (2013) findings surmise that central control by an instructor minimizes many of the technical problems that students may face online. They go on to write that students, once comfortable with the tools and online environment, will venture to experiment and create greater interaction with their peers and content. This finding does not match the current thinking in teaching and learning which is highly influenced by social constructivism and which views learning as a social activity where social interaction is key to the learning.

Consequently, social interaction has been the focal of research by a number of current researchers. In Liu et al.'s (2007) mixed methods study, interview results indicated that opportunities for social interaction boosted interpersonal relationships and supported positive communications among students. In another study by Stepich and Ertmer (2003), in which graduate students in an online instructional design course used an asynchronous social discussion area to express support and encouragement for other students, to discuss similarities, and to share the challenges they faced, students felt less alienated and an increased sense of belonging. Researchers have expanded on the above proposed models of interactions by studying the purposes behind interactivity (Sims, 2003), student satisfaction as a result of interactivity (Lin, Lin, & Laffey, 2008), and patterns of engagement online (Guldberg & Pilkington, 2007). Interactivity then is an important component of online learning. Not all educators agree on how much interaction should be included in education in general, or in online courses in particular (Anderson, 2003); however, with the advances in digital technologies and the developments in social cognitive based learning theories, there is a general consensus that interactivity influences the quality of the student's experience (Trentin, 2000) and leads to a sense of community (Lave & Wegner, 1991; Moore, 1989; Palloff & Pratt, 1999), which in turn enhances the overall online experience of learners (Snyder, 2009; Palloff & Pratt, 2007).

In consulting current studies on online communities, the majority of current studies draw on the Community of Inquiry model (Garrison, Anderson, & Archer, 2000) and use case studies to examine the nature and interactions of teaching and cognitive and social presence created by online instructors and students. According to Garrison et

al. (2000), a successful higher educational experience is embedded within a Community of Inquiry (CoI) where learning occurs through the interplay of three elements: cognitive presence, social presence, and teaching presence. Cognitive presence means the extent to which online learners are able to create meaning and critical thinking through supported communication. Cognitive presence is cited as most central to this model and to the success of the student. Garrison et al. (2000) argued that cognitive presence is a "vital element in critical thinking" (Garrison et al., 2000, p.89), which, in turn, is often cited as the overall goal of higher education. In other words, the collaborative discourse aspect of learning which leads to reflection and the construction of knowledge is the triggering event that results in a community of inquiry. Social presence refers to the ability of individuals to present themselves as "real people" to other participants online. Teaching presence refers to the instructor and how he/she conducts the course, what instructional design he/she uses, how he/she plans and prepares the course, facilitates discourse, and provides instruction. Examining indicators of these three core presences provides an evaluation of the learning experience. CoI is a popular framework that guides current research; however, the elements that make up this framework, the interconnectedness of the three types of presence, and the definition of these concepts have yet to be consensually defined and empirically tested.

Online interactions, how they are promoted and sustained, and their impact on a sense of community are areas that have not been researched extensively. Research on interactivity online thus far tends to focus on gathering quantitative data about students' levels of participation (Muirhead, 2004); however, these numbers are not

very useful in determining the quality of the interaction (Meyer, 2003) nor do they provide a sense of what appropriate or most effective pedagogical and technological skills are used to enhance interaction and promote meaningful dialogue between students and students or between students and instructor. Investigating the type of learning environment and activities that promote interaction in an online course will yield clear guidelines on how to best design an online course where interactivity is promoted and encouraged and where relationships between participants and objects or people are developed and deepened. Interaction in a traditional classroom is much different than the interaction that occurs in an online course.

The type of interactions that occur in a traditional face-to-face classroom and in an online learning environment vary greatly. This is largely due to the instructional media used in the online environment. Because online interaction is dependent on Internet technologies and tools used, the next section will outline a brief history of the presence of Internet technologies in education and the current research on using Internet and Web technologies for teaching and learning.

Internet & Web Technologies for Teaching and Learning

While Internet technologies allow for the communication and exchange of information across continents and provide teachers and learners with a network of connected computers, the Web, sometimes referred to as the information highway, cyberspace, or global village, serves as an avenue for transmitting data over the Internet, thus giving learners and teachers the ability to access, share, or publish information (“Web,” 2015). These tools are very compatible with learners building their knowledge through collaborative, multidisciplinary, student-led, student-centered, and

self-directed authentic-based learning, giving them opportunities for exchange and discussion, and the creation of a learning community (Wilson & Lowry, 2000). From its inception, the Internet was viewed as a place where learners can gather to collaborate and exchange knowledge as a community and through the process impact and change the field of education (Kozma & Schank, 1998). This led to the idea that global networks could be formed where learners could participate in collaborative learning stacks (Cummins & Sayer, 1995). Later, these global networks became what we now know as learning management systems (LMS); aided by computer-mediated communication, which became dedicated networked technologies for education (Benkler, 2006).

Computer-mediated communications (CMC). Computer-mediated communications (CMC) encompass all forms of communication transmitted between two or more people via computer networks. CMC applications are many and ever expanding. They range from synchronous or real-time tools such as conferencing systems with video/web conferencing abilities, virtual spaces, online conferencing, massively multiplayer online games (MMOs), or instant messaging platforms such as chats and instant messaging, to asynchronous tools such as email, listservs, discussion forums, blogs, and social networking sites such as Facebook and Twitter, wikis, and the exchange of RSS (web feeds). Google Apps, one of the latest additions to CMC, is capable of providing both a synchronous and asynchronous communication. In education, CMC makes possible a type of interaction that was lacking in the traditional teacher-based classroom. It allows learners the freedom to explore alternative pathways as they develop their own style of learning, making available content that is not limited to text but can take on the form of graphics, text, and/or full-motion video. It also makes it

possible for learners to communicate with whomever, whenever, and wherever in the world. CMC provides electronic mail, real-time chat capabilities, audio and video feeds, and instruction delivery, thus facilitating student-to-student and student-to-teacher interactions across a desk or across the world. CMC has created a major shift in how educators and students think about teaching and learning. By allowing students to learn in more convenient locations and often at more convenient times, opportunities for previously unreached populations are now available. Furthermore, with the advance in digital telecommunication and Internet technologies, interacting and communicating is as close to face to face and allow for meaningful exchanges. However, for CMC to be effective, purposeful engagements are required. One of the ways to achieve these is with the use of online discussion forums.

Online discussion forums for interaction. For the past 20 years, every Learning Management System (LMS) and its equivalent in higher education, has had some form of online discussion forum as one of its key components. They are a central element within every online LMS allowing for the extension of teaching beyond the traditional face-to-face classroom (Levine, 2007). Despite the hesitancy by many instructors to allow time for and to facilitate online discussions in their courses, current communication tools, specifically asynchronous learning designs provide students time for reflection, research, contemplation, and careful articulation of thought before contributing an idea.

In so doing, online discussion forums allow for the establishment of a unique collaborative learning environment that fully supports constructivist teaching and learning. Technologies that allow for learning to occur as real time interactions between

instructor and learners (synchronous) or enable learners to access instructional materials at their own time, place, and space (asynchronous) are grounded in constructivism, specifically the characteristics that state that a) learning is a process of actively constructing knowledge rather than acquiring it; and b) instruction is a supportive process which assists in the construction of knowledge rather than communication of knowledge (Duffy & Cunningham, 1996). Studies by Yang and Tang (2003) and Angeli, Valanides, and Bonk (2003) claim that when higher order thinking is taking place in a forum, then knowledge construction will occur. Other studies by Campos (2004), Curtis and Lawson (2001), and Thomas (2002) support this finding; however, they each qualify conditions required for the knowledge construction to occur, with curriculum design as the most cited condition for engagement to take place. Studies by Brown (2001), Clarke (2002) and Vandergrift (2003) argued that the presence of a community of learners and the development of an online community are made possible through the use of discussion forums which, to be successful, must contain coaching and scaffolding of content to ensure that the asynchronous discussion does not become poor and superficial and that the adult learners' needs are met (Herrington & Oliver, 2000).

A research study by Hrastinski (2009) identified three types of communication that can occur in a synchronous or asynchronous interaction. He found that over 90% of asynchronous communication focused on content-related discussions, was relatively one dimensional, and contributed very little to the other two dimensions of social communication, namely planning tasks (3%) and social support (1.5%). Synchronous communication, on the other hand, was more diverse, with approximately 57% focused

on content, 29% on planning tasks, and 18% on social support. This research suggests that asynchronous communications facilitate cognitive, content-specific interaction, while synchronous communication led to more personal and task-oriented interactions. This finding is summarized in Table 1.

Table 1

Three Types of Communication

Type of Exchange	Examples
Content-related	Ask or answer content-related questions. Share information. Express an idea or thought.
Planning of tasks	Plan work, allocate tasks, coordinate joint efforts, or review drafts. Negotiate and resolve conflicts.
Social support	Express companionship, emotional support, or advice. Provide support when problems arise (such as when having technical difficulties). Talk about things other than classwork.

Note. From "A study of asynchronous and synchronous learning," by S. Hrastinski, EDUCAUSE Quarterly, 4, p.52.

There are numerous studies that support the idea that interactions in an online environment are vital and contribute to students' learning (Akyol & Garrison, 2011; Picciano, 1998; Sherry, 1996) and that those interactions that explore the social aspects of learning aid in creating a sense of community in an online learning environment (Rabe-Hemp, Woollen, & Humiston, 2009). In discussing online learning, Harasim (2012) describes interactivity as the most striking characteristic of Computer Mediated Communication and the factor with the greatest potential to affect learning. Similarly, Garrison et al. (2000) insist that creating a "virtual community of inquiry" allows

learners to construct experiences and knowledge through analyzing, questioning, and challenging assumptions. Students involved in group discussions are able to work toward academic goals together and to assist and support one another as they become active learners, points out Song (2007). The ability to ask questions, share opinions, or disagree with the point of view in a reading assignment is without question vital to student learning, and research confirms this (Liu, 2008). This assumption encompasses the principles of social constructivism and learning as a social activity. Realistic tasks, scaffolds, and feedback for acquiring skills and knowledge, and collaboration with peers will facilitate the process of constructing a shared body of knowledge (Jonassen, 1999).

Discussion forums are viewed as effective pedagogical tools, which require both cooperative interactions amongst students while simultaneously requiring individual active reflection. Through online discussion forums, students have the opportunity to interact, construct hypotheses, view knowledge and information from multiple perspectives, and reflect upon this information (Song, 2007). In looking at how online discussion is assessed, researchers have found that it is often based on participation instead of performance (Hawkey, 2003; MacDonald, 2003). Biesenbach-Lucas (2003) found that when assessment is based on participation, learners tended to summarize rather than analyze in their online contributions. He suggested that assessment of content might provide learners with the motivation to become more critical and reflective in their contributions. For students' participation to go beyond information exchange and summarizing, most studies concur that instructor presence is vital to signal their presence and to provide administrative, pedagogical, and affective support (Dennen, Darabi, & Smith, 2007; Hawkey, 2003; Miller & Ewing, 2000; Oliver & Shaw,

2003; Salmon, 2001). There are those who also believe that a teacherless forum is best for student learning (Galanouli & Collins, 2000).

Online discussions may be one of the most important parts of the online learning experience. They can contribute to the development of students' reflective ability and critical thinking skills (Barnett-Queen, Blair, & Merrick, 2005; Chang, 2006) and ensure that students are engaged and present. Shea et al. (2006) found that students reported putting more thought into online discussion postings than they did in a face-to-face classroom discussion and they are more likely to participate in an online discussion. Garrison and Cleveland-Innes (2005) also found that online discussion promoted greater cognitive and exploratory learning, while Rovai and Downey (2010) found that discussions support more student-to-student conversation and collaboration. A more recent study by Huang and Lin (2011) also noted a positive correlation between students' online participation, in the form of postings and viewings, and the stated learning outcomes.

In the body of research investigating students' attitudes towards interacting with their peers in an online course, studies show that whilst some students perceive a gain from the interaction, others give it little value as they struggle to find time to engage in these discussions (Fung, 2004; Kear, 2004; Motteram & Forrester, 2005). One particular study that captures this ambivalence well is by Su, Bonk, Magjuka, and Lee (2005) which surveyed 102 MBA students and found that 94% of the students thought their interactions with other students enhanced their learning experience while, at the same time, these same students did not desire to engage in such interactions and generally accepted lower levels of engagement as the natural result of their multiple

commitments. Kear (2004) confirms this finding in his study where participants reported as having nothing to post, as everything that needs to be said had already been posted. In another study by Ke and Carr-Chellman (2006), students valued the multiple perspectives that online discussions with peers provided by still preferred independent learning activities, as they did not like being forced into interdependence. These findings have not changed despite the advances in technology. Back in 2002, a study by Hatch also reported students' frustration at reading discussion posts, as they perceived these irrelevant or superfluous to their learning. One participant in that study went as far as saying, "I moved to distance learning to get away from the interaction" (Hatch, 2002, p. 247). Since reading and posting demand more time (Barnett-Queen et al., 2005), time constraint and information overload have also been indicated by several studies as a deterrent for students' participation (e.g. Chang, 2006; Cheung, Hew, & Ng, 2008; Vonderwell & Zachariah, 2005).

Studies conducted by Stodel, Thompson, and MacDonald (2006) and Liu et al. (2007) found that some students missed the nonverbal cues, physical presence, and informal social interactions afforded by face-to-face communication. The students thought the asynchronous discussion boards were slow and lacking in spontaneity whilst the synchronous chat rooms was too reliant on speed typing. These results are in keeping with Palloff and Pratt (2007) and Kearns and Frey's (2010) research which shows that video conferencing tools increase communication and connectedness among students online. These platforms aid to establish a tight-knit group among online students (Kearns & Frey, 2010; Palloff & Pratt, 2007). The use of interactive learning tools, such as video conferencing, the whiteboard, and chat sessions, support learners

and builds a community in online courses (Kearns & Frey, 2010; Wang & Chen, 2007). Videoconferencing tools, such as Zoom or Google Hangouts, are the current tools used for community-building. These tools enhance the faculty-student interaction and class discussions in web-based graduate courses and lead to meaningful interactions between students and their peers and instructors (McPherson, Wang, Hsu, & Tsuei, 2007; White, 2010).

Beyond tool capabilities, other factors have been found to affect students' participation in online discussions. Thompson (2007) reported that students were more likely to participate in discussions once a close rapport with their peers is established. Course requirements and reward structure are other factors that could act as an effective stimulus for promoting students' contributions (Deng, & Tavares, 2013; Xie, Debacker, & Ferguson, 2006). However, forced participation inevitably engenders anxiety, resistance, and resentment among students (Pena-Shaff, Altman, & Stephenson, 2005). Furthermore, the level of participation of instructors and/or other peers in the online activities, has been shown to either motivate or demotivate students (Cheung et al., 2008; Yuen, Deng, Fox, & Tavares, 2009).

Each of these studies lends weight to Moore's (1993) theory that meaningful learning occurs when three types of interactions are present at high levels. Brookfield and Preskill (2005) have written extensively about class discussions as an instructional method that can motivate students, help them retain knowledge, and develop effective problem-solving abilities. Their book, *Discussion as a Way of Teaching*, is considered a seminal work about how college faculty can use discussion to make their classes more engaging and democratic. Howard (2015), writing more recently about *Discussion in the*

College Classroom, dedicates one of six chapters to online discussion. His chapter, "Making Online Discussion Work" provides an extensive examination on the scholarly literature related to online discussion as well as a discussion of implications. Discussion has also been found as one of the successful instructional method to use with adult learners (Vella, 2004). Purposeful conversation and dialogue on a topic or an event of mutual interest among adults engages the learners in a practice of listening to different perspectives, promotes collaboration and cooperation, and can also lead to a different sense of community (Dawson, 2006).

In addition to discussion forums within learning management systems, there are chat features as part of 3-D virtual worlds and Social Media – and more specifically Facebook, and Google hangouts or Zoom, which may be used and are often used in teaching for students to interact with the instructor, the content, and their peers. In the next paragraphs, research on the use of these different technologies for interaction in an online environment will be discussed.

