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A Mixed Method Study of Community Development in Online Learning Environments

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**A MIXED METHOD STUDY OF COMMUNITY DEVELOPMENT IN
ONLINE LEARNING ENVIRONMENTS**

by

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Presented to the Faculty of the Graduate School

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ABSTRACT

This study examined the effect of synchronous and asynchronous communication methods on a sense of community development in online learning environments. The researcher surveyed 734 online students at a small private school in East Texas, examining the variables of synchronous and asynchronous communication methods to evaluate the sense of community experienced in online learning environments.

The study used a convergent mixed method using the Classroom Community Scale along with supplemental open-ended questions. A factorial analysis was conducted, resulting in two factors: supportive relationships and a sense of reliance. The responses expressed the use of discussion boards, emails, and self-recorded videos as the asynchronous methods of communication that added to a sense of community. Five themes emerged (personal reasons, online course structure, a sense of community, faith-based education, and financial) explaining factors that enhance retention and persistence in online learning within the university.

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CHAPTER I

Introduction to the Study

Background of the Problem

Beginning one's college experience can bring both excitement and intimidation. New environments, new experiences, and new freedoms await new learners. However, the days of physical classrooms are dwindling, and the presence of online classrooms is on the rise. Allen and Seaman (2014) reported that out of 22 million students in college, 7.1 million have enrolled in at least one online course. The latest national study from the Babson Group indicated that the “. . . number of distance education students grew by 5.6% from Fall 2015 to Fall 2016” (Allen & Seaman, 2016). Traditional and non-traditional students may already be facing their insecurities and fears about college, but it is important to consider the issues that present in starting out in online classrooms. Students may be in a virtual classroom with the instructor and peers but could very well feel isolated and lack a sense of community. While the physical classroom allows for face-to-face contact and communication, online classrooms present different challenges regarding student interaction and communication.

In an online setting, the students are reliant on their ability to communicate with their peers and instructors, and if these methods of communication are not effective

efficient, the student could suffer academically (Jones, 2011; Palloff & Pratt, 2013).

When students miss connections in the classroom, the impact it has on the student can increase their sense of isolation and lack of community (Rovai & Wighting, 2005). Song, Singleton, Hill, & Hwa Koh (2004) found that students reported that a lack of community within online courses faced challenges in the online classroom environment. They indicated it was the instructor's role to generate a sense of community for the duration of the course (Song et al., 2004). Online students still desire the personalized classroom engagement along with the independence that online learning provides. Instructors also need to be aware of student expectations for online courses.

The methods used by a professor for communication in an online setting influence the environment of the classroom and student engagement (Song et al., 2004). To enhance interaction and dialogue within the classroom, instructors must cultivate engagement and develop connections with students through discussion and other forms of communication. When students experience a sense of belonging within a group setting, a sense of community begins to grow (Ouzts, 2006). Instructors are responsible for the design of the class and the tempo of communication within the classroom.

Online Learning and Student Engagement

Student engagement and participation in online courses are vital to online learning outcomes. Research has shown that students who are engaged and actively participating in class show higher levels of motivation (Reyes, Brackett, Rivers, White, & Salovey, 2012). Both traditional classrooms and online courses require student involvement and participation through required readings, discussions and writing. These are methods used

to help promote student learning and engagement and a sense of belonging in an online setting. Because online students engage and communicate in a virtual classroom and not face-to-face, they may feel less connected to their classmates and instructor. Tinto's (1987) theory of retention examines the concept of student isolation in a traditional face-to-face setting. According to Tinto (1975, 1987, 1993), if a student feels isolated and is not integrated well into the college community, the student will struggle to persist. Astin (1993) indicated the importance of the student's experience and retention are influenced by higher levels and quality of interaction between campus faculty and staff in traditional on ground campuses. The previous work of Tinto (1975, 1987, 1993) and Astin (1993) provide insight into community and retention in face-to-face college settings and have inspired more research on community development and retention in online college settings. Based on previous studies (Digmann, 2016; Garrison, Anderson, & Archer, 2000; Lehman & Conceição, 2010) the knowledge of the instructor's influence is central to online education. Hrastinski (2009) reported that relationships in an online environment have a significant influence on student participation and bolster the online learning community. In online courses, relationships develop through communication, shared experiences through virtual discussion boards, and the openness of the students to embrace learning together in an online format (Brown, 2001).

Problem Statement

When a student engages in online courses, various challenges are presented, such as lack of face-to-face interaction or physical distance between the students and instructor. If students do not develop a sense of community, they can become isolated in

their academic process, which may result in lower levels of academic success and decreased persistence (Rovai, 2002a). In a study of adult learners, Tyler-Smith (2006) found that 40% to 80% of online adult learner students dropped out of their online class. Hrastinski (2009) reported that students struggle to feel a sense of connection while in their online courses, which can impact student learning. Ouzts (2006) stated that cultivating a sense of community is a vital aspect of all courses, both on ground and online.

Purpose Statement

The purpose of this study was to examine the effect of online communication methods, both synchronous and asynchronous, on developing a sense of community in the online learning environments at a small private university in Texas. The study modified Digmann's (2016) study that examined the "... perception of community and the tools that are successful in developing a sense of community" (Digmann, 2016, p. 7). The previous study's purpose was to find what tools were successful in developing a sense of community but focused more so on the levels of isolation the students did or did not experience and the variables of trust and instructor feedback were tested. However, the hypotheses in the previous study (Digmann, 2016) focused on the concepts of isolation derived from Tinto (1975, 1987, 1993), assuming that isolation was the opposite of a sense of community.

This study focused on the communication methods that effected community development, rather than a student's sense of isolation. This study's hypotheses focused

on the influence of communication methods and if they successfully affected a sense of community in online courses.

Digmann (2016) conducted research at a small private college with students taking enrolled in online courses. The survey was sent to 321 students with 55 responses. The author recommended that further research could be done on a larger sample size. Digmann (2016) stated that further research be conducted with a larger sample size as well as asking more than one open-ended question to examine other variables that encourage community in online courses. This study extended the previous research study by using a factorial analysis, asking two open-ended questions to gain a depth of understanding from the student's experiences and the influence of communication techniques and potential other variables that influence a sense of community. Understanding what positively impacts a student's sense of community in online courses is important so there can be growth in online learning environments and help increase learning outcomes, persistence, and retention (Digmann, 2016; Lehman & Conceição, 2010; Rovai, 2002a; Rovai & Wighting, 2005; Song et al., 2004).

Research Questions

The research question guiding this study was: What were the effects of synchronous and asynchronous communication methods on a student's sense of community in online courses?

Significance of the Research

When students feel a higher sense of community in online courses, it can result in higher levels of academic achievement (Rovai, 2002c). Based on Rovai's (2002c) study,

results showed that with a higher sense of community, there were higher levels of learning in the online course in terms of cognitive achievement and self-reported levels of attainment of educational goals. The results also indicated that a sense of community increased the student's perception of cognitive achievement (Rovai, 2002a). The study is significant based on the increase of online learning and the growing populations of students who want to expand their education but may not be able to attend face to face classes on a campus. With the loss of face-to-face interaction, students communicate electronically, which can lead to a sense of isolation and negatively impact their academic potential (Rovai, 2002c). The sense of community developed in online learning is crucial to engagement, retention and academic success of students (Hrastinski, 2009; Jones, 2011; Rovai, 2002c). When students lack a sense of belonging, it can impair their academic ability as well as retention and persistence of the student.

In a study by Rovai (2001), the results of the study showed that online instructors were crucial in developing a sense of community within the online learning environment and this was done by participation, communication, and specific teaching techniques. Digmann (2016) noted that student participation and engagement in an online course was another significant factor in developing community. Effective communication methods are vital for establishing norms in the classroom, student and instructor relationships, trust, and community when face-to-face interaction is lacking (Rovai, 2002a). The use of synchronous and asynchronous communication methods may offer diverse methods of communication for students to build relationships with one another and the instructor. When students are in an online learning environment, the methods of communication can

be influencers on a student's experience in the class as well as on learning outcomes. When a student feels isolated, there is a decrease in their potential to thrive in the online course (Rovai, 2002a). To combat the feelings of isolation, instructors must assist students within the online course to help develop a sense of community with the use of synchronous and asynchronous communication. If online faculty can create higher learning achievements and community, there could be a decrease in student isolation, resulting in higher retention rates and increased feeling of a sense of community (Jones, 2011; Rovai, 2001; Rovai, 2002a).

Garrison, Anderson, and Archer (2010), developed the Community of Inquiry (COI), a framework to examine a student's educational experience in an online environment. Developing a sense of community in online learning is influenced by the variables of social presence, supporting discourse, cognitive presence, selecting content, teaching presence, and setting climate. The COI framework “. . . provides order, heuristic understanding and a methodology for studying the potential and effectiveness of computer conferencing” (Garrison et al., 2010, p. 6). The framework of COI addresses the variables of social presence, cognitive presence, and instructor presence and based on the COI framework, the Social Presence Model (SPM) was developed (Whiteside, 2015). SPM focuses on online learning environments and blends together five elements: “. . . affective association, community cohesion, instructor involvement, interaction intensity and knowledge and experience” (Whiteside, Garret Dickers, & Swan, 2017, p. 15). The COI and SPM are used to better understand the elements involved in online learning, but the theory is grounded with the connectivism learning theory. The literature points to the

importance of these elements in online learning and developing a sense of community, integrating technology, communication methods, and techniques.