Social media in teaching. Social media is a very broad term that refers to web-based communication tools that enable people to interact with each other by both sharing and consuming information. Facebook, LinkedIn, and Twitter are some of the most popular social media apps used by almost everyone. Social media plays an important role in students' life. It is convenient and easy and is the way that students tend to communicate and stay connected. In teaching, social media can be used for collaborating, networking, sharing, and generating knowledge and content. These features render social media of great value in the context of higher education, especially in an online classroom. Teachers and students can connect to each other and use these

platforms to interact and work. Social media allows students to explore the social aspects of their online learning experiences and their role in it (Rabe-Hemp et al., 2009). This reduces the feelings of isolation and frustration that may result in students dropping out.

Facebook. In the courses observed in this study, Facebook was the tool used for online communication and discussion. Facebook is a widely popular social media network that is free of cost, available twenty-four-seven, and ideal for students to collaborate and exchange information and content with their peers, instructors, community, or the world at large. There is increasing academic use of Facebook. Mazman and Usluel (2010) define the educational use of Facebook as involving communication: discussions and information; collaboration in groups; and resource sharing via videos and links. Students can share their work in multimedia form on Facebook and teachers and peers can review and comment on the work. Teachers tend to use Facebook to post comments and updates, connect their classroom with the world, or collaborate with others. Informal learning occurred in a social-constructivist community where students and instructors conversed and shared knowledge to help each other better understand the subject matter (Ractham & Firpo, 2011). A study by Deng and Tavares (2013) compared the use of Facebook to Moodle with a cohort of final-year student-teachers in their early 20's enrolled in a four-year English Education program at a university in Hong Kong. The study was interested in identifying the reasons behind students' disengagement with online discussions on Moodle as a contrast to their active involvement in their own Facebook group. Using Activity Theory as a lens, this study devised a three-level model that explains online engagement issues

from technological, individual, and community aspects. It contributed students' perceptions of Moodle as a formal, academic, and "not-so-user-friendly interface" as the causes for the lower activity rate which tends to discourage students from using it for discussions beyond university-based classes. Facebook, on the other hand, was found to be an integral part of their social interactions and consequently students, on the whole, felt more at ease posting informally and on topics of interest to them. In addition, the fact that Facebook was created by students for students, (whereas Moodle was created by teachers based on course needs), meant that the ownership students experienced in the two online platforms differed greatly, with students exhibiting a strong sense of belonging to and ownership of their Facebook group (Deng & Tavares, 2013).

Web and video conferencing in teaching. The explosion of bandwidth and computing powers today have made quality video and web conferencing possible on many tools - even on handheld devices. Online learning environments or virtual online spaces allow students and instructors to communicate synchronously using features such as audio, video, text chat, interactive whiteboard, and application sharing. Synchronous virtual classrooms are commonly known as web-conferencing or e-conferencing systems (Rockinson-Szapkiw & Walker, 2009). These virtual online spaces promote interaction and offer real time communications for students and instructors to communicate synchronously using features such as audio, video, text chat, interactive whiteboard, application sharing, emoticons, instant polling, and breakout rooms thus supporting collaboration and knowledge sharing and construction. Martin, Parker, and Deale (2012) studied the importance of interaction within a synchronous virtual classroom. Their results suggested that live communication in a synchronous virtual

classroom enhanced interaction and provided the non-verbal social cues that are missing in text based discussion platforms. Teachers and students can use these online spaces to meet, lead discussions, make presentations or as a virtual classroom gathering. Virtual classrooms used in this study include a 3-D Virtual World named OpenQwaq, Zoom, and Google Hangouts. These three online spaces were the synchronous virtual classrooms that were observed in this study.

3-D Virtual World. Although there has been a global increase in the use of virtual worlds, from 136 million in 2009 to 28.8 billion in 2014, the successful use of virtual worlds in education is still rare (Gregory, Jacka, Hillier, & Grant, 2015). Virtual Worlds are one type of immersive environments. As the name implies, immersive environment allows learners to be totally "immersed" in a self-contained artificial or simulated environment while experiencing it as real. As such, immersive environments provide learners with rich and complex content-based learning while also helping learners hone their technical, creative, and problem-solving skills. Because immersive environments are so rich and visual, users tend to be highly engaged (Burns, 2013). In these worlds, participants are represented by avatars, or digital personas, who interact with one another in a persistent world (i.e., the world exists whether or not a user is there). Second Life (SL) is one example of a virtual world and OpenQwaq is the 3-D virtual world that is used at the university in this research.

3-D virtual worlds have received a great deal of attention among educators; yet, the number of peer-reviewed articles published under the category of 3-D virtual worlds, particularly their use in educational contexts, is very small (Kuriscak & Luke, 2009). 3-D virtual worlds typically share three important features: The illusion of 3

dimensional space, avatars that serve as visual representations of users, and an interactive chat tool for participants to communicate and interact with one another. An avatar is the user's on-screen persona, described as 'user embodiment' in a virtual environment (Bailey & Moar, 2001). It can perform various actions such as walking, running, waving, and jumping. The use of avatars helps enable direct visual interaction with the 3-D environment and with other avatars in the virtual world (Bailey & Moar, 2001). Participants are not only aware of their own avatars but that of others as well. Avatars render the sense of presence very high in these worlds. (Bronack, Riedl, & Tashner, 2006). They can overcome the limitations of text-based, computer-mediated communication by giving users the means to display nonverbal communication cues such as gesture and emotional states (i.e., yelp for joy, boredom, etc.) that facilitate communication (Peterson, 2006) and add to a sense of community. These worlds offer an online space for learners to engage in the social activity of learning (Bronack, Riedl & Tashner, 2006).

In teaching, 3-D virtual worlds can be used to provide interactive opportunities for students, for collaborating on projects, as visualization, contextualization, or simulations aids that may be too costly to reproduce in real life, and for promoting a sense of community online (Warburton, 2009). Research conducted on 3-D virtual worlds reveals that overall, students like using the virtual worlds because of the following reasons: the ability to fly and move around freely in a 3-D space, to socialize and meet new people, and to experience virtual field trips and simulated experiences (Dickey, 2005). Another study conducted by Riedl (2004) investigated 3-D worlds in education in terms of social interaction. Using student observations, student interviews,

student questionnaire and online logs, such as student chat transcripts, this study suggests that the use of virtual worlds could help foster social interaction among participants through the use of avatars.

3-D virtual learning environments are also seen as an ideal match for situated learning, one of the constructivist adult learning theories, which advances that learning occurs through collaborative social interaction and the social construction of knowledge (Dickey, 2005). Interaction, however, may be hampered, if the student were not comfortable with the environment or the tool or if these were not to function properly. A study by Schrum (2002) discussed the learner-interface issue in terms of access to the technological tools in online learning. Results from surveys of 14 educators indicated that the greater the challenge for students in accessing the tools to partake in coursework, the more readily students could provide reasons for withdrawing from an online course. This finding is significant because learners may not have the necessary hardware or software readily available in their home or work environment. Subsequently, if students were inconvenienced unnecessarily each time they have to access the technology for school, they may come to resent the learner-interface interaction. Conceivably, the inconvenience could be a deterrent for remaining in the class or enrolling in future online courses. This is an important finding that can also explain the lack of community in an online environment. In other words, lack of computer experience or malfunctioning of the technologies may hinder the building of a sense of community. In this study, 3D virtual worlds were used in four out of the eight courses. These instructors used the platform for synchronous meetings to either provide instruction, share student learning, or as an Q and A space.

Zoom & Google Hangouts. As cloud videoconferencing tools, Zoom and Google Hangouts are examples of software-based videoconferencing applications that enable students and teachers to communicate in real time even when they are in different spaces. Three modes of communication are possible in these videoconferencing tools: test mode, audio mode, and video mode, thus giving students the sense of connectedness that is usually afforded by visual signals when interacting with others (Bower et al., 2012; Lawson, Comber, Gage, & Cullum-Hanshaw, 2010). In education, videoconferencing has developed into two main forms: One is used for reaching one or multiple remote campuses, where the teacher and some of the students are in one location and the other students are at another location. The other uses live-streaming from everyone to everyone and allows participants, using personal devices as PC's, tablets, or phones, to connect one to many or many to many (Roberts, 2009). Studies that look at the effectiveness of videoconferencing in online teaching have found that videoconferencing has yet to meet participant expectations (Delaney et al., 2004). This is due to the error that most videoconferencing users tend to make, which is to equate the videoconferencing environment with face-to-face traditional class environment and, as such, use it that way (Anastasiades et al., 2010). Students state that technical problems such as sound, image, and connection problems are some of the factors that affect their viewpoints (Gillies, 2008; Marsh, Mitchell, & Adamczyk, 2010). The study conducted by Umphrey, Wickersham, and Sherblom (2008) looked at student perceptions of videoconferencing and found that students believe that face-to-face education is more positive than video conferencing in terms of the teacher's proximity, understanding the teacher, mutual communication in the classroom, success and

quality. Based on these results, a video conference course would benefit from including interaction and in-class engagement.

In this study, Google Hangouts on Air and Zoom were used as the video conferencing tools. Zoom is a newly adopted tool by the university and was used in two of the courses, for introductory meetings, mid semester check- in, and at the end of the term for reflection sharing. In the courses that Zoom was used, the instructors did not wish to record the sessions. They believed that when students know they are being recorded, they feel inhibited. Therefore, all data is the result of the sessions attended by the researcher and recorded observations. This medium quickly became a favorite among the online learners as it was very easy to navigate and it did not present any technical issues in either getting on or remaining online. Because of the favorable response towards it, it was used for all online interviews as the researcher deemed it a safe and dependable tool to connect without technical difficulties with participants.

Google Hangouts were used for two purposes: When students met to conduct their discussions and when an instructor met with a student. In observing students' behaviors on Google Hangouts, students were less formal and more social until the recording started then the interactions became more formal and almost scripted.

Online discussion forums, video conferencing tools, and social media have advanced computer-mediated communication tools yet maintaining online interaction remains a challenge today. Based on the research in this area, one can extrapolate key factors that may contribute to the low online interaction such as poor course design, inappropriate content or sequencing of learning activities, learners' behaviors and attitudes, instructor role, assessment and inconsistent teacher feedback (Hawkey,

2003; Janicki & Liegle, 2001; Miller & Ewing, 2000; Oliver & Shaw, 2003; Salmon, 2001). Recognizing that educational technology encompasses both the process of teaching with technology and also the technology itself (Roblyer, Edwards, & Havriluk, 1997), a study that examines not just the digital tools used but what the educator and students actually do with these tools, along with those factors that are likely to affect the quality and quantity of input, contributes to greater understanding of how communities can be sustained and developed in an online learning environment.

The Adult Learner

Higher education institutions offering online programs tend to attract adult learners (McLaughlin, 2004). These online adult learners, often referred to as "non-traditional students" tend to be older and often have additional family and employment responsibilities as compared to the "traditional student" – 18-21 year olds attending brick and mortar higher education institutions (Allen & Seaman, 2014). Flexibility of anytime/anywhere access combined with the increased capabilities of self-directed learning are two of the most cited reasons why adults choose online learning environments over face to face settings (McLaughlin, 2004).

Andragogy is the method and practice of teaching adult learners (Kearsley, 2010). It was developed by Knowles (1913-1997) to differentiate the needs of adult learners from those of young learners. It outlines the specific methods that should be employed in teaching adults based on five assumptions about adult learners. These include self-concept, adult learner experience, readiness to learn, orientation to learn, and motivation to learn (Knowles, 1984). These assumptions guided Knowles' four principles of andragogy that apply to adult learners. These principles include involving

adults in planning and identifying their learning needs and goals, integrating one's personal experience into the learning, identifying the relevance of all learning activities and having a problem-centered rather than content-oriented approach to the teaching (Knowles, 1984). These principles are all grounded in the constructivist paradigm on teaching and learning, and are also at the base of the most used adult teaching theories which include self-directed learning, experiential learning, and transformational learning (Ke & Carr-Chellman, 2006). Cercone (2008), after careful consideration of the existing adult learning theories synthesized that successful online learning for adults is characterized by 1) social interaction and collaboration with peers, 2) connecting new knowledge to past experience, 3) immediacy in application, 4) a climate of self-reflection, and 5) self-regulated learning. These characteristics further describe a constructivist approach to teaching and learning.

Constructivism, Internet Technologies, and Adult Learning Theory.

Constructivism is a theory about knowledge and learning (Dunn, 2005). Although constructivism is not a unified school of thought, common to all of its theories is the position that (a) learners construct knowledge based on what they already know, and (b) learning is an active process (Duffy, Lowych, Jonassen, & Welsh, 1993). This stems from Vygotsky (1978) who posited a social aspect of learning that our connections and interactions with one another and with our environment, our language, and our culture, all play significant roles in contributing to our knowledge construction or learning. This is what is known as the sociocultural theory and refers to learning as being embedded in social events and social interaction (Vygotsky, 1978). Our personal social experiences

result in our construction of reality, and it is in this sense that multiple realities are said to exist (Jonassen, 1999).

Constructivist teaching is, then, a learner-centered approach to instruction that recognizes that learners build understanding and add to their existing knowledge through interactions with their environment (Duffy & Cunningham, 1996). Driscoll (2000) identifies six conditions that are indispensable for constructivist teaching and learning to occur. These include:

1. An embedded learning in complex, realistic and relevant environments.
2. Opportunities for social negotiation as an integral part of learning.
3. The use of multiple modes of representation and the support of multiple perspectives.
4. A promotion of ownership in learning.
5. Adequate time for learners' investigation and in-depth engagement.
6. A nurturing of self-awareness of the knowledge construction process.

Based in these principles, constructivist activities tend to be centered around tasks that are open-ended, problem based, and process rather than content-oriented, thus giving the learners self-direction and greater ownership of the content and the construction of their knowledge. In addition, distributed cognition, which is informed by the constructivist and cognitivist theoretical frameworks, recognizes that knowledge is built not only from the individual, but also as a result of the interactions with both others and objects (Hutchins, 1995) thus making interaction and social activities essential for knowledge construction. Distributed cognition entails creating environments that encompass the following: learning communities where participants

possess different backgrounds and levels of expertise, technology that supports communication and productivity within the environment, and authentic activities for engaging participants within the environment (Winn, 2002). The above principles are consistent with adult education andragogy and the use of Internet technologies and the Web in teaching and learning.

Learning in a constructivist paradigm is interactive and personal, emphasizing problem solving and understanding. Constructivist learning is authentic active learning, supporting the true meaning of construction as learners interact with their environments and the information that is presented to them (Wilson and Lowry, 2000). Constructivism, with its emphasis on one's own understanding and knowledge about the world through hands-on experience and reflection, reinforces and sustains those standards that define 21st century learning (P21, 2011). Constructivism's concern with the organization of a learning environment and activities that include opportunities for acquiring new skills, building on existing knowledge, and participating in meaningful interactions, along with the P21 goals for cross cultural competencies, advance two widely used approaches in teaching, namely collaborative learning theory and project-based learning, as the strategies to fulfill these needs. As an instructional strategy, constructivism involves purposeful collaboration where the teacher acts as a facilitator or a coach who is a co-learner guiding the learning (Jonassen, 1999). Teachers' roles are to mentor or guide students as they engage in these authentic tasks and activities. Teachers are also the designers of the learning environment. An environment that inspires curiosity, encourages inquiry, and fosters collaboration is an environment that is constructivist.

Designing learning spaces from a constructivist perspective means providing a learning environment that emphasizes real-world problems or tasks, which are most relevant to the learner, in context or real world settings (Duffy et al., 1993). Such environments encourage thoughtful reflection on experience and a collaborative construction of knowledge through dialoguing, social negotiation, and interaction (Duffy et al., 1993). In his book *The Flat World*, Friedman (2007) writes that one of the most important 21st century skills is the ability to "learn how to learn" (p. 302). A constructivist approach to teaching and learning accomplishes this skill by shifting the focus from teaching to learning, from thinking of things to thinking about things, from knowledge reproduction to knowledge construction, and from teacher telling to students doing, thus resulting in learning how to learn. With infinite interactive information at our fingertips, teaching becomes more about the 'why' and 'how,' and less about the 'what' (Jonassen, 1991) and although Wilson and Lowry (2000) remind us, in their article *Constructivist Learning on the Web*, that the principles of learning are the same for all media and learning environments, including the Web, as long as access to learning resources, meaningful interactions, and the bringing together of learners are present then learning is taking place. When all three are present, learners construct their new knowledge as a result of the collaboration, communication, and manipulation of the new concepts (Wilson & Lowry, 2000).

The literature does support the principle that social constructivism and current digital telecommunications and Internet technologies complement one another and give learners the skills needed for this global interconnected information driven society. In fact, when e-learning writers refer to establishing a learner-centered, reflective

pedagogy, they are in fact advocating andragogy, not pedagogy. Dickinson and Stewart (2001) have made this connection, explaining that the key features of successful online learning are “focus on the shift in the locus of control, the learner knowing that he or she is at the center of the learning, with the teacher one facilitator of that process” (p. 196). Driscoll (1994) explains that constructivism is gaining popularity and momentum at the same time as interactive, user-friendly Internet and computer technologies are becoming widely available. She adds, "The computer offers an effective means for implementing constructivist strategies that would be difficult to accomplish in other media" (Driscoll, 1994, p. 376). She goes on to outline five key conditions of constructivism for learning that, with today’s Internet technologies, can be implemented and promoted. These conditions are:

1. Provide complex learning environments that incorporate authentic activity.
2. Promote social negotiation as an integral part of learning.
3. Juxtapose instructional content and include access to multiples modes of representation.
4. Nurture reflexivity.
5. Emphasize student-centered instruction.

Designing and teaching a constructivist course online can be a challenging endeavor and Driscoll’s (1994) list does a good job of summarizing the basic five principles that would render such a task successful for teachers and students.

Effective Instructional Techniques for Adult Learners. Identifying effective teaching techniques that work well with non-traditional students is important for instructors when designing online courses. As the research shows, emphasis should

focus on techniques that afford rich and meaningful experiences and that take into account the five principles of andragogic thought, including the concepts of student engagement and social interaction (Booth, 2012; Brookefield, 2006; Knowles, 1990). Some instructional techniques that work well are problem-based learning, project-based learning, cooperative learning, and collaborative learning. Both project-based and problem-based learning are instructional strategies that promote active learning, critical thinking, and problem-solving (Duffy & Cunningham, 1996), where students work cooperatively in groups to find solutions to real world problems. Cooperative learning is an instructional technique that is similar to collaborative learning in that students work together on one task; however, whereas in cooperative learning each member of the group is responsible for one aspect of the task, collaborative learning dictates that everyone works jointly on the same problem rather than on different components of the activity (Duffy & Cunningham, 1996).

Discussion is another instructional technique that works well with adult online learners. Discussion or dialoguing, verbally or in text, encourages students to discover solution and develop critical thinking abilities (Arbaugh, 2008; Bonk, Wisher, & Nigrelli, 2004; Brookfield & Preskill, 2005; Vygotsky, 1978). Instructors using discussion as an instructional technique (a) pose a problem, (b) monitor the participant discussion, and (c) summarize all participants' completed input (Bonk et al., 2004). Research shows that discussion methods are more effective than lectures when used with adult learners as they allow for information retention, transfer of knowledge to new situations, problem solving and higher order learning, and motivation for further learning

(Arbaugh, 2008; Ardichvili, Page, & Wentling, 2003; Bonk & al., 2004; Brookfield & Preskill, 2005; Vygotsky, 1978).

Knowles (1998), Merriam and Caffarella (1999), Brookfield (1990), and Freire (1970) describe adult learners as:

- having real-life experiences;
- preferring problem-centered learning;
- being continuous learners;
- having varied learning styles;
- having responsibilities beyond school life;
- expecting learning to be meaningful; and
- preferring to manage their own learning.

These characteristics, along with the learning theories and instructional techniques mentioned in this section, serve as guidelines and recommendations for instructors teaching online adult learners. Designing a self-directed, flexible, learner-centered approach to learning is designing successful learning experiences for online adult learners. Whether we are speaking of constructivism, andragogy, self-directed learning, transformative learning or situated learning, in today's literature these are all forms of experiential learning, defined as "the process of creating and transforming experience into knowledge, skill, attitudes, values, emotions, beliefs and senses (Jarvis, Holford, & Griffin, 1998, p. 46).

Online discussion forums, threaded discussion, virtual meeting places, and social media software are all tools that allow learners to discuss, dialogue, debate, and construct meaning, all the while giving them opportunities to collaborate, engage with a

real audience, and receive and give immediate feedback. Access to the Internet provides the authentic learning platform that is favored in constructivism. Students can access different types of information resources to understand their and others' cultures, thus making the learning more meaningful, learned in 'real world' context rather than merely learning from abstract concepts. While all of the above may provide learners with opportunities to engage and construct knowledge, these opportunities require purposeful engagement within a context to benefit the learner. Online communities are the agencies that can provide this context. As one of the predictors of adult learners' success in online learning environments, online communities are the vehicle to a successful adult online learning experience (Shea, Li, Swan, & Pickett, 2005).

Summary of the Chapter

This literature review outlined the relevant learning theories and instructional designs that are currently in use in online learning environments and examined how these theories affect online learning. Higher education is under scrutiny to demonstrate its effectiveness regarding student success in online learning environments (Palloff & Pratt, 2007). An understanding of learning theory and instructional design is crucial in the development and designing of online courses (Jonassen, Peck, & Wilson, 1999; Swan, 2005). The concurrence of both constructivist approaches to learning and the development of the internet have made possible forms of teaching that can be collaborative and based in knowledge-construction, assisted and developed through social discourse and collaborative tasks. For this type of teaching and learning to occur, online communities are needed. It is therefore important to learn as much as possible about how to effectively build and foster online communities. Chapter Three will

outline the methodology and research design used in this study, as well as the setting, participants, and applied instrumentation. Data collection, processing, and analysis procedures as well as validity and ethical considerations will also be discussed.

CHAPTER THREE

Methodology

This chapter provides an overview of the research methods used in this study in order to gain a greater understanding of the interactions, activities, and learning environments that enable a sense of community in an online course. A mixed study naturalistic research design implementing a combination of qualitative and quantitative methodologies was used to describe the participants' experience in their online classroom environment. The characteristics of the study, including the research question, a description of the participants, data collection procedures, and the methods used for data analysis are contained in this chapter.

Research Design

This study is founded on the premise that learning is a social activity, thus emphasizing the ways in which learning is based in social interaction and practices as defined by Vygotsky (1978). It uses a naturalistic case study approach (Stake, 1995) to document adult learners' experience during an online graduate summer course. Qualitative research methodology was used to address the research question. Guba and Lincoln (1994) suggest that qualitative research methods are appropriate when the purpose of research is:

- to clarify an area where little is known or what is known is inadequate;
- to attempt to explain complex situations, shifting phenomena, or multiple perspective data;
- to understand and interpret an experience using participant perceptions; and
- to fully and deeply understand a phenomenon.

The preliminary literature review revealed that the concept of building an online community lacks clarity and is yet to be fully-defined or well-characterized (Bernard et al, 2004; Loews, 2014; Roberts & McInnerney, 2007; Tu, 2002). The surveyed learning theories revealed the complexity involved in identifying factors that impact online community development and the multiple factors working at both the macro level (social environmental conditions) and the micro level (influences on student behaviors and decisions). Additionally, a qualitative approach is the most appropriate methodology for research based in constructivism where meaning is situated in the social contexts, particularly through social interaction (Guba & Lincoln, 2000).

As an emerging educational researcher, epistemologically, I would position myself closely to a constructivist paradigm in that I view knowledge as socially constructed and emerging from people's social interactions and practices. Robert Stake's (1995) naturalistic approach to case study was used in designing my research study and Charmaz's (2006) constructivist approach to grounded theory was applied for analyzing my quantitative and qualitative data.

Case Study Research Design. Robert Stake's (1995) naturalistic approach to case study informed this research design. From a Stakien view, research is culturally derived, historically situated interpretations that are holistic and focused on the interplay between the phenomenon of study and the context in which it exists (Stake, 1995). In this study, I documented and explored the experiences of adult learners and the various types of interactions they engaged in throughout the duration of their participation in summer online courses where various levels of collaboration with peers, instructors, and content took place. Case study design is one type of research that

falls within the qualitative research field. Stake (1995) defines case study as a system bounded, usually by time and place, with all of its interrelated parts forming a whole. Case study refers to the collection and presentation of detailed information about a particular participant or small group, frequently including the accounts of subjects themselves (Stake, 1995). As a form of qualitative descriptive research, case studies examine intensely at an individual or small participant pool, and draw conclusions only about that participant or group and only in that specific context. Researchers do not focus on the discovery of a universal, generalizable one truth, nor do they typically look for cause-effect relationships. Instead, emphasis is placed on exploration and description. Considering the constructivist exploratory approach of this research, case study is an ideal methodology. Case studies have been used in varied investigations, particularly in the Social Sciences, including instruction (Tellis, 1997), and are designed to bring out the details, from the viewpoint of the participants, by using multiple sources of data (Stake, 1995), which in this research include interviews, survey responses, observations, synchronous and asynchronous discussion forum entries, as well as recorded synchronous sessions of online class sessions.

Data Collection and Analysis. Data coding in this study is based in Charmaz's (2006) constructivist approach to grounded theory, which requires that codes be identified directly from the data, and that constant comparison method be used to identify key concepts within the data as well as theoretical sampling to maximize the similarities and differences of information. In this case study, the focus was on the importance of meanings that individuals attribute to their online experience. Selecting participants from eight different online courses maximized the potential to discover as

many dimensions and conditions related to the phenomenon of online learning and sense of community (Charmaz, 2006; Creswell & Plano-Clark, 2007) that generated theories or findings that may serve as "plausible accounts rather than as objective truth" (Charmaz, 2006, p. 132) about this group of adult learners in this specific online learning experience.

Initial analysis of the data was exploratory and assigned meaning to concepts as they became apparent. Using data chunking and data naming, i.e. coding, which is a form of content analysis, issues in the data were conceptualized. I began by applying open coding to form initial categories about the phenomenon. First, I interviewed one participant. Following the interview, I analyzed the transcript and wrote key words on a large sheet of paper. Next, I interviewed another participant, ensuring that the participants I interviewed were from different online courses within the same program. Following the interviews I analyzed the transcript and, once again, wrote up the key words on my table. Words and phrases that highlighted an issue of importance or interest to the research were noted and described in short phrases. I then compared these and began forming the categories and themes as I added more keywords and performed on-going comparisons. When that issue or phrase was mentioned again, using the same or similar words, it was noted again. Using this approach to data analysis, I was able to explain relationships between concepts and focuses. In so doing, conceptual categories emerged. Subsequently, as more concepts were identified and grouped and regrouped based on commonalities, categories emerged from interview transcripts, discussion forums, and class observations, which served as the basis that led to the emergence of a theory (Allan, 2003) – in this case my four findings.

The constant comparison method is a specific data analysis approach (Creswell & Plano-Clark, 2007) in which the researcher reflects upon the importance of new findings by looking at similarities and differences from the collected data, identified concepts, and related theories. This type of analysis is dynamic and always evolving as new data are analyzed, and new meanings are assigned and reassigned based on the comparisons from incoming data. Based on the preliminary literature review in this research on online teaching and learning, and current learning theories on adult learners and social constructivism, multiple processes were involved in identifying the factors that influence online community development. Using this approach to data analysis, I was able to explain relationships between concepts and focuses.

The following table is a summary of the key themes, categories, and subcategories that were identified through the constant comparison method.

Table 2

Overview of all Themes, Categories, and Subcategories

Theme	Category	Subcategory
Ease with Online Space	Learning Environments: Instructor Role Course Design Tools Used	introductions facilitation guidance modeling course organization program advice parameters style tool integration setting expectations synchronous meetings
Engagement	Community Building Activities and Events	common goals valuing collaboration developing community collective nouns: we, us

Theme	Category	Subcategory
		beyond class time meetings group work medium used video inclusion
Group Cohesiveness	Personal Connections Collaboration	student to student student to teacher student to content constructivist feedback meaningful exchanges cohort models vs. none
Interpersonal Relations	Age Experience with online learning Gender	reflection connectivity value desire to build community relationships interactions vs. no interactions previous online courses feelings about online value of learning online

Using comparative analysis as the approach for data analysis helped me explain the relationships between categories and themes while focusing on describing a theory grounded in my data from my study that can guide my research question: "How do learning environments, interactions, and activities contribute to building and fostering online communities?" Following each interview, I wrote myself a memo and added the initial concepts or themes from that interview. Beginning with the second interview, I started grouping my data by questions and themes. Memos helped me remain organized and contained my field note analysis and transcripts in order to facilitate comparison to other interviewees and other compiled data.

Following the initial open coding, axial coding was applied. Axial coding is the step used to group codes according to conceptual categories that reflect the commonalities among codes. These identified categories were based on my own interpretive lens as a researcher in my attempt to abstract meaning from the data. The third phase of my analysis involved what Strauss and Corbin (1998) refer to as "selective coding", the point at which I began to treat the various code clusters in a selective fashion, deciding how they relate to each other and what stories they tell. Thus, I was able to construct a set of relational statements that can, in a general sense, explain what is going on. Additionally, a constructivist approach was applied to the analysis of the data by applying active codes, which meant looking at the participants' thoughts, feelings, values, viewpoints, assertions, etc. rather than merely gathering facts and describing acts (Charmaz, 2000, 2006).

A qualitative naturalistic research design, situated within the paradigm of constructivist inquiry (Guba & Lincoln, 1994) was applied in this study to clarify what it means to have a sense of community and to identify those particular conditions, activities, and interactions that lead to the development of a community. As the researcher, I aligned with an ontological position that adopts a relativist stance towards the phenomenon I am exploring, and an epistemological perspective that acknowledges my own subjectivity as I interact with the participants and the environment of my study (Guba & Lincoln, 1994). In this study, I also employed data and method triangulation to evaluate and validate my findings. According to Denzin (1989), triangulation refers to the use of multiple perceptions to clarify meanings and avoid misinterpretations. Furthermore, triangulation is used to secure an in-depth understanding of the

phenomena analyzed (Flick, 2002). In this sense, it is not a tool or a strategy that represents an alternative to validation. By combining qualitative and quantitative perspectives and using data from different sources, triangulation became a strategy that added rigor and complexity to my explorative naturalistic inquiry.

Setting and Participants

Identifying those instances and those uses that contributed to the building of an online community was the aim of this research, which explored how teachers and students interacted using learning spaces in eight online courses in the Master of Arts in Educational Media, a newly revamped online learning program at a mid-size rural university that shall be known as NESU University. The Educational Media Program at NESU has four tracks that cover K-12 licensure for instructional technology specialists, online learning and professional development, media literacies, and a general instructional technology licensure. This program is grounded in a constructivist pedagogy and has both synchronous class meetings (about six-eight meetings per course term) and asynchronous coursework. Some of the courses in this program use OpenQwaq for their virtual classroom, while others use Zoom or Google Hangouts for synchronous sessions. NESULearn, a university-wide learning management system, along with Google Apps, are also used for asynchronous discussion, communication, assignment sharing, and group collaboration. Zoom or Google Hangouts are used for video conferencing and as an online meeting platform for students to work on collaborative projects or for teachers to meet with the students synchronously. Some teachers also use Facebook as an alternative to the discussion forum platform in NESULearn.

There are 80 full-time online students and one on-campus student in the program at the present time. The program was originally based on a cohort model; in other words, students were admitted as one group and worked through the course of study as a group; however, the program now allows applicants on a "rolling admission" basis, meaning students can begin their course of studies at any point and join an existing ongoing cohort or group. The approximate time to graduate in the Master's program in Education Media is two years, including summer terms. This is based on a part-time enrollment as most students pursuing this degree are full-time working professionals. Courses offered during the summer are limited to the number of faculty members available for that semester and usually last for 10 weeks. This is a non-thesis program. Most, if not all, of the interaction between students and faculty occurs online, with very few face-to-face meetings. Although no formal training takes place with the online teachers, teachers in this program are encouraged to use social constructivism as their pedagogical paradigm with the Community of Inquiry (CoI) Model for the conceptualization and design of the online teaching platform.