Assumptions

There were several assumptions entering the study. First, students completed the online survey with honesty to evaluate communication methods and a sense of community in an online setting. It is also assumed that asynchronous communication methods will be used in the courses. The researcher also assumed that since the courses were varied in subjects, the courses will not only be in one subject. Lastly, the researcher also assumed that the instructors had received approval to teach these subjects and were competent in online instruction.

Limitations

There were several identified limitations to this study. The first limitation was self-reported data. The survey was self-reported which gave the students the option of sharing their opinion of courses and community in the course. Another limitation was that each course will differ like in size, length, and the instructor. Since it was self-reported research, there could be bias or exaggeration in responses, which could be a limitation. Another potential limitation was the lack of knowledge of communication methods or external events that may impact the student's opinion of the course. The researcher's role at the university could also be a limitation.

The researcher was employed as an adjunct professor at the university where the survey will be administered. Some students may know the researcher from her role at the university as an advisor and adjunct professor and could lead to bias. Another limitation

was the influence of faith on the participants. Due to the school being a private faith-based institution, the participants could have felt a stronger sense of community simply being at a school that proclaims one united faith and integrates it within online courses.

Delimitations

A delimitation of this study was the aspect and scope of the previous study. In the study, the researcher surveyed 743 students in the fall term of 2018 in all online undergraduate classes that are 5 and 15 weeks in length. The study took place in online undergraduate courses at a small private faith-based post-secondary institution in Texas. Traditional on ground students are allowed to take online classes, and vice versa and this study included both students so that some students may have pre-established relationships with their online peers. Some courses were specific to the various majors offered at the university, so some students may have interacted or taken classes together before, whereas some students participating in the study will have never seen their classmates face-to-face.

Definition of Terms

The purpose of defining the following conceptual terms was to set the foundation for the reader to understand the variables and conceptual terms that were used in this study.

Asynchronous communication. A type of communication that happens when individuals interact with each other at varied times. Asynchronous communication is the type of communication in which students communicate when it is convenient for each student (Jones, 2011, p. 70).

Engagement. Trowler & Trowler (2010) noted:

. . . student engagement is concerned with the interaction between the time, effort, and other relevant resources invested by [students, faculty, and institutions] intended to optimize the student experience . . . and [the] development of students and the performance, and reputation of the institution. (p. 2)

Isolation. Tinto (1993) explained isolation as “. . . the absence of sufficient contact between the student and other members of a social and academic community” (p. 55).

Online course. An online course is one that is taught in an online environment via use of one’s computer, tablet, phone or electronic device (Watts, 2016, p. 23).

Retention. The entry into college and “. . . completion of a particular academic degree plan” (Tinto, 1993, p. 39).

Participation. Hrastinski (2009) explained that participation “. . . involves action, e.g. talking with someone, and connection, e.g., feeling that one takes part” (p. 79)

Sense of community. McMillan and Chavis (1986) defined a sense of community as, “A feeling that members have of belonging, a feeling that members matter to one another and too the group and a shared faith that members’ needs will be met through their commitment to be together” (p. 9)

Social presence. Garrison (2009), defined social presence as “. . . the ability of participants to identify with the community (e.g., course of study), communicate purposely in a trusting environment and develop interpersonal relationships by way of protecting their individual personalities” (p. 352).

Synchronous communication. A type of communication that happens when students interact in real-time. More than one student can interact in the same activity simultaneously with other students in the class as well as with their instructor (Jones, 2011, p. 70).

Summary

The researcher conducted a modified research study to examine the effects of asynchronous and synchronous communication methods on the development of community in online learning environments. This study examined the question “What is the effect of synchronous and asynchronous communication methods on a student’s sense of community in online courses?” The significance of the research is based on the growing enrollment of online learning that is coupled with low persistence and retention rates as well as modifying this study (Allen & Seaman, 2016; Tyler-Smith, 2006).

Organization of the Study

This study includes five chapters, references, and appendixes. Chapter I serves as the introduction to the study. The author examined and analyzed, in Chapter II, the relevant and related literature related to fostering a sense of community in online higher educational environments, social presence, and communication techniques in online learning environments. Chapter III includes the research design and methods as well as data collection methods and procedures. Chapter IV provides the analysis of the data and results. Lastly, Chapter V offers the conclusions of the study, with implications and recommendations for future research.

CHAPTER II

Review of Literature

Introduction

The purpose of this study is to examine the relationship between communication methods and the development of a sense of community in online learning environments at a small private school. Online learning is a field that continues to have significant growth, and for quality education to continue, online students need to feel a sense of community and foster a supportive online relationship with both peers and instructors (Rovai, 2002; Palloff & Pratt, 2013). Due to the lack of face-to-face interaction and the distance geographically between students and instructors, students may experience feelings of isolation, creating more obstacles in their academic success (Ouzts, 2006; Song et al., 2004). To examine the relationship between communication methods and the development of community in online learning environments, the literature review will review the aspects of technology and education in the twenty-first century, the social presence model, methods of community development in online learning, the learning theory of connectivism, and communication methods impact in online education. The landscape of higher education has shifted significantly over the past decades and technology has been a strong influence in the changes within higher education.

Technology in Education in the 21st Century

The traditional image of a classroom has changed, and technology has been the initiator of change. Students no longer have to arrive in a classroom building, sit down in a desk and take notes as professor lectures to receive a formal education. The online learning environment allows students and instructors to be virtually present, using technology to mediate learning (Jones, 2011). Learning via the use of the Internet and technology has advanced knowledge involvement and gives an opportunity for 24-hour access to learn and expand knowledge from the comfort of one's home (Nicosia, 2013).

Distance education, the predecessor of online learning allowed students to learn outside the four walls of a classroom (Jones, 2011). Students communicated with their instructors by paper mail, sending in their assignments (Jones, 2011). As technology increased, fax machines and email were incorporated (Jones, 2011). In the late 1990's and early 2000s, students were using “. . . chat sessions, electronic bulletin boards, video, CD-ROM, audioconferencing and desktop videoconferencing” in addition to email (Palloff & Pratt, 2013, p. 62).

Web 2.0 has become a factor in online education and influences online learning environments in higher education (Palloff & Pratt, 2013). Web 2.0 describes the second generation of the World Wide Web, which is more interactive and uses more methods of collaboration and innovation (Cummings, 2016; Palloff & Pratt, 2013). Web 2.0 includes avenues like blogs, wikis, social networking, podcasts, RSS, and Skype, which “can help reduce the isolation and distance that students often feel in an online course” (Palloff & Pratt, 2013, p. 75). Some researchers believe that technology today has already moved

into Web 3.0 with the increased use of mobile devices, specifically the use of cell phones, smart phones, tablets, and smart watches (Palloff & Pratt, 2013). The growth in digital and mobile technology has allowed students to learn through connections, non-human appliances, as well as the diversity of options and opinions that they have at their fingertips (Palloff & Pratt, 2013; Siemens, 2004).

As technology increased, so did the enrollment, and growth of online classes and programs across the world. Universities then were pressed to train and employ professors who could meet the needs of online students (Palloff & Pratt, 2013). The growth of technology allowed instructors to “. . . flip the face-to-face classroom by extending collaboration outside the classroom” (Cummings, 2016, p. 83). One way this was accomplished was by using web-based courses use course management systems like Canvas or Blackboard, which could facilitate synchronous and asynchronous interaction (Jones, 2011). The use of synchronous and asynchronous methods help customize education for students and add to the appeal of online learning. Many instructors incorporate technology into their traditional on-ground courses; however, online education has become more appealing to many students, more so than traditional education because of the web-based format and adaptability for students (Palloff & Pratt, 2013; Reese, 2015).

Technology options have expanded immensely over the past several decades and it is helpful for universities and instructors to use these technologies to enhance learning environments and knowledge building. There are many who are skeptical of online learning (Allen & Seaman, 2016; Palloff & Pratt, 2013). Allen and Seaman (2016)

reported that over that past twelve years, “. . . no more than one-third of chief academic officers reported that their faculty accepted the legitimacy of online education” (p. 6). However, there can be just as impactful benefits for students who participate in online learning (Watts, 2016). Online learning has developed into more comprehensive and collaborative learning environments as technology as improved and increased within the educational system and the world itself (Palloff & Pratt, 2013). The technological tools used within online learning environments can aid student engagement, give and receive instantaneous feedback, enhancing social presence and thus building community within the classroom (Mazzolini & Maddison, 2003; Rovai, 2001; Watts, 2016).