A typical student in this program is a non-traditional Caucasian student, over the age of 30, working full time while attending school part time (McClannon, personal communication, September 29, 2016). The students are either K-12 educators, instructional technology specialists, or librarians, who live within a 150-mile range from the university. The sample population for this study is comprised of students in eight graduate online courses. Creswell (2013) recommends selecting participants who can provide information about the phenomenon being studied. For this reason, purposeful sampling method was used, with all participants actively engaged in the

online learning environment. Although this is a sample of convenience (Creswell, 2013), the participants in the study reflect the average adult, non-traditional student pursuing an online education as defined by the National Center for Education Statistics (2016). Their perceptions, therefore, can be applicable to other students pursuing online courses in any higher education institution.

Demographics of the Sample Population. Data collected through the online surveys were input into SPSS for analysis. Descriptive statistics were calculated using the demographic-related questions from the survey to better characterize this study's student population in terms of gender, age, ethnicity, and previous online experience. Both pre- and post- course surveys were delivered electronically. Response rate for the surveys was quite favorable with over 50% response and an average of 84% completion rate for both pre- and post-course surveys. Although there were students who were enrolled in more than one course, and therefore received the survey more than once, it was left up to the participant to choose to either answer twice or once because the sense of community can differ for each of the courses. In total, 58 students took the pre-course survey and 67 took the post course survey. The pre-course survey was closed to participants one month into the course semester and the post-course survey closed one week after the completion of summer courses. Only completed surveys were taken into consideration. Table 3 represents the descriptive statistics of the study sample in this study.

Table 3

Demographic Information for Survey Respondents

Variable	Answer	Frequency	Percent
Gender	Male	15	29.4
	Female	36	70.6
Age Group	18-30	15	29.4
	31-40	16	31.4
	41-50	16	31.4
	51-over	4	7.8
Race/Ethnicity	African	3	5.9
	Caucasian	40	78.4
	East Asian	1	2.0
	Hispanic	2	3.9
	Prefer not to answer	2	3.9
	Other	3	5.9
Previously Taken Online Courses	1	3	5.9
	2-3	8	15.7
	4-5	10	19.6
	6+	30	58.8
n=51			

The sample of this study was made up of predominantly female respondents (70.6%). Most participants had taken more than six online courses (58.8%). Since the frequency numbers of all ethnic groups except Caucasians (78.4%) were too small, comparative

analyses of responses to other questions based on ethnicity will not be conducted. However, because scholarship and literature have identified gender, age, and experience with online learning as variables that affect sense of community, these variables will be tested in this study.

Tools and platforms used in the observed courses. Table 4 shows the tools that were most used by the participants during this study. Ted Ed in Education, Blendspace, Wikispace, Wordpress, and Weebly were the tools identified under other and consisted of 18.64% of the total. Although the survey included Twitter, Instagram, Google Classroom, Google+, and Skype, these were removed as they were not used in any of the observed online courses.

Table 4

Tools Used in the Classroom

Tool	Percent
Google Apps: Docs, Presentation, & Sites	84.8
Discussion Forums	62.7
Google Hangouts	47.5
OpenQwaq	47.5
Facebook	42.4
Zoom	33.9
Padlet	10.2
Other, please specify	18.6
n=59	

Based on the responses in the surveys, most of these tools were familiar to the participants who had had previous online courses. The relatively low number for Zoom may be attributed to the fact that it has been adopted only recently by the university to serve as a virtual meeting place for teachers and students.

For synchronous virtual online spaces, OpenQwaq, Zoom, and Google Hangouts were used in these courses. All of these platforms offer chat capabilities, video, and audio as well as the possibility of sharing one's screen and recording one's session for later viewing. While OpenQwaq has been used for many years at the university, Google Hangouts and Zoom are relatively new adoptions. Two of the instructors used Google Hangouts for students to meet, discuss readings, and record their sessions, and as the platform to meet one-on-one when and if needed with the instructor, while one used Zoom for beginning, mid, and end-of-term whole class synchronous meetings. OpenQwaq was used to conduct a role play activity in two classes as a gallery to showcase student work in one class, and as a first and last meeting space in another class.

Data Sources and Collection Methods

IRB approval was obtained to conduct this research (See Appendix A). All participants were sent a consent form, which described the research, notified them of their voluntary participation in the research, informed them of their right to refusal, and invited them to take an online pre-course survey (See Appendix B). Participants were asked to consent prior to conducting and recording the interviews (See Appendix C). Data for this study was generated from multiple sources, including students' discussion board postings, observations of asynchronous meetings, recordings of

course, assignments, a pre- and post-course survey as well as one-on-one interviews. Data also included all the course assignments from all participating courses, including all written and oral assignments, all recordings, and activities collected in the NESULearn course sites.

Surveys. The tremendous increase in Internet usage and computer-mediated communication (Fox, Rainie, Larsen, Horrigan, Lenhart, Spooner, & Carter, 2001; Horrigan, 2001; Nie, Hillygus, & Erbring, 2002) has brought with it a significant increase in primary research on online communities, which in turn has led to an increase in the use of online surveys. This presents scholars with new challenges as they attempt to apply traditional survey research methods to the study of online behavior (Andrews, Nonnecke, & Preece, 2003; Yun & Trumbo, 2000). For these reasons, the surveys used in this research were only one of the ways triangulation was applied. To determine students' experience and perceptions of online learning before and after taking the course, in addition to a pre-course survey that was sent out the first week of classes, a post-course survey (Appendix D) was also sent toward the end of the term. The online surveys, both pre- and post-course (Appendix B & D), were reviewed and piloted prior to the study.

These surveys were sent out to all the students to document their online experience and to gauge their perceptions of online learning and more specifically their sense of community in their current class in the Master of Arts in Educational Media. In addition, the surveys looked at the tools that the students were familiar with and their perceptions of the effectiveness of those tools and activities associated with those tools in building an online community.

Although scales that measure student engagement in online environments are available, none offered concrete standards and guidelines on the specific types of activities and engagements that can lead to a sense of community. Therefore, the first stage of this study was to develop a set of questions that looked at students' experience in their online course(s). Based on Rovai's (2002b) Sense of Classroom Community Index (SCCI), Moore's Interaction Model (1989), and Anderson's (2003) Interaction Equivalency Theorem, I created a pre- and post-course survey consisting of five sections and containing time series questions in order to limit extraneous variables and ensure similar information. The first section of the survey asked for demographics since demographic and student characteristic variables such as age, gender, ethnicity, and the number of previously taken online courses have been shown to impact students' sense of connectedness and overall perception of their online learning experience (Cattan et al., 2005; Yeh & Sing, 2004; Vandervoort, 2000). The second section sought students' perception of online learning and included statements that incorporate social constructivist learning with Internet technologies. These 19 statements asked students about their perceptions of the learning environment, activities, and interactions and compared these with before and after completion of the summer course. Reliability analysis was conducted for the three subscales in the survey section (See Table 2). Cronbach's alpha, which is the most common measure of scale reliability (Field, 2005), was used. Values of 0.7 and above are considered acceptable in a Cronbach's alpha (Nunnally & Bernstein, 1994) for exploratory studies. As can be noted in Table 5, all six reliability numbers indicate that the three subscales were found reliable.

Table 5

Reliability of Scales in the Pre- and Post-Course Surveys

Subscale	Pre-Course	Post-Course
Affective Learning	.84	.75
Social Learning	.85	.76
Learning Design	.79	.84
	n=51	*n*=59

The remaining three sections of the survey focused on the effectiveness of the different Internet technologies on the interactivity of the online course. These questions asked students to rate the tools as extremely useful (5) to not at all useful (1) (Appendices B & D). The post-course survey has one additional open-ended question to give participants an opportunity to add any comments or questions they may have. From the 59 complete post course surveys, four respondents added comments.

Interviews. Interviews for this study were synchronous online interviews via Zoom, as videoconferencing was the closest I could get to resembling a face-to-face interview. At the end of the course semester, two to three individuals from each course were interviewed. The interviews lasted between 30-45 minutes. Using a semi-structured interview protocol, I was able to use my pre-planned questions while still allowing for the spontaneity and flexibility of the moment (Appendix E). The online platform allowed me to carry out interviews with geographically dispersed participants in the comfort of their home, and establish a rapport and a level of trust in a computer-mediated research relationship.

Eighteen adult students from the eight sampled courses were interviewed. These students were specifically chosen because they represent diverse groups of age, gender, ethnic status, and prior online course experience. The interviews centered around students' sense of community in their online learning experience. Semi-structured interviews focusing on the experiences and perceptions related to students' online learning, particularly those factors that contributed to the formation of a community in their current online courses, were conducted. Transcripts of the 18 interviews were coded and organized into larger thematic areas. Quotations included in the next section are presented verbatim, with the occasional excision of verbal fillers, such as 'um' or 'you know' when they did not add meaning. At the heart of qualitative data analysis was the task of discovering themes. These themes stemmed from the research, theoretical foundations, and personal experience with the subject matter (Bulmer, 1979; Maxwell, 1996; Strauss, 1987). Data analyzed in this study was based in grounded theory. Through data sorting, the researcher identified patterns directly from the data; the constant comparison method was used to group key themes within the data (Creswell & Plano-Clark, 2007; Strauss & Corbin, 1998). Using what grounded theorists label as open coding, and what classic content analysts call qualitative analysis (Berelson, 1952), several subthemes emerged under the main themes that identified factors that lead to a sense of community and that are deemed crucial for community to develop.

Discussion Forums. Asynchronous, text-based communication, via emails, threaded discussions, chats, Facebook postings, or bulletin boards, were coded and logged for the purpose of detecting emerging themes. In the eight observed classes, online discussions were obligatory and counted for a percentage of the class grade.

These discussions were, for the most part, closed discussions in that they were related to course material and were directed by either the professor or a discussion leader. In some of the courses, learners were expected to complete certain tasks on an individual or group basis and post their task results for their classmates to discuss. Some instructors used the online discussion task to foster content comprehension through an exchange of perspectives and dialogue, some used it to enable collaborative group work, while others used it as a medium for peer teaching. Two of the eight observed courses used the online discussion Forums in NESULearn to provide information on major assignments and at the beginning of the term to present the course syllabus. Others used the text chat in Zoom or the text chat in OpenQwaq for answering questions and presenting major projects. Otherwise, threaded-discussion forums were the predominant communication tools supporting the online discussions. Facebook was used as the discussion forum tool in four of the eight online courses observed. The remaining two used NESULearn, the University's learning management system based on Moodle, while the last two courses did not use any discussion forum but had their students record discussions in Google Hangouts on Air.

Interest and analysis of forum transcripts was focused on how online discussions can lead to the building of an online community. In analyzing the data, the factors that were identified as contributing to community building, in both literature review and in my findings and observations, were used to identify and classify threads based on replies to existing threads; the number of posts and replies by the instructor versus students; the number of replies that reflected a change from the original posting; and the number of replies that were a synthesis of information or a construction of new

knowledge as a result of the discussion. Instructors used Facebook in four of the courses observed, the NESULearn Moodle asynchronous discussion forum in two others, and Google Hangouts on Air (video recorded sessions) in the remaining two. Most discussions were learner-learner based with a specific topic that was either posted by the instructor or a lead student as the guiding post. When instructors posted, it was generally aimed at the whole class as a means to clarify a point or begin a thread of discussion.

Transcripts from the asynchronous discussions were analyzed, through the constant comparative method, to highlight individual learner experiences and perspectives (Charmaz, 2006; Creswell & Plano-Clark, 2007). With constant comparative processes, researchers compare data from one collected/identified set to another (Charmaz, 2006; Creswell & Plano-Clark, 2007). For the purpose of this study, collected data from one student's comments or postings to a specific prompt is thematized and written down and then compared with data of subsequent students' thematized comments. Data was then compared thematically on an ongoing basis with what had already been analyzed. These themes were then grouped into more general, or broader, categories or themes. From the themes, patterns emerged to form a working theory that proposed an explanation of the types of interactive communications that support the development of an online community. Once the data set was completed for each class, it was then compared with that of the other courses, thus creating not only a single but a cross-case analysis of the adult learners' online experience.

Course Documents and Class Observations. Instructional materials from the sampled courses, including course syllabi, assignment handouts, and class-wide emails, were collected for the researcher to obtain knowledge about the contexts and parameters of students' learning experience. Whenever possible, observation of the online environment, both synchronous and asynchronous, was archived. Analysis of these environments was centered on the interactions between faculty and students, and students with students as well as students and content. When data from the synchronous sessions were recorded, transcripts of the videos were analyzed and coded for emerging themes, while frequencies of engagement were noted and compared to determine the incidents and activities that could lead to a sense of community. Specifically, verbal behavior and interactions, such as the following, were recorded in field notes: who speaks to whom and for how long; who initiates the interaction; what is the tone of voice; how long the interaction lasts and the depth of exchange; who is not interacting; who is setting the tone for the interaction; and words that are most used in the exchanges (See Appendix E) as well as those that will be kept in a locked cabinet for a year. These field notes include accounts of the events observed, the way in which participants in the online environment behaved and reacted to different events and activities, and comments made in conversation as well as any personal subjective responses and reflections. Once field notes were completed and expanded, recurring themes were identified and referred to the research question to determine what information these records reveal in terms of data for this study.

Validity and Trustworthiness

For this study, Creswell's (2013) approach to validity and reliability in qualitative research will be applied. Validity in a qualitative study refers to the accuracy of the inferences drawn from the data (Denzin, 1989). Being aware of the limitations of this study, in order to increase both the internal and external validity, multiple sources of data triangulation were employed. In an effort to gain a holistic understanding of the dynamics of and learner sense of community, a mixed methods approach was used. In addition to online pre- and post-course course surveys, students from each of the eight observed classes, offered in the Master of Arts in Educational Media during the 2016 summer sessions, were invited to participate in in-depth interviews to share first-hand accounts of their experiences with interactions and their sense of community. In addition, students' questions and responses, teachers' input, guidelines, and feedback, peer-to-peer feedback, and synchronous meetings were analyzed for patterns in order to describe the online learning environment as accurately as possible, while observing and reflecting on what took place. The data sources examined yielded multiple opportunities to validate the accuracy of the themes and patterns, minimizing the threat of introducing random errors or contributing results to a confounding variable, while providing a broader and deeper range of immediate experiences, thus adding value to the body of knowledge by forming a solid foundation for future inductive or empirical studies.

Role of the Researcher and Ethical Considerations

In qualitative research, personal views play a role in the interpretation of the data (Creswell & Plano-Clark, 2007). Glesne (2011) summarizes the ways in which

subjectivity interacts with the research project in differing ways. She draws on Peshkin's definition that subjectivity refers to "autobiographical, emotional states that were engaged by different research situations" (as cited in Glesne, 2011, p. 152). A qualitative researcher therefore needs to weigh the impact of such subjective stances. As an instructor who uses technology and a student who has learned from a number of instructional designs and digital tools, I am influenced by my own personal experiences. Aware of these potential biases, I considered them as I extracted meaning from the data I collected. Like many who choose a qualitative research model, I had preconceived notions along with strong beliefs and feelings about the topic I studied. As the researcher of this study, I carry the primary responsibility of establishing a safe environment for the participants to share and interact.

Confidentiality was maintained by assigning each participant a pseudonym to be used instead of his or her name. Each participant was informed of the research, given an opportunity to opt out, and could have dropped out of the study at any time without it interfering or influencing their course participation. All recorded notes, digital and written, were stored in a locked file cabinet in the office and will be housed there for one year.

This research design brought forth multiple ethical considerations. Some of them were true of any qualitative research design, and as such I took the steps described above to protect the rights and privacy of my participants. Others, such as the impact of a specific course design on interaction and on feelings of a sense of community, will have to be handled with great care so as to not reveal the identity of the course or the instructor discussed.

Limitations of this Study

Due to the extensive contact that a qualitative researcher has with the setting of the study and the participants, efforts must be made to address bias, reliability, and validity (McMillan & Schumacher, 2006; Merriam, 1998). While such precautions were taken, a number of factors persisted that may present potential limitations to this study: the time of year the research was conducted, the size of the sample used, the physical distance between the learners and the researcher, and the inability to limit confounding variables.

This study took place during the summer semester, when students attend full semester courses in a shorter period, thus reducing their availability to respond to surveys or be interviewed. Furthermore, the participants were either full-time teachers or librarians living in different regions; therefore, all interactions with the researcher, their instructor, and their peers were exclusively online. Moreover, insights gleaned were drawn from a homogeneous group of students in the same mid-size rural university and may therefore not be applicable to the entire population of online learners, and although this study can be replicated, the differences in the teaching methods, instructors, and students' characters would alter the results.

Implications of the Study

This study will contribute to scholarship on online teaching. By identifying those activities and types of interactions that are likely to create meaningful connections and help students feel connected and engaged in their online courses, this study will perhaps provide online instructors with elements to consider when they design activities for an online environment. Another implication of this study is the emphasis

on the role that students play in building a sense of community. Because this research is grounded in a constructivist worldview, it does not claim the existence of a single truth, but rather that all truth is relative and constructed by the individual or society. As such, the findings of this study are based on the premise that multiple perspectives and interpretations exist for any one given experience and it is the significance of the experience to the participants that constitutes reality (McMillan, 2000).

Summary of the Chapter

This chapter described the methodology of the study and outlined the reasons for using qualitative research and grounded theory for data analysis. Characteristics of the study, which included the research question, a description of the participants, data collection procedures, and the data analysis process were also outlined.

The purpose of this naturalistic case study was to investigate which activities and behaviors contributed to the formation of an online community in a higher education graduate program. A design utilizing case study and grounded theory was used to defined emergent themes from the collected data. Methodological triangulation assured the validity of research results through the use of a variety of research methods and approaches. In so doing, the research attempted to overcome the weakness and bias that can arise from the use of only one method, such as interviews or observation. The introductory chapter outlined the issues faced by higher education institutions today. The chapter on literature review provided a description of relevant works and findings associated with creating a successful online learning environment. This chapter described the methodology procedures that were used to explore the online

environment and presented the research question, the participants, data collection and analysis procedures. The next chapter will discuss the results of this study.

CHAPTER FOUR

Results

Introduction

The overarching purpose of this study was to investigate specific factors that contributed to the formation of a community in eight graduate online courses that were offered during the summer in the Master of Arts in Educational Media Program at a mid-size rural university. Researchers agree that community plays a crucial role in engaging learners and contributing to deeper learning (Ritter, Polnick, Fin, & Oescher, 2010; Rovai & Downey, 2010; Rovai et al., 2005); therefore, investigating how learners actively gather, collaborate, and construct knowledge is of great interest.

Through the use of a qualitative naturalistic case design, this study considered the many factors that can impede or contribute to the formation of a community in an online environment. Methodological triangulation in this study allowed for the collection of both qualitative and quantitative data from both primary and secondary sources. Quantitative analysis of the data, when possible, was performed using SPSS v. 23.0 (IBM Corp, 2015) to provide support and further understand the qualitative. Research in this study is guided by the following research question: "How do learning environments, interactions, and activities contribute to building and fostering online communities?"

This question, along with the scholarship and literature review on online learning and student perceptions of online communities, directed both the qualitative and quantitative data collection and analysis. As the purpose of this study is exploratory - in that I wished to understand more thoroughly community building in an online

teaching environment - social constructivism was used as a framework for understanding and interpreting the experiences and perceptions of the research participants. Analysis of Variance (ANOVA) and t-test analysis were used to explore and to report the different results where possible. This section includes both the quantitative and qualitative findings from the surveys, interviews, online discussions, class recordings, and researcher observations. All participants have been given pseudonyms.

In this study, I discovered four major findings. While the first three findings I intentionally set out to investigate, the fourth finding about gender became evident through the survey analysis, interviewees' comments, and my own observations.

Finding One: Learning environments impacted the development of online community. Community building was found to be influenced by the way a teacher interacted with the students, the design of the online course, and the selection and integration of the online tools. While some of the observed conditions, situations, and interviewee comments revealed instances of how a sense of community was being promoted, others pointed to a hindrance and lack of community.

Introduction activities – especially those that incorporated video, collaborative projects, peer reviews, synchronous meetings, guided discussions, and instructor interactions – were all instances when sense of community was perceived. In two out of the eight courses observed, the first session of class was devoted to students introducing themselves to each other. One was a synchronous session on Zoom and the other was an asynchronous activity using Padlet, a virtual bulletin board where students were asked to post a video talking about themselves and where the instructors

modeled the activity by having a video of themselves. The introduction activities were mentioned by three of the interviewed participants as positively impacting their feelings of connection with their classmates. As one interviewee remarked, "I liked seeing my classmate's introduction videos. Sometimes personal connections are lacking but technologies now can overcome that" (Maddie, personal communication, July 26, 2016). When instructors entered into a conversation with the students, even by sharing a bit about themselves, students felt more comfortable interacting. As one participant stated, "I like it when professors share a bit about themselves or when they make videos for us to watch and study. It helps me gauge what their expectations are and adds value to the learning experience" (Latecia, personal communication, July 25, 2016). Introductions and instructors' interactions, both with the use of video technologies, seem to have contributed to the participants' greater interactions and feelings of connection.

Aside from introductory activities, when students were asked to work collaboratively on specific tasks, greater interaction in that class occurred as a result. As this program used to be a cohort, most students knew each other from previous courses. However, those few new students who had just begun the program commented how much better they felt in classes where teachers assigned group work. As Lexis commented to me, "In my other class, we had no group work so I felt lost and I didn't know who to go to, to ask. If we had had at least a first meeting where we could socialize and know who is who in the class, and if the teacher would insist on putting the video on so we can see one another, then I wouldn't have felt so lost. You need to build trust before you can admit you don't know" (Lexis, personal communication, July

20, 2016). Another participant talked about his appreciation of instructors who take time to set up groups at the beginning of a course. “I like it when professors set up groups at the beginning of the term. I get accountability buddies” (Ed, personal communication, July 27, 2016). Danny echoes this sentiment by adding, “[It’s] hard to jump in as an adult to develop relationships, but if we have a specific task to complete it helps” (Danny, personal communication, June 30, 2016). At times, participants who have been in previous classes together work only with those students they know and have worked with previously; however, this does not benefit students new to the program who don’t know anyone and who try to join existing groups. By setting up groups, instructors thus ensure that everyone is part of a group and no one feels alienated or alone.

In some classes, instructors used social media or videoconferencing platforms for students to display their work and for their peers to critique it and provide feedback. Students’ feedback to their classmates’ work were all positive, using adjectives such as “Great presentation, excellent presentation, enjoyed your presentation, wonderful, etc.” (classroom observations, Summer, 2016). These type of comments were well received by the online learners and were the incentives for new relationships. As one participant told me after viewing her classmates’ work, “I’m becoming friends with Latecia because after I saw her project, we connected, and she now shows me how to use different tools” (Zoe, personal communication, July 28, 2016).

Whole class synchronous meetings, in either Zoom or OpenQwaq, were, for the most part, also perceived positively by the participants in this study, with the exception of a few who experienced some glitches with the technology. Students commented on

those instances when class was held synchronously stating that "it felt as if we were in the same room" (Lori, personal communication, July 9, 2016) or John, who felt there was "more interaction," when classes were held in OpenQwaq and later added, "It is easier to interact when we are not just writing text" (John, personal communication, July 27, 2016). Teresa's comment supports this view. She felt that "synchronous regular meetings are just like being in a classroom" (Teresa, personal communication, July 27, 2016). When students were observed in Google Hangouts where they met to conduct either their assigned discussions or plan a group project, commitment to collaborate is evident. Students listen to one another and mutual respect is evident and practiced. Zoe, an interviewee, shared the following with me, "I had to learn to listen when I started online courses. It was very different from taking courses in person" (Zoe, personal communication, July 28, 2016). Synchronous meetings where students were given an opportunity to share their projects with their peers and instructor were also viewed favorably. Observations of these recorded sessions revealed that students liked hearing about their peers' projects and often shared resources and tips when classmates showed interest. Overall, synchronous meetings were viewed favorably, except when the technology failed to work and participants were unable to connect or remain connected.

Whether asynchronous discussions were initiated by a teacher prompt or by student moderators, they fostered activity and interaction. Students responded with reflection and sometimes expanded on their peer's contributions. On average, there were two to three responses to each posting. In classes where Google Hangouts on Air was used to record discussions, observations of these discussions showed students who

had prepared extensively, in some cases, to moderate their group's discussions. As Joan explained to me during the interview, "Google Hangouts makes it easy to collaborate… Giving us a specific task keeps us on track and keeps us connected regularly" (Joan, personal communication, July 26, 2016). Margaret added, "Last time we had our discussion on Hangouts, we just talked about our experiences in the program and even though we didn't have to stay and share, we stayed online but we stopped the recording" (Margaret, personal communication, July 22, 2016). Margaret did add that it was difficult to "talk casual when we know the teacher is going to listen to the recording." (Margaret, personal communication, July 22, 2016). This is an interesting comment for two reasons: It raises an obvious conundrum between what is considered best practice in managing and evaluating online discussion, while retaining the authenticity of the interaction, and points to the importance of 'social talk' for establishing a sense of online community and for learning or knowledge construction to take place.

Finding Two: Shared experiences and common goals contributed to a sense of community. Interview responses, survey results, and observations all revealed that the participants in this online program recognized their shared purpose and values. As one student pointed out, "We all have the same goal so it helps and we can support one another. Talking about the program makes us feel like accomplices. We all want to finish together" (Lori, personal communication, July 9, 2016), she said as she discussed the types of interactions that she experiences with her classmates. Zoe adds to this sentiment when she expresses her contentment with the program and says, "We all want to do this degree so that motivates us" (Zoe, personal communication, July 28,

2016). The observations and interviews revealed that engagements and social relations in the online courses were based in the professional rather than the affective or social realm as most related this support back to either their jobs and field of work or their coursework and field of study. Mandy, for example, stated that "the online environment gives me the support I need. I can rely on my classmates to keep me accountable" (Mandy, personal communication, June 23, 2016), while John answered "If I miss a class, I know they will tell me everything and I would do the same for them" (John, personal communication, July 27, 2016). These comments attest to the presence of a community that supports and collaborates together toward the goal of completion of course study. The findings also attest to the focus of these interactions as being professional and not personal. As Danny pointed out to me in his interview, "We are not friends, [we are a] professional network of people, but not friends" (Danny, personal communication, June 30, 2016).

Shared experience and common goals that lead to the birthing of an online community were not always built on knowing classmates, ease with technology, or the motivation for graduation or course completion. Confusion and chaos were also the impetus for creating a sense of online community. Students' frustrations with tools or lack of instructor guidance, as well as personal frustrations in their workplace, led to strong feelings of connectedness and the forming of alliance. In one course, learners were assigned to a group and given an opportunity to collaborate and solve a fictitious problem. The 3D virtual world was used and each group of students was assigned a different 'room' - one of the strength of this medium. Not sure of what to do and how to begin the task, some learners went to see their classmates in other 'rooms' and asked

questions while others chatted as they waited for the instructor to arrive and explain what they were required to do. Following this activity, students had an opportunity to reflect as a class. Because many were 'kicked out' of the session, in that the connection dropped for them and they could not get back on and participate or they could sign on but were unable to hear one another so the sessions were not recorded, the in-depth learning and reflection were not evidenced. However, the levels of frustration and vagueness did bring the participants together into meaningful interaction albeit on their experience with the course and the program as a whole as witnessed by this conversation:

Mandy: So what are we supposed to do?

Lori: I don't know, do you?

Joan: I think we're supposed to read these and then try to solve the problems

Mandy: Oh, ok, I'll read them out loud for you guys

A few minutes later…

Lori: I still don't understand

Joan: Yeah, me neither

Mandy: Ok, should we wait for the professor?

Lori: Yeah. Have you used OpenQwaq before?

Joan: I have.

Mandy: Not me. I don't like it. It is strange and confusing.

Joan: I used it in another class. We had a gallery walk where we got to see everyone's work and that was cool. It was different and worked fine that day.

Mandy: How many courses have you taken already?

> Joan: I'm almost finished. Two semesters to go (Mandy, Lori, and Joan, course observations, June 7, 2016)

The conversation continued around the theme of the program and course of study, different teachers, and likes and dislikes. This exchange between three students who did not know one another but who were communicating shows that although they were communicating primarily about the predicament they were in, there was communication taking place. In another course, when this same activity was used, even though the students were in separate spaces or in separate 'rooms,' questions and comments were made using the chat function with very few students actually interacting vocally or physically. Although 3D worlds have great potential for creating collaborative small-group activities, in some cases the technological glitches prevented this from taking place; however, the glitches also contributed to students banding together to try to help each other and accomplish the assigned task.

Personal contributions of frustrations at work were also an impetus for creating a sense of an online community. Rather than writing the minimum required responses as students often did for discussions, when the students shared personal information about work, especially stories of frustration, more people tended to respond to those postings and the responses were personal in nature. Following is one example of such an exchange from my observations. Parts of the conversation which could identify either the participant or the organization they are referring to have been removed.

> Carol: My administration doesn't communicate or plan technology integration.
>
> Too often, we are creatures of reaction rather than action. If administrators took

> a more active role in communicating the positive impact of technology, integration would have increased success (Carol, online posting, July 28, 2016).
>
> Joan: I can echo that administration sets the tone for level of use. It's frustrating when that expectation is not consistent across a district and you have no guidance (Joan, online posting, July 28, 2016).
>
> Karen: I totally agree. I also found that our leaders don't take a large role in thinking through how we will implement these changes. How can we, as tech facilitators, voice this to our administration? (Karen, online posting, July 29, 2016)
>
> Carol: I struggle with that question too (Carol, online posting, July 29, 2016).
>
> Joan: Excellent question, Carol and Karen. I think modeling the correct manner of integration and teaching administrators what is involved in integrating technology would go a long way (Joan, online posting, July 29, 2016).

On average, there were two to three responses to each posting – as required in the syllabus. However, when comments dealt with frustration with either administration or work-related examples, the response rate would double. Upon close inspection of the forum data, examples such as the above were in every course. This finding exemplifies how online community is developed through the sharing of frustration or confusion. The communication is still primarily about the course, but it is nevertheless a community, one that becomes more vibrant as the postings on Facebook or NESULearn or Google Hangouts increase in number and length each time. This also occurred in classes where instructors offered a less structured course design. In some of the online courses, instructors required that students explore different tools and

determine which would best serve their needs to complete an assignment; however, this free choice activity overwhelmed many of the students and created uncertainty about the assignment and how to complete it. Chris, for example, shared feelings of confusion stating that he felt, especially considering this is a summer session, that there were "Too many tools in too little time. I don't know where to look!" (Chris, personal communication, July 14, 2016). This was also felt by Lexis, who was interviewed about a different course. She had this to say: "[I'm] not sure where to look for what and there are too many different places to check for each class. Why not use one platform, one place?" (Lexis, personal communication, July 20, 2016). Other participants commented that such an assignment was too open and made them feel lost (Mandy, personal communication, June 23, 2016; Latecia, personal communication, July 25, 2016). Choices and an active role in choosing an appropriate tool were not viewed as positive incentives to modify or personalize the learning environment and often led to confusion for many of the participants. However, the confusion became an incentive to create community as students attempted to help each other to clarify the assignment and determine the best tool to use for their coursework.

Finding Three: Students viewed online collaboration and activities as products which inadvertently served to build community. Motivation and collaboration rested on the fact that all the students wanted the same thing: to successfully complete the course and/or program. Students viewed everything as products, and were generally concerned with 1) what does this teacher want and 2) what are we supposed to do? Although collaboration and motivation were evident in these interactions, students' engagement was always in the form of agreement or

acknowledgement and never in argument or disagreement, which resulted in more of an exchange of information instead of a synthesizing and construction of new knowledge. Joan's views on the collaboration and motivation of group work is summarized in this sentence when she says, "We all have the same motivation in our group; I mean we all want to get a good grade. This is always a guaranteed incentive" (Joan, personal communication, July 26, 2016). Martin, another interviewee, adds, "Forced weekly meetings do not form community. You do it because you have to do it (it referring to meeting online in groups)." (Martin, personal communication, July 21, 2016).