A Sense of Community

Whether students learn behind a desk in a traditional classroom or in the comfort of their own home, feeling a sense of belonging is essential for every human being. McMillan and Chavis (1986) defined a sense of community as “. . . a feeling that members have of belonging, a feeling that members matter to one another and to the group and a shared faith that members’ needs will be met through their commitment to be together” (p. 9). When a sense of community is absent, students feel a sense of isolation or disconnect, often resulting in alienation. Alienation can be felt as a lack of support as well as lacking a sense of belonging to the group (Bronfenbrenner, 1986; Mau, 1992; Rovai & Wighting, 2005). Lacking connections and support for students can be detrimental for both academic and social success. Many have theorized the need for social interaction and the negative impact of a lack of community or social interaction (Astin, 1993; Bronfenbrenner, 1986; Rovai & Wighting, 2005; Tinto, 1993).

When students enroll in online courses, they are often more susceptible to feelings of disconnect with other students and the instructor, which increases the feelings of isolation (Palloff & Pratt, 2007). The physical distance is difficult for students and feelings of aloneness can arise and due to the missed connections and shared experiences within a traditional classroom (Reilly, Gallagher-Lepak, & Killion, 2012). With the absence of traditional ways of bonding face-to-face, online students can feel a lack of belonging and this can lead to negative social and academic results (Ouzts, 2006; Palloff & Pratt, 2007).

According to a study of presence in online teaching, Lehman and Conceição (2010) found that students interacted more within the classroom setting when they shared in experiences with peers and their instructor. The study also found that interaction increased when they believed they had a connection with someone in their class (Lehman & Conceição, 2010). When students bond over similar or shared values, beliefs, or interests, they grow in trust and care for one another, thus building a sense of community within the learning environment (Brown, 2001; Palloff & Pratt, 2007; Rovai, 2002b). Rovai (2002b) stated that a classroom of students can be a social community in which values, goals, information and beliefs are shared between the students and instructor. Based on Rovai's (2002b) study of developing an instrument to measure classroom community online, results showed that with a higher sense of community there were higher levels of learning in the online course. Within these communities, communication and knowledge sharing helped foster interpersonal connections and a sense of connectedness.

The feeling of connection and community continues to grow within the course when students self-disclose with one another as well as have common interests or beliefs (Brown, 2001; Palloff & Pratt, 2007). According to Rovai's (2002c) study of persistence in asynchronous learning environments, the results demonstrated that for there to be self-disclosure between students; two-way communication had to occur to enhance discussion, openness, and the attainment of shared goals. As communication becomes more open and developed, students feel less isolated and more connected, fostering a sense of care and responsibility for their peers in the classroom (Brown, 2001).

Communication in our current culture has integrated the use of technology; using computer-based communication methods require an examination into one's educational experience in a computer-based world (Hrastinski, 2009; Jones, 2011). Synchronous and asynchronous communication methods are used within the educational system to support learning, student success and achievement as well as support the development of community within the online classroom (Jones, 2011; Watts, 2016). To achieve student success, there must be inquiry into what variables influence community within online courses.

Community of Inquiry Framework

The Community of Inquiry framework was developed by Garrison, Anderson, and Archer (2000) and concentrated on the online learning environment and serves as a guide on how online courses are structured and experienced by students (Garrison et al., 2000; Garrison, 2009; Whiteside et al., 2017). The COI framework details the dynamics between social, cognitive, and instructing as crucial to the learning environment and can

be a framework on addressing the needs of students, both socially and academically (Anderson, 2015; Garrison et al., 2000; Whiteside et al., 2017). The aim of the COI framework is to give structure, “. . . heuristic understanding and a methodology for studying the potential and effectiveness of computer conferencing” (Garrison et al. 2010, p. 6). The main three elements of COI are cognitive presence, social presence and teaching presence (Garrison et al., 2000). Within this online community, learning can take place and knowledge can be made by connections and interactions between these elements (Garrison et al., 2000).

According to Garrison et al. (2000), COI assumes that learning and knowledge making comes from within the network of the community. The first core element is cognitive presence. Cognitive presence refers to the extent in which students are able to make knowledge and meaning through their network of discourse and sustain learning through the online environment (Garrison et al., 2000). Through sustained communication and discourse within the network of the community, cognitive presence can be developed (Garrison et al., 2000).

The second element of COI is teaching presence, which consists of two functions: the educational design and facilitation (Garrison et al., 2000). Teaching presence requires instructors to organize and present the information whereas facilitation can be something done by both instructors and students (Garrison et al., 2000). According to Garrison et al. (2000), teaching presence is shared more often in online higher education settings and common in computer conferencing methods. The concept of teaching

presence aims to increase social and cognitive presence for grasping educational outcomes (Garrison et al., 2000).

The third element of COI is social presence, which will be further examined in the next section in relation to community advancement, development of trust, student interaction and connectivism theory. Garrison et al. (2000) stated that neither cognitive presence nor teaching presence are enough on their own to sustain a learning community. There must be a sense of connection and strengthening of the social environment, which is why social presence is crucial in COI.

Social Presence

When researching community in higher education online learning environments, the need to understand the value of social presence is crucial. As previously stated, online learning lacks the personal interaction of students and instructors communicating face-to-face. This factor can decrease the amount of social presence felt and experienced in an online classroom (Rovai, 2002a). Social presence was first defined by Short, Williams, and Christie (1976) as the “. . . degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationship” (p. 65). Since this first description, many have adapted and modified the definition. According to Garrison et al. (2000) social presence is the students and instructor’s ability to insert their own characteristics and personality traits into the online course, so others can truly see who they are as a real person.

Out of the need to address social presence in online learning, Whiteside (2015) developed the Social Presence Model (SPM), which includes affective association,

community cohesion, knowledge and experience, interaction intensity and instructor involvement.

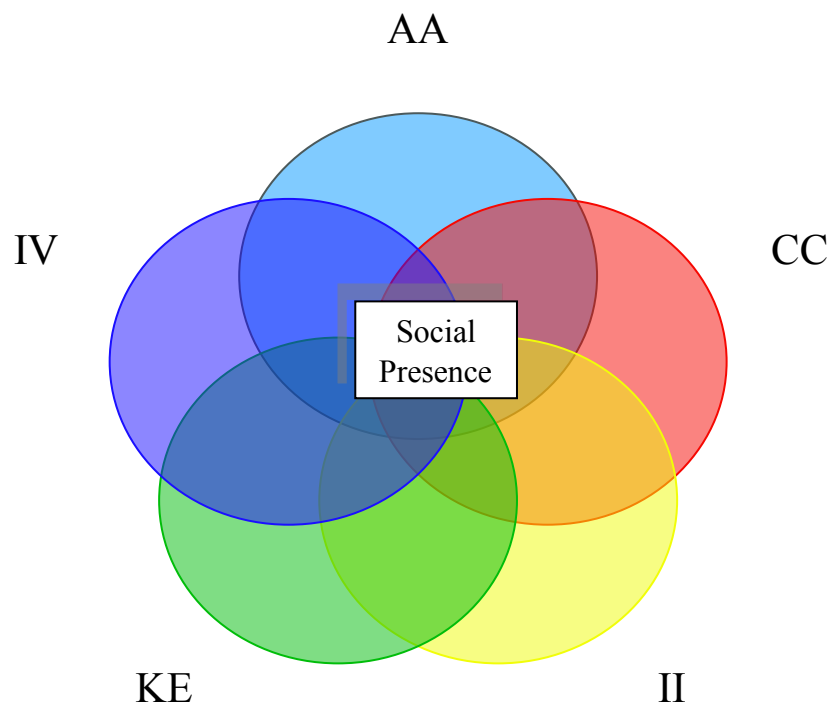


Figure 1. A graphic of the Social Presence Model. (Sources: Whiteside, A. L, Garret Dickers, A. & Swan, K. (2017, p. 15). Social presence in online learning: Multiple perspective on practice and research.)

Affective association refers to the emotional connection within the courses, like humor, emotion, self-disclosure in which students share personal information or emotions and trust (Whiteside et al., 2017). In an online course, this is communication through paralanguage, like when students use caps or bold lettering or emojis to convey their

feelings (Whiteside et al., 2017). Affective association can help or discourage the development of self-disclosure and ultimately the development of trust. Community cohesion relates to the community of the course as a whole and it takes place when students collaborate together with sharing resources, giving help or advice as well as greeting their peers within the course by name (Whiteside et al., 2017). This action also can be a factor in influencing trust between students and a sense of connection.

Connecting with others begins with acknowledging one another and recognizing each other as individuals. According to Palloff and Pratt (2007) student introductions and engaging with other students are ways that students engage and acknowledge their peers, beginning to see them as not just a name on a screen, but real people. Addressing someone by his or her name allows for human connection and the formation of relationships (Palloff & Pratt, 2007).

Instructor involvement is another variable of the SPM and based on literature, it is an important element. Instructor involvement requires action and participation for the instructor, working to establish relationships with students (Whiteside et al., 2017).

Interaction intensity refers to the “level of interaction between participants, which can be a direct quote or a paraphrased” comment from another peer in the course (Whiteside et al., 2017, p. 137). Knowledge and experience are the remaining factors in this model, and they refer to the student’s knowledge and experience he or she brings into the course (Whiteside et al., 2017). This could be done by sharing advice from previous courses, tips or life experiences in the virtual setting among students. The SPM uses student’s experiences and prior knowledge as variables of learning within the online learning

community, as it plays a role in increasing social presence in the community (Whiteside et al., 2017).

As a pedagogical tool, the SPM is a comprehensive framework that will allow instructors and students to develop more connectedness and a sense of community. This model helps provide a framework that creates awareness of connections between students and instructors so that community can be developed and trusting relationships can be cultivated, thus increasing student learning outcomes while helping to increase student motivation and persistence (Whiteside et al., 2017). As social presence continues to grow, students can continue to share their opinions, research, and advice in the online setting. Through shared experiences, students can make connections and relationships through sharing with one another (Brown, 2001).

Development of Trust

Community development also requires the element of trust between students and their instructor. Trust within an online classroom requires self-disclosure as well as openness from the student and instructor. Trust is the “. . . feeling that community members can be trusted and represents a willingness to rely on other members of the community in whom one has confidence” (Rovai, 2002a, p. 3). Rovai’s study (2002a) showed that trust consists of two variables: credibility and benevolence. Credibility refers to a person’s expectations that the other person will honor and uphold his or her word and responsibilities (Rovai, 2002a). Benevolence is when members of the community are motivated to help others within their community and have a genuine compassion for one another (Rovai, 2002a). With the integration of both components,

trust can be established between learners and there can be a sense of openness within the environment (Rovai, 2002a). The establishment of trust in online classes allows for sincerity within the class and between students (Rovai, 2002a). In a study of a sense of community in online learning, Ouzts (2006) found that when sincerity increased among students, the development of trust grew and allowed students to feel comfortable engaging in the course.

The development of trust is not instantaneous. Rovai (2002a) stated that for a sense of community to develop, students must feel that they can trust their peers and instructor. Studies demonstrate that trust must be developed between students initially before there can be higher levels of social presence (Tu & McIsaac, 2002; Whiteside et al., 2017). Trust is initiated when students engage in questions and conversations with their peers, while assessing for consistency among the answers given (Whiteside et al., 2017). Rovai (2002a) noted that when trust is developed, and connections are made, then friendship and community can be developed among the learners. It is vital for student and instructors to be upfront and honest, which enhances social presence and assists in maintaining trust between students and instructor (Whiteside et al., 2017).

Instructors in online learning environments must be aware of the challenges that come with developing trust in online classes. Glenn (2018) discussed typical face-to-face classroom trust building exercises, like ice breakers, introductions and smiling and greeting students. However, in an online class, instructors cannot introduce themselves with the typical handshake and warm affect as in a physical classroom. Developing trust in this setting requires students and professors to put in effort in their virtual settings

(Glenn, 2018). Lehman and Conceição (2010) found that when students interacted in online settings while making connections with one another, the perceived barrier of the physical divide decreased between the learners in the virtual setting. The interaction between students in an online setting is crucial, but not always an easy task.

Student Interaction

Student interaction in online learning is necessary; however, online learning environments require a different type of student interaction, both involving tasks and social interaction (Rovai, 2002a). With the flexibility that online learning offers, many students are attracted to virtual classes. However, many students overlook the intensity of online course requirements. However, there can still be barriers in student interaction and engagement in online settings (Glenn, 2018).

Online courses often require increased amounts of reading, discussion, summaries, tests, and group projects which can leave students feeling overwhelmed as well as isolated (Glenn, 2018). Online students often must juggle multiple assignments throughout the week and if the work becomes overwhelming and they feel alone, many will drop the course or withdraw (Glenn, 2018). Another barrier to student interaction is the student's level of motivation (Wighting, Liu, & Rovai, 2008). If students feel unsafe, insecure, intimidated, or afraid of criticism or negative communication, their motivation may be negatively impacted, thus diminishing learning outcomes and classroom community (Rovai, 2002a; Wighting et al., 2008).

Interaction can also come in the form of acknowledgement of other student's experiences (Rovai, 2002a; Whiteside et al., 2017). If students do not participate in their

online course, they will often suffer both on a social and academic levels. Friendship, community, and a sense of belonging are necessary in students' lives and if these factors are absent, they can negatively impact student learning and retention (Bronfenbrenner, 1986; Rovai & Wighting, 2005). Hrastinski's (2009) study noted that online learning participation was not just required but should be fostered among students to enhance their online learning. Discussion posts, group programs, and student acknowledgement are all ways to help encourage interaction and community cohesion as well as the influence of the instructor in the virtual classroom (Whiteside et al., 2017).

Instructor Engagement and Involvement

Instructors play a vital role in creating and influencing the development of social presence (Lehman & Conceição, 2010; Whiteside et al., 2017). Teaching online moves past the “. . . tried and true models of pedagogy” (Palloff & Pratt, 2013, p. 20) and requires instructors to encourage more discussion, collaboration and group work than face-to-face classes. Online instructors must be visible and organized as well as creative in their instruction within an online environment. An instructor's classroom is often seen as his or her domain, thus what the teacher says is right. However, in online learning instructors need to consider their willingness to release some control (Palloff & Pratt, 2013).

Online instructors must be flexible as well as compassionate to allow the students to give their input, open discussions that may differ in opinion, and allow students to be reflexive and reflective (Palloff & Pratt, 2013). The goal for instructors is to create and enhance student learning, yet students are ultimately responsible for their work.

Instructors can help by being accessible to students and this component is vital to increasing social presence (Digmann, 2016). When students feel that their instructor is not available or engaged in their work, it can lead to feelings of isolation for the students (Whiteside et al., 2017). Timely feedback from an instructor is a method of communicating and helping students feel connected to the class (Andrade, 2016; Whiteside et al., 2017). Placing students at the center of the course development and allowing for student engagement, interaction and student feedback has been shown to have a positive impact on enhancing community and social presence in the course (Lehman & Conceição, 2010).

As previously stated, instructor involvement and development of trust with students is vital to developing sense of community in the classroom. Glenn (2018) discussed the extra effort that instructors must put into their online classes in order to help foster a sense of safety and openness. Instructors need to offer encouragement to students, welcome them into the class, share some personal information about themselves, and provide daily updates within the learning modules (Glenn, 2018). Self-disclosure helps students connect on a personal level with the instructor and can give the students more compassion and care for the instructor (Glenn, 2018).

A sense of community in online learning environments are influenced by social presence, development of trust, student engagement and instructor feedback. The review of literature points to the importance of a sense of connection and strengthening the student's ability to connect and generate knowledge in a virtual classroom setting. The COI and SPM frameworks give structure to the importance of social presence in online

learning environments. They are supported with the use of connectivism learning theory, which underpins the theoretical framework of the study. The tenets of connectivist learning theory represent a network of connections and a process in which students learn and develop in online settings.

Connectivism Learning Theory

Students' ability to learn and create knowledge occurs in various locations and settings. The traditional formal learning experience has not changed significantly in its delivery. A trend in education is the increase of technology used in the classroom as well as a venue of learning (Siemens, 2004). The use of technology in people's lives and in education has rewired our brains, how we learn, and how we communicate (Siemens, 2004). The growth of technology has increased the number of students participating in online learning environments and has altered the landscape of how information is obtained (Dunaway, 2011). Learning is a continual process that now can be accessed formally in the comfort of your own home. Students no longer must attend a physical class to learn and earn their degrees; they can connect peers and instructors in their courses via the internet.

The world of online learning advanced further in the 1990's and has emerged today as a method and environment for learning that connects students, instructors, and peers with course content across the globe (Reese, 2015). The use of technology is a valued aspect for online learnings in accommodating student's 21st century needs. Students today are looking for an education that fits into their schedules and online courses provide and allow students to be more self-reliant and self-motivated with online

courses (Reese, 2015). There are many educators who think less of online learning and yet some call for a “pedagogical shift” in regard to Web 2.0 moving into Web 3.0, online learning, competencies and skills of online learner, so they can understand and apply the information more effectively and efficiently (Reese, 2015, p. 580). That shift is a new learning theory by Siemens and Downes called Connectivism, a “. . . learning theory for the digital age” (Siemens, 2004 as cited by Reese, 2015, p. 580). Siemens (2003) stated that connectivism begins when students connect to and participate in learning communities. Siemens (2003), defined a community as “. . . the clustering of similar areas of interest that allows for interaction, sharing, dialoging and thinking together” (para. 20). Within the virtual community there must be a place for people to gather, room for growth, connectedness for people and resources, and a symbiotic connection for all members within the community (Siemens, 2003, para. 23). In online classrooms, student participation and communication with one another builds knowledge as well as community in the classroom, which Siemens (2003) referred to as nodes, or points of connections in a network. Learning communities are viewed as nodes and nodes are connected to a large network, sharing resources and ensuing student growth and learning (Siemens, 2004).