This was also evident in the depth and number of responses in online discussions. Whether it was online discussion forums in NESULearn or Facebook, students responded the required amount when guidelines and prompts were clear; however, when a discussion was open without parameters, or did not count toward their grade, very few threads developed. Danny felt that engaging in conversation in discussion forums is limiting and "not really creative" (Danny, personal communication, June 30th, 2016). Lori adds to these sentiments when she says, "Personally, I'm not a fan of Facebook. I think it is just post, read, respond. I respond because I have to respond" (Lori, personal communication, July 9, 2016). This is supported by observations of students discussing specific topics as assigned by the instructor, either synchronously or asynchronously, and by the comments students revealed during interviews which stated that they did not feel sufficiently comfortable to really engage with the content and one another in either recorded sessions or discussion forums. Students posted to obtain the grade. When asked during the interviews about

discussions and how these contributed to their sense of community, interviewees professed that hearing classmates' perspectives is where they learn the most, but that often there isn't enough time to really get into discussions. Sandra shared the following when asked about discussions, "Opinions and feedback from classmates motivate me, but we don't really do that enough except when we are with the same students in different classes. It makes it easier" (Sandra, personal communication, July 27, 2016). Even an instructor's use of the synchronous meeting times validated the notion that the successful completion of this course and the grade were important. When instructors did meet synchronously with students, it was always with the goal to either explain an assignment, clarify a task, or answer questions about a project. Discussions and explorations of different viewpoints were not observed during these synchronous sessions. What was revealed from the observations and interview comments is that students' motivation is about the grade and/or the successful completion of the program.

Finding Four: Age and experience with online courses did not impact students' perceptions; however, gender did make a significant difference in their perceived sense of online community. A one-way ANOVA was conducted to compare students' perceptions of online learning and sense of community with their age group and number of previously taken online courses as research studies have shown that these two factors can impact a student's perception of online community. In this study, neither factors seemed to play a role in students' perceptions. ANOVA results revealed no significant differences based on age and students' perceptions of online learning and

sense of community at either the affective, social, or design subscale. Table 6 provides a report of the results.

Table 6

ANOVA Based on Age Groups and the Three subscales

		Sum of Squares	*df*	Mean Square	*F*	Sig.
Affective	Within groups	1.766	2	.883	1.813	.17
	Between groups	23.379	48	.487		
	Total	25.145	50			
Social	Within groups	0.207	2	.103	.372	70
	Between groups	13.344	48	.278		
	Total	13.551	50			
Design	Within groups	1.046	2	.523	1.398	.26
	Between groups	17.967	48	.374		
	Total	19.013	50			

Studies have indicated that older students are likely to have a lower sense of community in an online environment, enjoy the online platform less, and often drop out (Xu & Smith-Jaggars, 2014); however, my participants' perceptions did not appear to change significantly based on their age group. Studies have also found that experience with online learning is a contributing factor to higher sense of community. Consequently, a one-way ANOVA was also conducted to compare students' perceptions of online learning and sense of community with the number of previously taken online courses. Again, no significant effect was discovered in this data for any of the subscales. Table 7 is an illustration of these results.

Table 7

ANOVA Based on Previously Taken Courses and The Three Subscales

		Sum of Squares	*df*	Mean Square	*F*	Sig.
Affective	Within groups	1.105	2	.533	1.104	.34
	Between groups	24.040	48	.501		
	Total	25.145	50			
Social	Within groups	0.682	502	.341	1.273	.29
	Between groups	12.869	48	.268		
	Total	13.551				
Design	Within groups	1.876	2	.938	2.627	.08
	Between groups	17.137	48	.357		
	Total	19.013	50			

Based on this one-way ANOVA, experience with online environments did not affect students' perceptions of either online learning or sense of community. There were, however, two items from within the design scale that did show significant differences in relation to the number of courses previously taken online. These items are Ease of Navigation and Facility with Online Tools. Table 8 illustrates these numbers.

Table 8

Items with Significant Differences Based on Previous Courses

	$\bar{X}$1-3	$\bar{X}$4-5	$\bar{X}$6+	Sig.
Ease of Navigation	3.64	4.10	4.53	.006
Facility with Online Tools	3.45	3.80	4.43	.000

Contrary to the subscale results, these two individual items revealed a connection between the number of online courses previously taken and the perceptions toward navigation within the online environment and facility of the online tools. These results

reveal an increase in perception toward online learning and sense of community: as the number of online courses previously taken increases, the perception of easy navigation increases as well. The same effect is observed about the online tools. The perception that they are easy to use went up as the number of courses previously taken increased. These results are also found in literature on online learning research (Burns, 2013; Palmer & Holt, 2009), in which studies reveal that repeated exposure and involvement in an online environment are likely to increase perceptions of ease and online navigation.

A third factor that has been found to affect participant perception of the online learning environment is gender of participants. Although age and number of online courses previously taken did not reveal a significant difference, based on the results of the t test, females' survey responses indicate a significant mean difference in their affective, social, and design perceptions than the male online students. Results indicate that female students tend to have higher scores on the affective, social, and design subscales than do male students. Table 9 shows these results.

Table 9

t Test, Gender, and Perceptions of Online Learning and Community

	Sex						95% Confidence Interval of Differences			
	Male			Female			Mean			
	M	*SD*	*n*	*M*	*SD*	*n*	Diff.	*t*	*df*	sig
Affective	3.27	.813	15	3.87	.588	36	.60000	2.959	49	.005
Social	3.67	.542	15	4.08	.469	36	.40617	2.693	49	.010
Design	3.68	.696	15	4.23	.509	36	.54778	3.135	49	.003

This finding is supported in literature as well as in the interviews I conducted. The female interviewees, in one way or another and with no exception, all identified feeling connected to others online as an important component in their online learning experience. As Teresa shared with me, “Synchronous regular meetings are important for me. It’s just like being in a classroom. I like being with the others and with Facebook, I build friendships with people I would not have met otherwise. These connections are anchoring” (Teresa, personal communication, July 27, 2016). On the other hand, though two male interviewees felt that community was somewhat important, most of the male students interviewed did not feel a need for any connection beyond what was required to complete coursework. One male interviewee stated, “Different students, same as in life, different outcomes: Some speak too much, others not much. To me, it doesn’t matter. I’m not looking for friends, just peers” (Chris, personal communication, July 14, 2016). Another comment made by Danny refers to online collaboration as “helpful to complete a task and serves as a professional network” (Danny, personal communication, June 30, 2016). One of the men who showed appreciation for a community online stated, “I’m aware of my personal accent but slowly I’m beginning to trust classmates. Social relationships make me feel less isolated and confused and overwhelmed” (Donald, personal communication, July 11, 2016). John adds to this sentiment when he says, “Knowing my classmates, I never feel left out” (John, personal communication, July 27, 2016). Comments such as these, along with the observations and statistical analysis, provide compelling evidence that females perceive having a community in an online course as more important than their counterpart male students.

Summary of the Chapter

This study focused on identifying the learning environments, interactions, and activities that give students a sense of community in an online course. Data collection consisted of both qualitative and quantitative analysis and included interview transcriptions, participant observations of the online course environment and student interactions, survey responses and statistical analysis. These four findings emerged from the analyses:

1. Learning environments impacted the development of online community.
2. Shared experiences and common goals contributed to a sense of community.
3. Students viewed online collaboration and activities as products which inadvertently served to build community.
4. Age and experience with online courses did not impact students' perceptions; however, gender did make a significant difference in their perceived sense of online community.

Based on the findings of this study, there are some interactions, activities, and platforms that promote a sense of community while others inhibit it. Introductory activities, collaborative projects, peer reviews, synchronous meetings, guided discussions, a shared vision, and gender are some of the conditions and events that were identified as factors that contributed to a sense of community through my observations, interview transcripts, as well as survey analysis. As sense of community has been found to contribute to the overall success of online learners, these findings can serve as a guideline for instructors who teach online. The next chapter will discuss these findings and provide connections to the literature.

CHAPTER FIVE

Findings & Conclusions

The purpose of this study was to investigate students' perceptions of community before and after completing a summer online course in the Master of Educational Media Program at a mid-size American college. Qualitative data acquired through observations, discussion boards, class recordings, social media postings, and interviews was used to answer the research question. In addition, the use of quantitative data from online surveys proved useful in providing additional support for the qualitative results, enabling the researcher to triangulate data and discuss results in more depth. My research question was "How do learning environments, interactions, and activities contribute to building and fostering online communities?" The interplay and relationship between these three variables were analyzed and guided the research design and analysis. This chapter is organized into four sections: 1) discussions of the findings 2) limitations, 3) recommendations for future research, and 4) conclusions.

Discussions of Findings

Data analysis for this study revealed the following four major findings about the learning environments, interactions, and activities in an online course:

1. Learning environments impacted the development of online community.
2. Interactions that built a sense of community were cultivated in shared experiences and common goals.
3. Students viewed online collaboration and activities as products which inadvertently served to build community.

4. Age and experience with online courses did not impact students' perceptions; however, gender did make a significant difference in their perceived sense of online community.

Finding One: Learning environments impacted the development of online community. As was defined in Chapter One, learning environments refer to course design, learning spaces, e.g. course management systems, video conferencing tools, and social media, as well as Internet technologies used for communication, collaboration, connection, and interaction in and outside of the online course. In this study, course design, activities, and interactions impacted students' sense of community.

Some activities contributed to that sense of community, such as allotting time for students to get to know one another and interact socially, or allocating time for students to express how class content relates to their personal or professional experiences. These events contributed to the building of connectedness and shared learning. I found that students not only made connections between themselves and the content in those instances, they also gained insights from each other's experiences and mistakes. For instance, taking time at the beginning of an online class to have students introduce themselves was found by Gallagher-Lepak et al. (2009) and Stepich and Ertmer (2003) to allow students the opportunity to establish commonalities upon which they can build for the rest of the semester. This study supports this idea. In those courses where students were given an opportunity to get to know one another during the first class, they quickly learned they were not alone and that they were having a shared experience with peers who happened to be in a different geographical location.

Interviewees' comments support this finding, and observations of the courses where introductions were used showed a greater increase in interaction among students.

Cercone's (2008) characteristic of social interaction and collaboration was observed in this study and, as noted above, positively impacted participants' perceived sense of community. However, the remaining four characteristics outlined by Cercone (2008) – immediacy in application, climate of self-reflection, self-regulated learning, and connecting new knowledge to past experience – were not as discernible. For example, the absence of connecting new knowledge to past experience may have been why one interviewee expressed frustration and feeling lost and confused as a result of the teacher's open attitude toward the assigned task. "This online teacher in particular gives no parameters, and so I feel lost. I know others feel lost too, so we talk together and try to figure out what the instructor wants," shares Mandy (Mandy, personal communication, June 23, 2016). The instructor may have wanted to apply self-regulated learning however; the gap between the new knowledge and past knowledge could have contributed to the confusion and may have even resulted in cognitive dissonance, a thought worth considering for further investigation.

Regardless, the learning environment, with its prescribed activities and tools, transformed the students into passive recipients in this learning setting instead of active learners that constructivist teaching promotes. Students performed the tasks, engaged with the content and their fellow classmates, and used the tools as prescribed by their instructors without truly engaging and interacting at the level that leads to critical thinking and construction of new knowledge.

Finding Two: Interactions that built a sense of community were cultivated in shared experiences and common goals. Through this study, I found that student-student interactions were the impetus for building an online community. Participants in these online courses needed to be able to trust and feel secure about the other members in the course in order to engage and offer constructive comments. This program was based in a cohort model until very recently, which may explain the initial trust and comfort that promoted the sharing of personal information and the openness of the conversations that were taking place online. Consequently, interactions that focused on personal challenges resulting from confusion, frustration, and/or personal connections built on that initial trust to create a sense of belonging and to build an online community. Student participants indicated that they appreciated online courses where they had peers from previous classes as it was easier to collaborate and connect. It was in those spaces that they felt they could openly discuss and learn together as Margaret, one of the interviewees pointed out: "To learn we need to feel confident and trust the environment so that we can think critically and thoroughly" (Margaret, personal communication, July 22, 2016). There were no comments that provided suggestions for improvements, questions that invited self-reflection, or feedback that could have led to higher interactive learner engagement and critical thinking. This points to the lack of a strong resilient online community which, research tells us, is an essential component before any kind of constructive criticism can be made or deeper learning can take place (Brown, 2001; Rovai, 2001, 2002).

Finding Three: Students viewed online collaboration and activities as products which inadvertently served to build community. Research on adult

learners and online learning confirms that what matters to adult learners is interactive learning approaches that give them control over how and what to learn. Adults learn from interactions with others in personalized structures, and through authentic tasks that are meaningful to their lives and personal goals (Booth, 2012; Brookfield, 2006; Knowles et al., 1998; Snyder, 2009). Yet, I found that almost every task and every interaction in the observed eight courses was grade-driven or had successful course completion as its main focus, whether I was observing a synchronous online session between students and instructors or whether it was students discussing an article or commenting on each other's work. Even the motivation, as was evidenced by the findings, was based on grades in the course and eventually on successfully graduating from the program. Interviewees also confirmed the importance of grades when they offered comments such as this one: "Group us in ways where we can help one another and complete the work" (Martin, personal communication, July 21, 2016), or this comment made by Mandy, who appreciated working in groups online because "my group members keep me accountable" (Mandy, personal communication, June 23, 2016).

When asked about their reasons for pursuing this degree or doing the collaborative work, or their feelings about their peers, comments often came back to the one core motivation: successfully completing the course or the program. Successful completion of coursework is, of course, an important goal, as was evident in the interviewees' responses, such as Sandra's comment that "We all want the same thing, a good grade and to finish this certificate" (Sandra, personal communication, July 27, 2016). This was also evident in the observed discussions. Students were asking each other what the teacher wanted exactly and how to divide the workload. When the

students met with the instructor as a whole class, synchronous sessions focused on what the students needed to do to get their coursework successfully completed. It would have been of greater benefit if students had been given opportunities – as a whole class – to discuss some of the issues, to contribute to the learning, and to engage with one another by sharing their own experiences. These steps would have created a learner-centered environment that is proven to work for adult learners, who bring with them a wealth of experience and tend to be motivated by authentic, problem-centered learning (Knowles et al., 1998; Snyder, 2009). However, the types of exchanges shown by participants align with the types of exchanges revealed in Hrastinski's study, with social support, planning of tasks, and content-related questions as the emphasis of these exchanges (Hrastinski, 2009); the focus shifts to task completion and final product as the desired goal.

What was also evident from this finding is that students need to connect to identified common elements (in this case completion of program or task) to create a sense of community. As a cohort, they already had a focus: begin the program together and successfully complete it together. For those who were not part of a cohort, their confusion and feelings of frustration brought them closer to their peers. They developed a rapport, which led to a connection that facilitated the building of a sense of online community. Cohorts, which are based on the importance of community in education, can be viewed as a community at a program level and can be equated to online learning communities, which may be viewed as communities at the course level. In passing, cohorts are sometimes referred to as intentional communities in literature;

an interesting point to consider would be whether online communities are the equivalent of digital cohorts.

Finding Four: While age and experience with online courses did not make a difference, gender made a difference in the perceived sense of online community. Previous research has shown that demographics and student characteristics such as age, gender, a student's experience with online learning, and reasons behind pursuing an online degree may impact a student's sense of community. In this study, contrary to the findings of studies by Cattan et al. (2005) and Yeh and Sing (2004) who examined the relationship between age and social isolation and found an increase in age results in increased levels of social isolation, age did not reveal a significant difference in a student's perception of the online learning environment or their sense of community, nor did experience with online courses. However, gender did make a significant difference – with females having a higher positive perception of the online learning environment and a greater sense of community. These differences, in regards to gender, have also been established in studies by Bostock and Lizhi, 2005, as well as Rovai and Baker, 2005. They found that females in their studies were less likely to feel socially isolated than males and tended to display a higher degree of satisfaction with online learning. These numbers reflect a recent trend to focus on research on online learning and gender. Whereas in the past, studies that investigated the impact of gender looked at computer attitude, ability, and/or use and reported differences that favor males with 30-50% of the studies, recent studies tend to look at social presence and a sense of community, thus favoring female respondents (Kay, 2009). Seventy-one percent of this study's population is female, a percentage that also reflects the university's program

demographics (McClannon, personal communication, September 29, 2016). Higher numbers of female participants will likely result in increased positive perceptions of online learning and a greater sense of community, which is important because high levels of satisfaction and a perceived sense of community are variables that have been identified as contributing to greater engagement (Young & Bruce, 2011), achievement (Harvey et al., 2007), and overall learner satisfaction with the online experience (Moore, 2014; Shackelford & Maxwell, 2012). Having a high percentage of the student population that is female may have been one of the contributing factors to the overall heightened sense of community in this study; however, confounding variables, such as the fact that almost all of the participants were teachers, could have affected this result as well.