Connectivism theory suggests that knowledge grows from the student’s learning network, making connections, expanding on concepts and perspectives that are retrieved from online technologies (Dunaway, 2011; Siemens, 2004). The history of connectivism stems from the limitations of behaviorism, cognitivism, and constructivism (Siemens, 2004). Siemens (2003) noted that connectivism differs from other learning theories

because they do not adequately reflect our current digital learning culture, and this is truly important in the world of digital learning, knowledge and experiences.

Connectivism and Online Learning

When discussing learning theories, behaviorism, cognitivism, and constructivism are often used as foundational theories in education and in studying human behavior. Siemens (2004) believed these theories were limited because they did not discuss learning that takes place outside of people as well as learning within an organization. Behaviorism stems from a stance that learning is not truly attainable, and that behavior is more important based on its observability and that learning is related to behavior alterations (Siemens, 2004). Cognitivism is based on the foundation that learning is a process, like a computer system that is controlled by long and short-term memory (Siemens, 2004). Cognitivism holds to the belief that learning occurs from student experiences and knowledge happens when students make meaning or work to understand their experiences (Siemens, 2004).

The following are the main principles of connectivism. Connectivism states that learning is a process of connecting information sources and rests in the diversity of options (Siemens, 2004). Siemens (2004) stated that “. . . decision making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality” (p. 3). Connectivism emphasizes that learning can occur within non-human appliances and it requires learners to seek connections between various concepts and ideas to make meaning (Siemens, 2004). Up to date knowledge is at the heart of all connectivist learning experiences, working to aid learners

in their decision-making skills because connectivism believes decision making is a learning process in and of itself (Siemens, 2004).

Connectivism places value on the influence of technology and connection making as learners experience situations and grow in knowledge (Siemens, 2004). The theoretical framework of connectivism is grounded in “. . . individual ideas and opinions, valuing diversity in the perspective of others, lifelong learning, building relationship, interdisciplinary connections, current information and risk taking” (Reese, 2015, p. 4). Connectivism stresses the idea that the student’s knowledge is stored and manipulated by information technology and focuses on the learner’s ability to make connections, thus resulting in one’s learning process (Siemens, 2004).

With the consistent growth of online learning, it is important to know what makes online courses successful. This first consists of evaluating the role of the instructor (Reese, 2015). Looking through the lens of connectivism, instructors must be adaptable in their use and reworking of technology in the classroom as well as working through their interaction with students.

Online Learning Environments

Many virtual learning environments use a variety of communication methods and learning systems to engage with students. Computer mediated communication (CMC) and learning management systems (LMS) have become a viable way for students to learn on their own time and in their own ways via their computer (Garrison et al., 2000). The concept of time is a factor that is important in online education. Being together in a

classroom no longer has to occur in face-to-face time and the importance of social presence can still be experienced in CMS or LMS methods (Whiteside et al., 2017).

Collaboration and communication are important factors in creating a successful online learning environment. According to Reese (2015) online learning environments should allow students to “. . . collaborate, communicate, share and discuss . . .” throughout the course (p. 582). This can prove challenging for many colleges and instructors. Therefore, universities and professors must be aware of the methods of communication, course work design and curriculum development (Reese, 2015). Mobile technology is a part of students’ daily lives and allows students the mobility to learn wherever and whenever they choose (Jones, 2011; Palloff & Pratt, 2013; Watts, 2016). Through the growth of mobile technology, the opportunity for informal learning has increased (Palloff & Pratt, 2013). Accessibility is key for online learning methods and students can download the applications right onto their phones or tablets and participate in their classes from anywhere (Palloff & Pratt, 2013).

However, many universities have not embraced mobile learning, based on physical limitations, such as small screen size as well as potential safety and academic integrity issues (Palloff & Pratt, 2013). In one study of negative student engagement with technology in undergraduate work, Selwyn (2016) reported that digital technology in higher education courses resulted in student difficulties, lower learning outcomes, and reported levels of disengagement from the university. Computer management systems or learning management systems are the most commonly used for online class delivery, providing consistent delivery to students and (Palloff & Pratt, 2013).

The advancements in technology have made education a possibility all over the world, but the question of how to create robust online learning environments still arises. Communication methods contribute to strong online learning environments, within which students and instructors communicate and engage in order to develop community and create knowledge (Andrade, 2016; Glenn, 2018; Whiteside et al. 2017). With this growth in technology, it is crucial to understand how synchronous and asynchronous methods of communication may influence developing a sense of community in online learning environments.

Communication Methods

As previously mentioned, universities use various methods of communication methods and technology to provide virtual classrooms (Palloff & Pratt, 2013). There are benefits of online learning and the use of technology tools to improve the online learning environment for students. Glenn (2018) stated that in online courses, it is pertinent for the instructor to “. . . add the human touch . . .” by providing support, prompt feedback for students, and “. . . frequent communication in videos, emails, phone calls or discussion posts” (p. 390). Based on the varied learning styles and student capabilities, university instructors must be mindful of their methods of communication, presentation of the material as well as teaching techniques (Singh, Mangalaraj, & Taneja, 2010).

Synchronous and Asynchronous Communication

There are two primary types of communication that online institutions use, asynchronous and synchronous techniques (Jones, 2011; Palloff & Pratt, 2013). Synchronous communication refers to a method in which all students in the course or

learning system are all present at the same time, even if they are not physically in the same geographical location (Jones, 2011; Watts, 2016). Asynchronous communication refers to students who interact at different times and from various locations at any time (Jones, 2011; Watts, 2016).

Most CMS or LMS venues use asynchronous means of communication, which allow students to engage in the coursework requirements at varied times and communicate with one another at the best time for each individual student. The use of asynchronous LMS allow for students all over the globe to take part in the course when it is most convenient for them to do so (Palloff & Pratt, 2013). For example, many universities require students to post in discussion forums throughout the course to help students connect, discuss the material, and interact with each other (Mazzolini & Maddison, 2003). This can foster a sense of community within an online course because it acts as primary method of communication for students and their instructors to communicate (Mazzolini & Maddison, 2003). In a study of asynchronous and synchronous tools in online courses, Oztok, Zingaro, Brett, and Hewitt, (2013) found that when communication is used asynchronously, students can spend time reflecting on the concepts and ideas so that they can engage with more detailed responses. Asynchronous communication also gives students the option of interaction with people in the classroom without the constraints of figuring out a convenient time or place to interact (McNeil, Robin, & Miller, 2000).

According to Digmann (2016), for a sense of community to develop within online classes, both synchronous and asynchronous communication methods should be utilized.

Using synchronous tools like teleconferencing, video conferencing, online chat room, Skype, Google Hangouts, and Google Docs can aid students in their personal interactions with one another and build relationships with their classmates (Cummings, 2016; Jones, 2011, Oztok et al., 2013, Palloff & Pratt, 2013). Oztok et al. (2013) found that students using synchronous methods of communication allowed the students and instructors to form relationships with one another and work together in shared learning outcomes.

Both synchronous and asynchronous communication allows for collaboration within the classroom; it is up to the instructor on how to implement both within the LMS (Jones, 2011). In regard to weekly discussions, synchronous communication methods may enhance community and social presence more than asynchronous discussion (Oztok et al., 2013). In a study of virtual communication in a graduate seminar, Schwier and Balbar (2002) found that when students can communicate via chat rooms in real time it creates a sense of urgency to respond and engage with others. The study also found that when students chat in real time, it motivates students to be more proactive in their assignments and readings, so that they could more effectively engage in the discussion posts (Schwier & Balbar, 2002). Working in groups in an online course can seem difficult but using both synchronous and asynchronous methods can help aid in collaborative group work (Singh et al., 2010).

Working in online environments requires students and instructors to communicate both formally and informally. Hall (2009) reported that lines between informal and formal learning environments in education have blurred with the rise in technology, thus resulting in new and adaptive communication approaches. In the study of the fusion of

informal and formal learning environments, Hall (2009) reported that student's valued customization of their communication in online settings. Students wanted to manage their academics and their methods of communication, whether it be videos, social media, or discussion boards (Hall, 2009). Even though online learning lacks face-to-face communication, students and instructors can still build on technology and communication methods to increase learning and community. Computer based communication requires more text-based communication rather than oral communication (Garrison et al., 2000). Through various methods of communication, students and instructors can learn more about one another, build collaboration and connection and grow in knowledge and experience. This process enhances social presence within the online classroom and can enhance a sense of community.

Summary

In this chapter, the review of literature presented an overview of studies that examined technological advances in the 21st century that influence the growth of a sense of community (Jones, 2011; Palloff & Pratt, 2013). As well, the review of literature presented an overview of the COI framework, including social presence, cognitive presence and teaching presence as well as the SPM (Garrison et al., 2000; Whiteside et al., 2017). This chapter also reviewed studies that examined the development of trust, student and instructor involvement in online courses (Lehman & Conceição, 2010; Palloff & Pratt, 2013; Rovai, 2002a). Communication methods were demonstrated as crucial factors in developing social presence and community in online courses (Oztok et al., 2013; Singh et al., 2010).

This review of literature points to the rise in virtual learning and through connectivism, knowledge is created through connections and networks (Siemens, 2004). Online classrooms provide those networks and connections that students can acquire knowledge and learn in an ever-changing world (Siemens, 2004). The review of literature presented the dynamics of online learning environments, online communication methods, specifically the use of synchronous and asynchronous communication methods in online courses (Jones, 2011; Mazzolini & Maddison, 2003; Oztok et al., 2013; Palloff & Pratt, 2013; Watts, 2016). The review of literature empathized the continued growth and development of online education, while also illuminating the elements in which community in online settings is influenced. Based on the review of literature, the need to research and understand what influences positive community development in online courses is essential.

Chapter III describes the methodology for the proposed study in order to better understand the variables that contribute to the growth of community and in online learning environments.

CHAPTER III

Methodology

Introduction

For a sense of community to develop within online courses, students and instructors engage in using both synchronous and asynchronous communication methods (Rovai, 2002a; Oztok et al., 2013; Whiteside et al., 2017). To successfully generate a sense of community in online courses, further research was needed to examine the influence of synchronous and asynchronous communication methods in online classrooms. This study explored what are the effects of synchronous and asynchronous communication methods on a student's sense of community in online courses?

This study utilized a convergent mixed method design to survey (see Appendix A) 734 undergraduate students participating in online, non-cohort style courses at a private university in East Texas to measure the relationship between communication methods and the developing sense of community (Rovai, 2002b; Digmann, 2016). The modified study investigated the perception of community through open-ended supplemental questions. The instrument evaluated the sense of community in the classroom and subscales of connectedness and learning. According to Rovai (2002b), connectedness included the students' feelings of trust between one another and the social community.

The learning subscale included the students' feelings towards their interactions with one another, as they worked towards learning objectives and grow in knowledge (Rovai, 2002b). Digmann's (2016) study used the student's level of isolation as the supplementary dependent variable, seeing as students who felt higher levels of isolation did not experience a high level of community in the online environment. This replication of Digmann's (2016) study used a student's sense of community as the dependent variable and trust, student interaction, participation and instructor feedback as independent variable. This chapter will detail the hypotheses, research sample, instrumentation, research design, data collection, data analysis, and provisions of trustworthiness.

Questions/Hypotheses

Community development may be influenced by using synchronous and asynchronous communication methods that are used in the course. Digmann's (2016) hypotheses focused more on what contributed to student feeling less/more isolation, rather than on what positively affected a sense of community. In the previous study, the focus was on the levels of isolation a student may or may not experience. However, Digmann (2016) used a sense of isolation as the assumed opposite of a sense of community and did not accurately address the sense of community experience. This study asked what are the effects of synchronous and asynchronous communication methods on a student's sense of community in online courses? This study focused on a sense of community, rather than levels of isolation and the impact of synchronous and asynchronous communication methods used in the course. The research was guided by

one initial research question examining the effects of synchronous and asynchronous communication methods on a sense of community in online learning, which evolved into two research questions. The second research question asked if student's feel sense of community in online learning environments, what other factors influence a student's decision to persist in online courses?

Sample

The participants in this study were surveyed, using a purposive sample of undergraduate, non-cohort students taking online courses at a small private faith-based university in East Texas. Purposive sampling is a type of non-probability sampling and is used in “. . . cases or subjects have a known probability of being selected” (Vogt, 2007, p. 81). Purposive sampling is used when the researcher has a specific purpose and “. . . seeks to identify members of an unusual group” (Vogt, 2007, p. 82). The university had both face-to-face students as well as students who only take classes online, but this sample will survey the online undergraduate population of 734 students.

Instrumentation

The survey was administered during the second 5-week module, to a total of 56 undergraduate courses. Through the semester there were three modules, each lasting five-weeks for undergraduate online students, as well as full semester courses. The survey did not require students to identify themselves, so all survey results are anonymous, and results were kept confidential in a private spreadsheet. Consent to participate in the survey was required and only students 18 and older were selected to participate (see Appendix D). Prior to administering the survey, Institutional Review

Board (IRB) approval was secured from Stephen F. Austin State University as well as the institutions from which the data was collected and the letter of permission to replicate the study (see Appendix E). The modified survey was distributed through via email to all students enrolled in an online module 3 and full semester class, which minimized any potential bias. The researcher is an adjunct professor at the university.

The instrument used to gather data on developing a sense of community and communication methods was the Classroom Community Scale (CCS), a 20-question scale in 5-point Likert format (Rovai, 2002b) (see Appendix B). The CCS was the main instrument for this study with modified supplemental questions (see Appendix C). The survey included 20 questions to measure the frequency of instructor feedback, student frequency of engagement in discussion, and number of students in the class. There were eight modified supplemental questions, including three open-ended questions (see Appendix C). The two additional open-ended questions were added to allow students to discuss ways they can communicate and build community within their courses as well as reasons that may factor into their retention and completion of their degree from that institution. Qualtrics was used in implementation and delivery of the survey.

Design

Mixed method research is a methodology of mixing and integrating quantitative and qualitative data within a study (Creswell, 2014). Johnson, Onwuegbuzie, and Turner (2007) stated the following:

Mixed method research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches

(e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purpose of breadth and depth of understanding and corroboration. (p. 123)

The use of a mixed methods design allowed the researcher flexibility and examined specific phenomenon (Onwuegbuzie & Collins, 2007). A mixed method design also allowed the researcher to understand the size and target population of research participants (Onwuegbuzie & Collins, 2007). Mixed method typology examined the time in which the data was collected, sequential or concurrent as well as the relationship of sampling including identical, parallel, and multilevel samples (Onwuegbuzie & Collins, 2007). This study used a non-probability purposive sampling method, sending out the quantitative 20-question scale Likert scale survey with supplemental qualitative questions to all undergraduate online students enrolled in courses during the third five-week module and full semester courses (Creswell, 2007; Onwuegbuzie & Collins, 2007).

The use of a mixed method study granted researcher to opportunity to take full advantage of the strengths of quantitative and qualitative data (Johnson et al., 2007). This study was a convergent mixed methods design (Creswell, 2007; Creswell & Plano Clark, 2018). See Figure 2. Convergent mixed method design pulled the results from both data sets so that they can be combined or merged together to interpret the data (Creswell & Plano Clark, 2018).

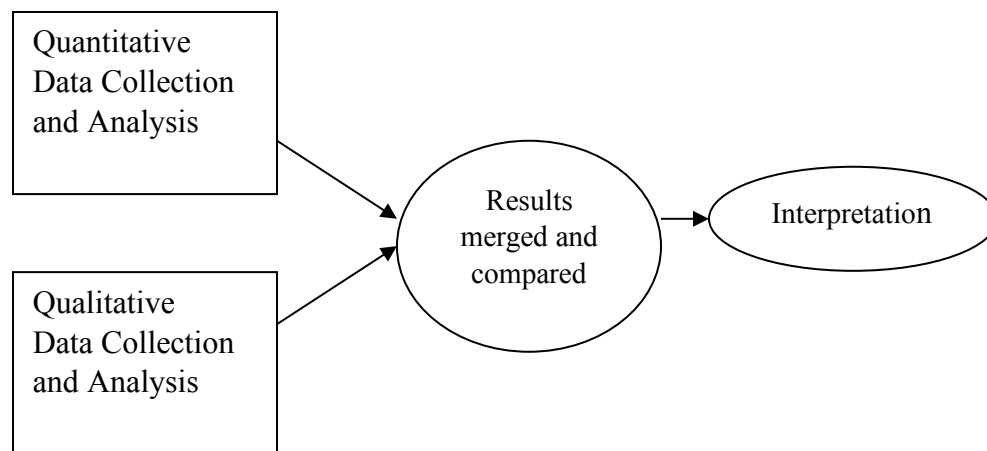


Figure 2. A graphic of the convergent design (Sources: J. W. Creswell and V. L. Plano Clark, 2018, *Designing and Conducting Mixed Methods Research* (Kindle Location p. 2782) Kindle Edition).

The researcher chose convergent design “ . . . to compare quantitative statistical results with qualitative findings” for a more comprehensive understanding of the problem (Creswell & Plano Clark, 2018, chapter 3, section 9, para 2). While convergent design can be in either a one or two-phase approach, the researcher used a one phase approach in which qualitative data will be added to the quantitative survey (Creswell, 2007). In this study, the qualitative data was used to help bolster and enhance the quantitative data collected in an electronic survey. Since this study’s priority was given to the quantitative methods, the QUAN is upper case and utilized the use of the plus sign, representing the concurrent use of QUAN and qual methods as well as parentheses since the methods are embedded resulting in (QUAN + qual) (Creswell & Plano Clark, 2018).