Limitations of the Study

Interpretation of the results of this study may be limited in several ways. The sample was drawn from education students enrolled in a Master's degree granting program in Educational Media and may have a relatively high level of technology comfort, which may not be indicative of all adult learners in a higher education online course. Furthermore, this study took place in the summer, when courses are more compact and time can be a challenging factor for students and even the instructors, who may be juggling many duties in a very short time. In addition, most of the participants in this research were members of a cohort model, having had many previous opportunities to work and collaborate with their peers. This may have biased the perception of sense of community. Gender is the other variable that may have contributed to the high sense of community. Did having mostly female participants in

this study skew the results? What about the fact that most participants were teachers? This program attracts mostly teachers and/or instructional technology professionals (16 out of the 18 interviewed were teachers). Could that have played a role as well? This study set out to explore those key moments when a sense of community is fostered in a particular online graduate program at a particular time, and while it successfully identified those instances, it does not ascertain that its findings are generalizable to all online learners.

Addressing the Gaps

This study attempts to address some of the gaps in the research on building learning communities online. While many studies on sense of community are available, there are few that are current and that identify those learning environments, interactions, and activities that can guide instructional designers, administrators, teachers, and students on the best practices for building online communities. Although concepts such as common goals and values are identified as catalysts for a sense of community, no literature fully addresses frustration and confusion as an impetus, nor are there any current studies on the influence of cohorts on the sense of community online. This study identifies the meaningful learners' interactions with tools, peers, and instructors that contribute to the building of a sense of community in an online environment.

Lessons Learned

As a medium, online learning was accepted by the participants in this study for what it could offer them. Their participation and willingness to collaborate and build a community were based in practicality, more akin to a contract, and they perceived

community as a necessary relationship for the successful completion of coursework and/or program. If our wish is to truly promote a culture of community that fosters self-efficacy and builds on intrinsic motivation, instructors and university leaders must consider promoting environments that allow students and instructors to experiment and evolve, just as technology is always changing and evolving. This study revealed evidence that to entice an online learning environment to become an online learning community, trust and social interactivity must be promoted as well as a learning environment that facilitates and guides the learning. Guiding students from their first attempts at getting to know one another socially through introductory activities and synchronous sessions builds trust and connections. A teacher can then establish activities that facilitate discussions, encourage purposeful interactions, and promote reflection and knowledge construction. As one interviewee shared with me, "To learn we need to feel confident and trust the environment so that we can think critically and thoroughly" (Margaret, personal communication, July 22, 2016). Once trust and purpose have been established, collaborative projects that engage the students and ensure ongoing interactions can be assigned and as students collaborate on projects, an online learning community is birthed. This is the roadmap I would recommend for building and sustaining online learning communities, especially for those instructors who teach online and who are looking for ways to promote a sense of community.

Community is affected by a number of external factors that fall outside of an institution's purview, such as personal time constraints, learning styles, and personalities. However, it is also altered by factors that are within the control of an institution. Establishing cohort models that ensure students are part of a group that can

serve as their community from the start, promoting interactions that are social in nature and that encourage students getting to know one another at a personal level, and assigning activities that invite critical thinking and reflection are some of the ways that sense of community can be promoted.

What I have learned through this research process is that teaching and learning are complex processes that are influenced by so many factors, and that to contend that one approach or one pedagogy can bring about change is reducing a complex issue into simplistic thinking. Indeed, any recommendation for change faces the many intricate interdependencies within education as a system that is biological, ecological, political, economic, and social, all intertwined, overlapping and interdependent. As online learning is becoming the norm and not the exception, instructional designers, higher education administrators, and instructors need to apply emerging educational practices and web technologies that foster online learning communities for the adult learner. Designing effective learning environments, interactions, and activities with the adult learner in mind means designing interactive, collaborative, and constructive tasks that are steeped in authentic activity and meaningful interactions while incorporating emerging web tools (Kearsley, 2010; Snyder, 2009). To be in a position to enhance online teaching and learning while promoting a sense of community, instructors in particular need to have guidance, ongoing support, and training on how emerging technologies, tools, or methods support different types of instruction, learners and contribute to building a sense of community.

Recommendations for Future Research

While this study provides important contributions to designing and developing online learning environments, interactions, and activities that foster a sense of community, it is important to mention recommendations that may guide future studies on this subject. Replicating this study with a larger sample during a regular school term could prove beneficial, especially if conducted with students outside of the online graduate degree program in Educational Media. For example, would Chemistry or Business majors produce similar results? Would social interaction and student engagement be more difficult or less difficult in different fields of instruction? How can one effectively integrate social constructivist pedagogy into the curricula and programs to support learners in online environments? Another suggestion would be to compare students who are in a cohort model with those who are not in order to study patterns and styles of the formation of online learning communities within these two different types of student environments. Investigating web tools and the role they play in enhancing and supporting online learners, and more specifically ways in which we can bridge the gap between what the research tells us and what is actually happening in the classroom, is another possibly valuable topic. One more question that merits investigation is how can we conduct this research with international higher education students? As online learning is an ideal vehicle for communicating and engaging globally, conducting this research with students in institutions outside of North America to identify the many collaborative potentials of learning constructively online where multiple perspectives and different cultures are conveniently accessible might be valuable. Such a project may benefit the world as a "global village," to use the words of

Marshall McLuhan, the Canadian communications theorist, in which we are but one community, living and learning together as one great online community. Online learning communities affect the overall online learning experience, as this study and the scholarship on this subject have shown. Further research must be conducted to refine our understanding of the effects of community on learning and the technologies that might be used to best help develop that community. Conducting experimental design studies with participants in courses that purposefully develop community versus a course that does not would also help to draw a more direct connection between connectedness and learning. If we can further develop this connection, we can design and deliver courses that enhance the online learning experience for adult learners.

Conclusions

What are the learning environments, interactions, and activities that give students a sense of community in an online course? This chapter discussed the findings as related to current research literature and the significance of these findings as they relate to promoting and fostering a sense of community in an online course. Overall, the results of this study suggest that relatively few of the participants perceived a sense of community and, when they did, they mainly desired it to help them perform well in class and successfully complete the program of study. This is an interesting finding because it doesn't necessarily align with current thinking and research that promotes building social learning environments that are interactive and promote a sense of community (Davidson & Ingraffea, 2007; Hamdan et al., 2013). However, even though students may have not perceived a sense of community, it does not necessarily mean that they don't want or value the types of interactive opportunities that foster a sense of

community. In other words, a participant of this study might have said that he/she doesn't perceive a sense of community after completing his/her online course, but then he/she might cite "interactions with classmates" (an activity strongly related to feeling a sense of community) as a reason why he/she enjoys the online class. Variables that may affect the sense of community are very complex, and making the distinction between what students perceive and what actually may be taking place is relatively difficult. Furthermore, social constructivism, with its emphasis on collaboration and learning as a social activity, is a mismatch with our current assessment values and learning goals. This presents a challenge that can only be improved when we can re-conceptualize what it means to teach and learn, and when our pedagogy and assessment goals are aligned.

Interest in developing online communities of learners continues to increase in higher education as social constructivist theoretical frameworks continue to grow in popularity and recognition. Instructors who intentionally set out to actively engage learners in online courses and promote the creation of knowledge through meaningful interactions that foster online communities of learners are instructors who are aware and have thought about what it means to teach and learn today.

In this study, driven by my history as a teacher, a learner, and a researcher, I explored the experiences of online learners using a constructivist approach that ties the social construction of knowledge through communication and social interaction to try and establish those activities, interactions, and learning environments that develop a sense of community. As with any exploratory naturalistic inquiry, the insights gleaned from this study provide an initial and focused understanding of factors that may

contribute to the development of an online learning community. The resultant data provides insight into learning communities that builds on findings from current studies and attempts to explore and share those key events, guided by my research question: "How do learning environments, interactions, and activities contribute to building and fostering online communities?" Learning is a social activity that thrives in settings where the focus is authentic and the inquiry is collaborative. Online learning communities provide the online space that is needed for rich discussions and meaningful connections among peers, content, and instructor to take place. By learning together, adult online learners are thus given the necessary space and conditions to extend and deepen their learning through their interactions and reflections.

Was community observed in this study? If we were to measure the presence of an online community based on existing research, we would have to conclude that no community was found as most current research measures community on the basis of perceived cognitive learning (Liu et al., 2007; Rovai et al., 2005; Vesely & Sherlock, 2007). However, as perceived learning was not the measurement used in this study, evidence of an online community was found based on the comments made by interviewees, the number of supportive postings written by the students, and the focused intent on seeing one another through to program completion expressed by almost everyone who was interviewed. In my study, participants created an online community that was functional, time-driven, and professional. Shared frustration and confusion might have been the incentive for building a community, but I believe the glue that will hold this community together will come from the shared ultimate goal of successful completion of the program, which will carry this group of individual learners

for the duration of this degree and even maybe beyond. Prior to conducting this study, I read about the factors that could contribute to the development of an online learning community. This study gave me the opportunity to witness firsthand those instances when connections are made and communities are birthed as I observed and interacted with the participants in this research. I believe insights gleaned from this study are the first step toward deeper noteworthy reflections and will hopefully be the impetus toward further investigation and exploration.

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APPENDIX A

IRB Approval

From: IRB <irb@appstate.edu>
Date: Fri, May 20, 2016 at 2:47 PM
Subject: IRB Notice
To: Damiana Pyles pylesdg@appstate.edu Curriculum & Instruction
Cc: Mona Abinader, Doctoral Program abinaderm@appstate.edu

From: Monica Molina, IRB Associate Administrator
Date: 5/20/2016
RE: Notice of IRB Exemption

STUDY #: 16-0285
STUDY TITLE: Online Learning Spaces in the Master of Arts in Instructional Technology

Exemption Category: (1) Normal Educational Practices and Settings,(2) Anonymous Educational Tests; Surveys, Interviews or Observations
This study involves minimal risk and meets the exemption category cited above. In accordance with 45 CFR 46.101(b) and University policy and procedures, the research activities described in the study materials are exempt from further IRB review.

Study Change: Proposed changes to the study require further IRB review when the change involves:

1. an external funding source,
2. the potential for a conflict of interest,
3. a change in location of the research (i.e., country, school system, off site location),
4. the contact information for the Principal Investigator,
5. the addition of non-Appalachian State University faculty, staff, or students to the research team, or
6. the basis for the determination of exemption. Standard Operating Procedure #9 cites examples of changes, which affect the basis of the determination of exemption on page 3.

Investigator Responsibilities: All individuals engaged in research with human participants are responsible for compliance with University policies and procedures, and IRB determinations. The Principal Investigator (PI), or Faculty Advisor if the PI is a student, is ultimately responsible for ensuring the protection of research participants; conducting sound ethical research that complies with federal regulations, University policy and procedures; and maintaining study records. The PI should review the IRB's list of PI responsibilities.
To Close the Study: When research procedures with human participants are

completed, please send the Request for Closure of IRB Review form to irb@appstate.edu.
If you have any questions, please contact the Research Protections Office at (828) 262-2692 (Robin).
Best wishes with your research.

Websites for Information Cited Above
Note: If the link does not work, please copy and paste into your browser, or visit https://researchprotections.appstate.edu/human-subjects.
1. Standard Operating Procedure #9: http://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/IRB20SOP920Exempt%20Review%20Determination.pdf
2. PI responsibilities: http://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/PI20Responsibilities.pdf
3. IRB forms: http://researchprotections.appstate.edu/human-subjects/irb-forms

APPENDIX B

Pre-Course Interview

D. G. Pyles: <pylesdg@appstate.edu> & M. Abinader: <abinaderm@appstate.edu> You are invited to take part in a research survey about Online Learning Spaces. Your participation will require approximately a 15-minutes slot completed online at your computer. Taking part in this study is completely voluntary. There are no known risks or discomforts associated with this survey. Your participation will contribute to the body of knowledge on online teaching and learning at Appalachian State University. You can withdraw at any time without adversely affecting your relationship with anyone at Appalachian State University. Your responses will be kept strictly confidential, and digital data will be stored in secure computer files. Any report of this research that is made available to the public will not include your name or any other individual information by which you could be identified. If you have questions or want a copy or summary of this study's results, you can contact the researchers at the email address above. If you have any questions about whether you have been treated in an illegal or unethical way, contact the Director of Research Protections, Robin Tyndall, at 828-262-2692 or you may email her at: tyndallrs@appstate.edu

- ❍ I agree (1)
- ❍ I don't agree (2)

If I don't agree is Selected, Then Skip to End of Survey

Q1 Are you?

- ❍ Female (1)
- ❍ Male (2)
- ❍ Prefer not to answer (3)

Q2 In what age group are you?

- ❍ 18-30 (1)
- ❍ 31-40 (2)
- ❍ 41-50 (3)
- ❍ 51-over (4)
- ❍ Prefer not to answer (5)

Q3 Please indicate your race/ethnicity. (Choose all that apply)

- ❑ African (1)
- ❑ Caribbean (2)
- ❑ Caucasian (3)
- ❑ East Asian (4)
- ❑ Hispanic (5)
- ❑ Latino (6)
- ❑ Middle Eastern (7)
- ❑ South Asian (9)
- ❑ Other (10) _____
- ❑ Prefer not to answer (11)

Q4 How many online courses have you taken previously?

- ❍ 0 (1)
- ❍ 1 (2)
- ❍ 2-3 (3)
- ❍ 4-5 (4)
- ❍ 6+ (5)

If 0 is Selected, Then Skip to End of Survey

Q5 Use the checkbox to indicate any previous courses you have taken in this program (Check all that apply). If you have not taken any in this program, choose Other and enter the name of the last three online courses that you've taken.

- ❑ ITC 5220 Digital Technologies in Education (1)
- ❑ ITC 5620 - Vision and Strategies for Integration of Digital Technologies (2)
- ❑ ITC 5720 Planning for Instructional Technology (3)
- ❑ ITC 5910 Applications of Digital Technologies (4)
- ❑ ITC 5330 Utilizing Networking and Communications Technologies for Learning (5)
- ❑ ITC 5240 Designing Instruction for Digital-Age Learners (6)
- ❑ ITC 5350 Technology, Policy, and Law (7)
- ❑ ITC 5440 Digital Learning Environments in a Changing Society (8)
- ❑ ITC 5550 Using Digital Technologies to Facilitate Systematic Improvements (9)
- ❑ CI5310 New Media and Emerging Literacies (10)

  Other (11) _____

Q6 Based on your experience with online learning, indicate the extent to which you agree with each statement.					
	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (4)	Agree (6)	Strongly Agree (7)
I will have the opportunity to share information about myself in this class. (1)	❍	❍	❍	❍	❍
I will get to know my classmates. (2)	❍	❍	❍	❍	❍
I anticipate members of this class will disclose personal information over the span of the summer. (3)	❍	❍	❍	❍	❍
Actively participating in class discussions is important to me. (4)	❍	❍	❍	❍	❍
Being fully engaged means I focus only on class related activities when meeting online with classmates. (5)	❍	❍	❍	❍	❍
I anticipate scheduling time to meet together online will be easy. (6)	❍	❍	❍	❍	❍

In my class projects, classmates will contribute to discussions. (7)	❍	❍	❍	❍	❍
I feel confident that my interactions with class members will allow for different point of views. (8)	❍	❍	❍	❍	❍
My classmates and I will have similar goals and priorities. (9)	❍	❍	❍	❍	❍
My online experience will promote teamwork and collaboration. (10)	❍	❍	❍	❍	❍
My interactions with classmates will contribute to my success. (11)	❍	❍	❍	❍	❍
Contact with classmates will extend beyond this course. (12)	❍	❍	❍	❍	❍
Class members will welcome feedback that is different and contrary to the group's thinking. (14)	❍	❍	❍	❍	❍

I am confident if/when conflict arises, it will get resolved in this class. (15)	❍	❍	❍	❍	❍
I will feel a sense of belonging in this class. (16)	❍	❍	❍	❍	❍
I am confident I will be able to navigate the online class environment. (17)	❍	❍	❍	❍	❍
I anticipate communication tools in this classroom will be easy to use. (18)	❍	❍	❍	❍	❍
Being able to not only hear but also see my classmates online will make getting to know my classmates easier. (21)	❍	❍	❍	❍	❍
Online tools used in this class will contribute to the development of bonds between my classmates and me. (22)	❍	❍	❍	❍	❍

Q7 Rate each tool based on your feeling of its effectiveness for communicating with your peers. Choose "Not Applicable" if it is a tool that you are not familiar with or have not used.