In conducting mixed method research, it was vital to understand the philosophical assumptions and theories that were used. For the purpose of this study, the philosophical worldview was the pragmatic worldview, in order to engage both data sets and strengths of each to understand the phenomenon and consequences of the research (Creswell & Plano Clark, 2018; Onwuegbuzie & Leech, 2005; Teddlie & Tashakkori, 2009). This study allowed for quantitative data to be put into close-ended questions and qualitative approach will use open-ended questions to let the participant answer freely, providing their own opinions, not predetermined answers (Creswell, 2014). The study would not have been as robust if only a quantitative approach was used. A sense of community was assessed by a Likert survey, however adding two open-ended questions increased the understanding of connectedness in online learning.

Data Collection

The CCS was used for quantitative data collection, asking 20 questions in 5-point Likert scale statements to all undergraduate non-cohort online students. The survey included questions on connectedness among classmates, interaction, isolation, and trust (Digmann, 2016; Rovai, 2002b). Concurrently, the survey examined the perception of community by using supplemental open-ended questions at the end of the survey. The initial email was sent in week two of the third module in the fall semester of 2018. Each module was five weeks long as well as 16-week full semester courses. The survey was open from the second week of module 3 until two weeks after the end of the fall semester.

Confidentiality and Anonymity

The email informed the students of the purpose of this study and their right to refuse in participating in the survey as well as a link to the study. The student could discontinue the study at any time and for any reason with no penalties or repercussion. Each student was informed at the start of the survey, regarding the informed consent (see Appendix D). Qualtrics, an online survey program, was used to create and administer the survey. The survey remained open until two weeks after the end of fall 2018 semester. The students who participated and completed the study had the opportunity to be entered a drawing for four gift cards in the amount of \$50 dollars each to Amazon. The data was stored on the researcher's personal password protected computer and kept for a minimum of three years.

Data Analysis

After the data was compiled, SPSS and Excel programs were used to analyze the quantitative data. SPSS was used to run the statistical test and Excel was used to sort and store the data from the survey in Qualtrics. Quantitative data was analyzed through the statistical test of factorial analysis to explore the factors that contribute to a sense of community in online learning environments. Factorial analysis “. . . refers to a set of statistical procedures designed to determine the number of distinct constructs needed to account for the pattern of correlations among a set of measures” (Fabrigar & Wegener, 2012, p. 3). The use of factorial analysis determined the “. . . number of distinct constructs assessed by a set of measures” (Fabrigar & Wegener, 2012, p. 3). Factorial design allowed for “the manipulation of more than one independent variable in the same

experiment” (Keppel, 1991, p. 18). Factorial analysis presumes that the “unobservable constructs account for the structure of correlations among measures” (Fabrigar & Wegener, 2012, p. 4). Factorial analysis measured the variability between the variables that were observed and correlated and aimed to discover the independent latent variables (Fabrigar & Wegener, 2012).

Tucker and MacCallum (1997) stated that the latent variables are internal and cannot be directly measured, rather more hypothetical concepts. These internal variables can be used to help understand and account for observed phenomena” (Tucker & MacCallum, 1997, p. 2). The variables that are observed can be shown in linear combinations and can be conducted as exploratory factor analysis, common factor analysis, or a principal component analysis (Fabrigar & Wegener, 2012; Osborne & Banjanovic, 2016). Exploratory factorial analysis (EFA) sets out to examine the “pairwise relationships between individual variables and seeks to extract latent factors from the measured variables (Osborne & Banjanovic, 2016, p. 1). Principal component analysis (PCA) is often used in a similar fashion as EFA, however for this study, the data analysis used exploratory factor analysis in order to reveal patterns among the inter-relationships of the items. Questions that focused on connection in the CSS were loaded into SPSS to identify underlying relationships between the variables.

For the qualitative questions of the study, the responses were analyzed for emerging themes and then used to support and create a richer the quantitative data results. Creswell and Plano Clark (2018) stated the most common method is to compare and analyze the data is to do it separately with two databases. Creswell and Plano Clark

(2018) stated that the researcher can either use a qualitative data analysis software or hand code the data. The researcher used hand codes, using In Vivo Coding to use the words of the participants to create symbols for themes (Saldana & Omasta, 2018).

Both data sets were interpreted by summarizing the results and significance of the quantitative data and compared the results to the hypotheses. Lastly, results were interpreted the results and inferences drawn to answer the hypotheses (Creswell & Plano Clark, 2018). According to Creswell and Plano Clark (2018) analysis and interpretation can be done in a linear method in quantitative studies, but in mixed method research are implanted at the same time. Tables were utilized in Chapter IV to arrange and compare the results of the study, as well as to look for ways to approve or disapprove the concepts (Creswell & Plano Clark, 2018).

Provisions of Trustworthiness

A mixed method design focuses on trustworthiness and trustworthiness includes credibility, transferability, dependability and confirmability (Creswell, 2014). In a mixed method design, validity must be ensured for both data sets (Creswell, 2014). Construct validity requires that the instruments scores measured what it should and when discussing reliability, the instrument scores were consistent and precise (Creswell & Plano Clark, 2018). The CCS is a reliable instrument to measure classroom community with a Cronbach's coefficient of α of .93 (Rovai, 2002b). The survey Digmann (2016) administered had a Cronbach's coefficient α of .9311. The raw score of the CCS ranged from 0-80, with 0 having no sense of community to a maximum of 80 representing a

strong sense of community. This study has been proven reliable and valid with previous use and documentation.

The qualitative component of this study emphasized increasing trustworthiness through credibility and confirmability (Cope, 2014). Cope (2014) stated that credibility is the researchers' depiction of the participant's opinions and the researcher will support credibility of this study by several methods. Credibility was supported by the researcher's methods of engagement and will verify the findings to the members who participated in the study (Cope, 2014).

Confirmability is the researcher's capability to avoid the researchers' bias and accurately portray the participants thoughts and statements (Cope, 2014). The researcher reached confirmability by “. . . describing how conclusions and interpretations were established.” (Cope, 2014, p. 89).

Zohrabi (2013) stated that it is the researcher's responsibility to “. . . build validity into the different phases of the research from data collection through to data analysis and interpretation” (p. 258). To certify trustworthiness, it is encouraged that researchers used methods like triangulation, and constant reporting of disconfirming evidence (Creswell & Plano Clark, 2018). Triangulation is a combination and comparison of multiples data sources, data collection and analysis procedures, research methods, and inferences that arise within a study. This is considered a process and outcome (Teddlie & Tashakkori, 2009). Triangulation only gathered by one method is not a strong method and could be biased (Zohrabi, 2013). Creswell and Plano Clark (2018) also recommended qualitative data analysis procedures such as note taking, using

qualitative data analysis software, develop themes and interrelate the themes, summarize the findings and then interprets how the themes connect or support the hypothesis. Limitations must also be identified as well and will be done so by describing the limitations in the results of the study (Creswell & Plano Clark, 2018).

Summary

Chapter III discussed the convergent mixed method design that were utilized in this study to examine the development of a sense of community in online college courses. The CCS examined the variables of student's perception of isolation, participation, trust, and student engagement and instructor feedback, with a sense of community as the main dependent variable. Supplemental question and open-ended questions allowed students to express other communication techniques or methods used in developing community. Chapter IV details the analysis of the data and discuss how the data either confirms or rejects the hypotheses as well as the discussion of the findings.

CHAPTER IV

Findings

Introduction

This study investigated the effects of online communication methods, both synchronous and asynchronous on a student's sense of community in online courses. This study utilized a convergent mixed method design to survey 734 undergraduate students participating in online, non-cohort style courses at a private university in East Texas to measure the relationship between communication methods and the developing sense of community. The chapter details the questions posed in the study and the research collected that answer the question of the effect of communication methods on a student's sense of community in online courses.

Participants

The survey was sent out on the second week of the third 5-week module. The survey was open from the second week of module three until two weeks after the semester concluded. A total of 154 students participated in the survey, resulting in a 20.98% response rate. The modified survey of the Classroom Community scale investigated the perception of community through 20 questions in 5-point Likert scale statements and additional supplemental open-ended questions at the end of the survey.

70.40% of students were enrolled in 5-week courses and 29.60% were in 16-week courses (See Table 1).

Table 1

Length of Current Courses

Length	Participants	Percentage
Sixteen weeks	57	29.60
Five weeks	28	70.40

Students responded at a 45.60% that they had completed 1-3 weeks, 22.40% had completed 4-6 weeks, and 32 % had completed 7-10 weeks of their course (See Table 2).

Table 2

Weeks Completed in Current Course

Weeks Completed	Participants	Percentage
1-3	57	45.60
4-6	28	22.40
7-10	40	32

A total of 81.75% of students reported making 1-5 posts or responses on discussion boards on average per week in their course, 15.87% reported 6-10 posts per week, and 2.38% reported making 11 or more posts per week (see Table 3).