	Not at All Useful (1)	Not Very Useful (2)	Useful (4)	Very Useful (6)	Extremely Useful (8)	Not Applicable (5)
Online Discussion Forum in AsULearn (1)	❍	❍	❍	❍	❍	❍
Google Apps: Docs, Presentation, Sites (2)	❍	❍	❍	❍	❍	❍
Google Hangout (3)	❍	❍	❍	❍	❍	❍
Google Classroom (4)	❍	❍	❍	❍	❍	❍
Google+ (5)	❍	❍	❍	❍	❍	❍
OpenQwaq (6)	❍	❍	❍	❍	❍	❍
Twitter (7)	❍	❍	❍	❍	❍	❍
Skype (8)	❍	❍	❍	❍	❍	❍
Instagram (9)	❍	❍	❍	❍	❍	❍
Facebook (10)	❍	❍	❍	❍	❍	❍

Q8 Rate each tool based on your feeling of its effectiveness for completion of course related tasks. Choose "Not Applicable" if it is a tool that you are not familiar with or have not used.

	Not at All Useful (1)	Not Very Useful (2)	Useful (3)	Very Useful (4)	Extremely Useful (6)	Not Applicable (5)
Online Discussion Forum in AsULearn (1)	❍	❍	❍	❍	❍	❍
Google Apps: Docs, Presentation, Sites (2)	❍	❍	❍	❍	❍	❍
Google Hangout (3)	❍	❍	❍	❍	❍	❍
Google Classroom (4)	❍	❍	❍	❍	❍	❍
Google+ (5)	❍	❍	❍	❍	❍	❍
OpenQwaq (6)	❍	❍	❍	❍	❍	❍
Twitter (7)	❍	❍	❍	❍	❍	❍
Skype (8)	❍	❍	❍	❍	❍	❍
Instagram (9)	❍	❍	❍	❍	❍	❍
Facebook (10)	❍	❍	❍	❍	❍	❍

Q9 Rate each tool based on your feeling of its effectiveness for getting to know your peers outside of the class.
Choose "Not Applicable" if it is a tool that you are not familiar with or have not used.

	Not at All Useful (1)	Not Very Useful (2)	Useful (3)	Very Useful (6)	Extremely Useful (4)	Not Applicable (5)
Online Discussion Forum in AsULearn (1)	❍	❍	❍	❍	❍	❍
Google Apps: Docs, Presentation, Sites (2)	❍	❍	❍	❍	❍	❍
Google Hangout (3)	❍	❍	❍	❍	❍	❍
Google Classroom (4)	❍	❍	❍	❍	❍	❍
Google+ (5)	❍	❍	❍	❍	❍	❍
OpenQwaq (6)	❍	❍	❍	❍	❍	❍
Twitter (7)	❍	❍	❍	❍	❍	❍
Skype (8)	❍	❍	❍	❍	❍	❍
Instagram (9)	❍	❍	❍	❍	❍	❍

APPENDIX C

Interview Consent

Online Learning Spaces in the Master of Arts in Instructional Technology
Consent to Take Part of the Research and Be Interviewed

Principal Investigator: Dr. Damiana Gibbons Pyles
Department: Curriculum and Instruction
Contact Information: Damiana Pyles (pylesdg@appstate.edu, 828-262-2277)
Co-Investigator: Mona Abinader (abinaderm@appstate.edu, 828-262-8370)

Information to Consider About this Research

I agree to participate as an interviewee in this research project that studies participation in online teaching and learning in the courses in the Masters of Instructional Technology. The interview(s) will take place at the end of the course, which will take about approximately 30 minutes, at the location of your choice. I understand that the interview will be about my participation in online learning activities.

I understand that there are no foreseeable risks associated with my participation. I also know that the knowledge gained from this study may benefit of participation to online learners at Appalachian State University and elsewhere.
I understand that the interview(s) will be audio [and/or video] recorded and transcribed. I understand that the audio [and/or video] recordings of my interview may be stored on a secure password-protected server, and will only be accessed by the investigators of the study, if I sign the authorization below. I understand that if I sign the authorization at the end of this consent form, photos may be taken during the study and used in scientific presentations of the research findings.
I give Damiana Pyles and Mona Abinader ownership of the digital recordings and transcripts from the interview(s) and observations they conduct with me and understand that digital recordings and transcripts will be kept in the Principal Investigator's office in a locked cabinet and stored on her computer in a secure server. I understand that information or quotations from the audio recordings and/or transcripts could be published following my review and approval. I understand I will receive no compensation for the interview or classroom observations.

I understand that the interview is voluntary and there are no consequences if I choose not to participate. I also understand that I do not have to answer any questions and can end the interview at any time with no consequences. I confirm I am at least 18 years of age.

If I have questions about this research project, I can call Dr. Damiana Pyles at (828) 262-2277 or the Appalachian Institutional Review Board Administrator at 828-262-2692 (days), through email at irb@appstate.edu or at Appalachian State University, Office of Research Protections, IRB Administrator, Boone, NC 28608.

Appalachian State University's Institutional Review Board has determined this study to be exempt from IRB oversight.

I request that my name **be used** in connection with tapes, transcripts, photographs or publications resulting from this interview.

I request that my name **not** be used in connection with tapes, transcripts, photographs or publications resulting from this interview.

By signing this form, I acknowledge that I have read this form, had the opportunity to ask questions about the research and received satisfactory answers, and want to participate. I understand I can keep a copy for my records.

_____

Participant's Name (PRINT) Signature Date

Photography and Video Recording Authorization

With your permission, still pictures (photos) and/or video recordings taken during the study may be used in research presentations of the research findings. Please indicate whether or not you agree to having photos or videos used in research presentations by reviewing the authorization below and signing if you agree.

Authorization

I hereby release, discharge and agree to save harmless Appalachian State University, its successors, assigns, officers, employees or agents, any person(s) or corporation(s) for whom it might be acting, and any firm publishing and/or distributing any photograph or video footage produced as part of this research, in whole or in part, as a finished product, from and against any liability as a result of any distortion, blurring, alteration, visual or auditory illusion, or use in composite form, either intentionally or otherwise, that may occur or be produced in the recording, processing, reproduction, publication or distribution of any photograph, videotape, or interview, even should the same subject me to ridicule, scandal, reproach, scorn or indignity. I hereby agree that the photographs and video footage may be used under the conditions stated herein without blurring my identifying characteristics.

_____

Participant's Name (PRINT) Signature Date

APPENDIX D

Post-Course Survey

D. G. Pyles: pylesdg@appstate.edu & M. Abinader: abinaderm@appstate.edu This online survey is a follow up to the Pre-Course Survey that you took as part of a research about Online Learning Spaces. Your participation will require approximately 15 minutes completed online at your computer. Taking part in this study is completely voluntary. There are no known risks or discomforts associated with this survey. Your participation will contribute to the body of knowledge on online teaching and learning at Appalachian State University. You can withdraw at any time without adversely affecting your relationship with anyone at Appalachian State University. Your responses will be kept strictly confidential, and digital data will be stored in secure computer files. Any report of this research that is made available to the public will not include your name or any other individual information by which you could be identified. If you have questions or want a copy or summary of this study's results, you can contact the researchers at the email address above. If you have any questions about whether you have been treated in an illegal or unethical way, contact the Director of Research Protections, Robin Tyndall, at 828-262-2692 or you may email her at: tyndallrs@appstate.edu

- ❍ I agree (1)
- ❍ I don't agree (2)

If I don't agree Is Selected, Then Skip To End of Survey

Q1 Use the checkbox to indicate which course are you responding about:

- ❍ CI 5310 - New Media and Emerging Technologies with Damiana Pyles (2)
- ❍ ITC 5550 - Professional Development, Innovation, and System Change with Krista Perry (3)
- ❍ CI 5630 - Instructional Technology with Herbert Brown (4)
- ❍ CI 5835 - Media Influence and ID Culture with Theresa Redmond (5)
- ❍ ITC 6550 - Info Tech Systems in Education with Terry McClannon and Amy Cheney (6)
- ❍ Other, please specify (7) _____

Q2 Online Tools used in this classroom

- ❑ Online Discussion Forum in AsULearn (1)
- ❑ Google Apps: Docs, Presentation, Sites (2)
- ❑ Google Hangout (3)
- ❑ Google Classroom (10)
- ❑ Google+ (17)
- ❑ OpenQwaq (5)
- ❑ Twitter (6)
- ❑ Skype (7)
- ❑ Instagram (8)
- ❑ Facebook (4)
- ❑ Other, please specify (9) _____

Q3 Based on your experience with this course, indicate the extent to which you agree with each statement.

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (6)	Strongly Agree (7)	Neither agree nor disagree (4)
I had the opportunity to share information about myself in this class. (1)	❍	❍	❍	❍	❍	❍
I got to know my classmates. (2)	❍	❍	❍	❍	❍	❍
Members of my class disclosed personal information over the span of the summer. (3)	❍	❍	❍	❍	❍	❍
Actively participating in class discussions was important to me. (4)	❍	❍	❍	❍	❍	❍
Being fully engaged meant I focused only on class related activities when meeting online with classmates. (5)	❍	❍	❍	❍	❍	❍
Scheduling time to meet together online was easy. (6)	❍	❍	❍	❍	❍	❍
In my class projects, classmates contributed to discussions. (7)	❍	❍	❍	❍	❍	❍

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (6)	Strongly Agree (7)	Neither agree nor disagree (4)
Interactions with class members allowed for different point of views. (8)	❍	❍	❍	❍	❍	❍
My classmates and I had similar goals and priorities. (9)	❍	❍	❍	❍	❍	❍
My online experience promoted teamwork and collaboration. (10)	❍	❍	❍	❍	❍	❍
My interactions with classmates contributed to my success. (11)	❍	❍	❍	❍	❍	❍
Contact with classmates extended beyond this course. (12)	❍	❍	❍	❍	❍	❍
Class members welcomed feedback that is different and contrary to the group's thinking. (13)	❍	❍	❍	❍	❍	❍
When conflict arose, it was resolved in this class. (14)	❍	❍	❍	❍	❍	❍
I felt a sense of belonging in this class. (15)	❍	❍	❍	❍	❍	❍

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (6)	Strongly Agree (7)	Neither agree nor disagree (4)
I was able to navigate the online class environment. (16)	❍	❍	❍	❍	❍	❍
Communication tools in this classroom were easy to use. (17)	❍	❍	❍	❍	❍	❍
Being able to not only hear but also see my classmates online made getting to know them easier. (18)	❍	❍	❍	❍	❍	❍
Online tools used in this class con-tributed to the development of bonds between my classmates and me. (19)	❍	❍	❍	❍	❍	❍

Q4 Rate each tool based on your feeling of its effectiveness for communicating with your peers. Choose "Not Applicable" if it is a tool that you are not familiar with or have not used.

	Not at All Useful (1)	Not Very Useful (3)	Useful (4)	Very Useful (5)	Extremely Useful (2)	Not Applicable (6)
Online Discussion Forum in AsULearn (1)	❍	❍	❍	❍	❍	❍
Google Apps: Docs, Presentation, Sites (2)	❍	❍	❍	❍	❍	❍
Google Hangout (3)	❍	❍	❍	❍	❍	❍
Google Classroom (4)	❍	❍	❍	❍	❍	❍
Google+ (5)	❍	❍	❍	❍	❍	❍
OpenQwaq (6)	❍	❍	❍	❍	❍	❍
Twitter (7)	❍	❍	❍	❍	❍	❍
Skype (8)	❍	❍	❍	❍	❍	❍
Instagram (9)	❍	❍	❍	❍	❍	❍
Facebook (10)	❍	❍	❍	❍	❍	❍

Q5 Rate each tool based on your feeling of its effectiveness for completion of course related tasks. Choose "Not Applicable" if it is a tool that you are not familiar with or have not used.

	Not At All Useful (1)	Not Very Useful (3)	Useful (4)	Very Useful (5)	Extremely Useful (2)	Not Applicable (6)
Online Discussion Forum in AsULearn (1)	❍	❍	❍	❍	❍	❍
Google Apps: Docs, Presentation, Sites (2)	❍	❍	❍	❍	❍	❍
Google Hangout (3)	❍	❍	❍	❍	❍	❍
Google Classroom (4)	❍	❍	❍	❍	❍	❍
Google+ (5)	❍	❍	❍	❍	❍	❍
OpenQwaq (6)	❍	❍	❍	❍	❍	❍
Twitter (7)	❍	❍	❍	❍	❍	❍
Skype (8)	❍	❍	❍	❍	❍	❍
Instagram (9)	❍	❍	❍	❍	❍	❍
Facebook (10)	❍	❍	❍	❍	❍	❍

Q6 Rate each tool based on your feeling of its effectiveness for getting to know your peers outside of the class. Choose "Not Applicable" if it is a tool that you are not familiar with or have not used.

	Not At All Useful (1)	Not Very Useful (3)	Useful (4)	Very Useful (5)	Extremely Useful (2)	Not Applicable (6)
Online Discussion Forum in AsULearn (1)	❍	❍	❍	❍	❍	❍
Google Apps: Docs, Presentation, Sites (2)	❍	❍	❍	❍	❍	❍
Google Hangout (3)	❍	❍	❍	❍	❍	❍
Google Classroom (4)	❍	❍	❍	❍	❍	❍
Google+ (5)	❍	❍	❍	❍	❍	❍
OpenQwaq (6)	❍	❍	❍	❍	❍	❍
Twitter (7)	❍	❍	❍	❍	❍	❍
Skype (8)	❍	❍	❍	❍	❍	❍
Instagram (9)	❍	❍	❍	❍	❍	❍
Facebook (10)	❍	❍	❍	❍	❍	❍

APPENDIX E

Interview Questions

Thank you for agreeing to be interviewed. I have here some questions I would like to ask you. Feel free to say as much or as little as you like. I am interested in your personal online experience this summer. I will audio record these sessions. Is that ok with you?

Ok, let's start then

1. Please describe any benefits you experienced after being in this online classroom?

2. Please describe any disadvantages you associate with this course experience?

3. Share an experience that encouraged you to experiment between classmates and you:

4. Share an experience that inspired you to develop your ideas beyond the scope of the online classroom:

5. Name some of the activities that provided creative outlets throughout the course:

6. Describe the type of interactions you experienced with your classmates:

7. What were some of the motivating factors in your group work?

8. Some of the challenges?

9. In what ways did this online class support you?

10. Name some of the individual skills that your group work revealed about you?

11. Your classmates?

VITA

Mona Abinader was born in Lebanon and grew up in Canada. She graduated with a Bachelor of Arts from Concordia University, in Montreal, Canada. After working in human resources in training and development, Mona spent two semesters teaching refugees as a volunteer. This experience led her to return to school and obtain a Bachelor of Education, specializing in teaching English as a Second Language (ESL). Mona completed her B.Ed. in 1996 and, while teaching with the Visiting International Faculty Program in North Carolina, learned about Appalachian State University's Educational Media Graduate Program. In 2000, Mona completed her Master of Arts in Educational Media.

Since 2000, Mona has been traveling and teaching. She has lived and taught in Vietnam, Dubai, India, Thailand, Nicaragua, Canada, and the United States. In the summer of 2014, she was admitted into the Educational Leadership doctoral (Ed.D.) program at Appalachian State University. Mona completed her Ed.D. in Educational Leadership in December of 2016.

Mona's research interests include online learning, higher education, curriculum instruction, teacher training, and educational technology – with a special focus on how we can harness the power of Internet technology and computer-mediated communication to foster learning communities at both the local and the global level.