Table 3

Discussion and Response Posts

Posts & Responses	Participants	Percentage
1-3	57	45.60
4-6	28	22.40
7-10	40	32

Participants were asked to report on the feedback from their instructors. A total of 42 students (33.33%) responded that their professor gave a moderate amount of feedback and 38 students (30.16%) stated their professors gave a great deal of feedback. There were 32 participants (25.40%) that reported a lot of feedback from their instructor while 12 students (9.52%) reported a little bit of feedback from their instructor. There were two students (1.59%) that reported no feedback from their instructors (See Table 4).

Table 4

Instructor Feedback

Amount	Participants	Percentage
A great deal	38	30.16
A lot	32	25.40
A moderate amount	42	33.33
A little	12	9.52
None	2	1.59

Participants were asked to select communication methods, both synchronous and asynchronous methods. A total of 113 participants (41.09%) reported discussion boards

as the primary communication method. Of the participants, 99 (36%) reported the use of emails and 34 participants (12.36%) reported the use of emails and 14 responses (5.09%) reported text messages to be used. Lastly, 11 responses (4%) reported the use of phone calls, 2 reports (0.73%) of the use of Skype and 2 reports (0.73%) reported the use of Google Hangouts. Participants reported zero use of social media like Facebook, Snapchat, Twitter, Instagram or Whatsapp and zero usage of Zoom (See Table 5).

Table 5

Synchronous and Asynchronous Communication Methods

Communication	Response
Synchronous	
Text Messages	14
Phone Calls	11
Google Hangouts	2
Skype	2
Zoom	0
Social Media	0
Asynchronous	
Discussion Boards	113
Emails	99
Self-Recorded Videos	34

Quantitative Data

The study's research question asked what are the effects of synchronous and asynchronous communication methods on a student's sense of community in online courses? To answer this question an exploratory factor analysis was performed on survey

questions 1, 3, 5, 7, 9, 11, 13, 15, 17, and 19, which focused on connectedness. The ten questions were analyzed, and the total variance and component matrix was examined to determine significant in the study. The total variance (see Table 6) revealed two factors (see Table 6-9).

Table 6

Total Variance

Question number	Question	Total Variance
1	I feel that students in this course care about each other	5.523
3	I feel connected to others in this course	1.023
5	I do not feel a spirit of community	.775
7	I feel that this course is like a family	.688
9	I feel isolated in this course	.500
11	I trust others in this course	.413
13	I feel that I can rely on others in this course	.364
15	I feel that members of this course depend on me	.287
17	I am uncertain about others in this course	.247
19	I feel confident that others will support me	.179

Factor 1 detailed statements regarding connection to other students, feeling familial, support from others, and the ability to support and rely on other classmates in the course. The highest loading factor was that students could rely on other students in the course and this factor was important to students in online courses.

Table 7

Factor 1- Supportive Relationships

Question number	Question	Direct Oblimin
7	I feel like this course is like a family	.847
13	I feel that I can rely on others in this course	.836
1	I feel that students in this course care about each other	.816
3	I feel connected to others in this course	.804
19	I feel confident that others will support me	.780
9	I feel isolated in this course	-.695
5	I do not feel a spirit of community	-.702
17	I feel uncertain about others in this course	-.684

Factor 2 detailed statements about connection, isolation, and dependence on one another. The highest loading factor was negatively correlated at $-.832$, meaning as the more connections made, the less dependence the individual felt from other students.

Table 8

Factor 2- Sense of Reliance

Question number	Question	Direct Oblimin Loading
15	I feel that members of this course depend on me	-.832

The component matrix (see Table 9) depicted the component loadings, which are the correlations between the variable and component. The potential values range from -1 to $+1$ (Bruin, 2006). The component matrix displayed the two extracted components that reported an eigenvalue greater than 1 (Bruin, 2006).

Table 9

Component Matrix

Component	1	2
I feel that students in this course care about each other	.816	.302
I feel connected to others in this course	.804	.200
I do not feel a spirit of community	-.702	.230
I feel that this course is like a family	.847	.149
I feel isolated in this course	-.695	.298
I trust others in this course	.773	.086
I feel that I can rely on others in this course	.836	.156
I feel that members in this course depend on me	.376	-.832
I feel uncertain about others in this course	-.684	-.006
I feel confident that others will support me	.780	-.068

Note: Factor loadings >.65 are in boldface.

Qualitative Data

Participants answered two open-ended questions and the responses were coded and assessed for themes. Question one asked to further elaborate on the question of communication methods, asking whether those communication methods contributed to feeling more connected in the course. The second open-ended question asked students to describe their plan to stay and persist to graduation and the factors that influenced them to stay at the university. The following themes presented from the first open-ended question.

Open-Ended Question 1

Of these methods selected, please discuss whether they contributed to feeling more connected in the course and why or why not?

Discussion boards. One theme that emerged from the open responses was that the use of discussion boards helped to get to know their classmates and learn collectively. Other responses included comments that stated discussion boards helped build rapport between classmates because of interaction of the discussion boards. One response stated that the “discussion boards help me feel connected because the whole class is interacting throughout the week.” Other responses stated that discussion boards helped create a sense of being connected to other students and were an active way to participate.

Discussion boards were viewed as a method to receive quick feedback from classmates and if responses were quick, it made students feel more connected and reported more effectiveness when using discussion boards. Responses also touched on the fact that discussion boards were required, but even though they were requirements for the class, it was as communication method, which helped connect classmates both socially and academically.

Emails. Participants reported emails as the second most used communication method, reporting that emails were easier and efficient ways to connect with the class and the instructor. Even though email is asynchronous communication, students reported that you can quickly respond, which helped increase feeling connected. One response stated that “emails are more personal and prompt.” Overall, the consensus was that emails felt

more involved and personal, especially when emailing with the professor. Emails were a consistent way of connecting with classmates and the instructor and worked sufficiently.

Self-recorded videos. Even though self-recorded videos were not utilized as much as discussion boards and emails, participants felt that self-recorded videos positively contributed to feeling connected. Students reported enjoying seeing a face and voice of their classmates or instructors. Participants reported that the videos helped show the personality of their instructors and classmates, adding to a sense of connection. Students also reported that videos increased their feelings of learning together while receiving more details. Students reported feeling connected through videos because it “felt like they were talking to someone face-to-face.”

Very few students reported the use of any synchronous communication methods. .073% reported the use of Google Hangouts, but did not answer the open-ended question to explain why or why not it contributed to feeling connected. A total of 4% of participants reported using phone calls and the open-ended responses detailed the students feeling connected to their professors when using phones to communicate. Responses stated it was nice to put a voice to an email or discussion board post. A total of 5.09% reported using text messages, stating that it was helpful in connecting with peers in the course, especially if they knew the student from a previous course.

Open-Ended Question 2

There are a number of factors that can influence whether or not a student will decide to continue his or her degree. What factors influence your decision to complete your degree at this university?

The participants were coded and analyzed for themes. The analyzed questions resulted in five themes. The five themes that emerged included personal reasons, a sense of community, online course structure, faith-based education, and financial.

Personal reasons. Responses that included personal reasons ranged from personal goals to personal family influence. Many responses stated that the student had developed personal goals for their lives, and they would persist to achieve those goals. Many participants responded that their family was a strong influence on their personal lives and goals, stating that their family support was a strong influence on finishing school. Personal reasons also included responses that spoke to their personal calling to pursue a specific career. Responses often included a more intrinsic personal reasons like achieving a dream or overcoming a challenge in their academics.

A sense of community. Participants responded that positive relationships with other students, faculty and staff were influential in persisting to graduation. This theme pointed to a strong sense of community between students and faculty and staff and feelings of being connected and supported by one another. Responses noted the encouragement they received from instructors as well as the secure bonds and relationships. Students expressed feeling cared for by peers as well as faculty and staff. Responses also connected the faith-based environment alongside the connection to professors, staff, and other students as a shared interest. Students felt that their professors genuinely cared about their success.

Online course structure. A strong theme was the structure of the online courses. Responses included positive responses for five-week courses and how they were flexible

with their lifestyle, whether that be work or taking care of a family. Many participants stated that five-week courses were more manageable than full semester while balancing their professional lives. Many students voiced feeling comfortable with the use of the LMS in addition to the course structure. Working on finishing their degree was important to them and as equally important was the structure of the course, making sure it fit in with their lives and schedules.

Faith-based education. Students chose to attend and persist at this university based on their faith-based education. Students reported feeling supported by the integration of faith in their education by having devotionals each week. It was important for many students to attend a school with a Christian worldview along with strong academics. Responses stated that many students enjoyed the course material that empathized a Christian worldview.

Financial. Participants reported that finances were a factor in persisting in their degree at the university. Many students stated that they had already spent time at other universities, therefore spending money and they needed to graduate from this university. Time plays a factor into money as well. Many students reported that they had already invested so much time and money into their degrees that they needed to finish at the university. Responses stated that the online courses were more financially sound, rather than paying more money for traditional on-ground classes. Responses regarding finances were less detailed, but yet still emerged as a theme in why students decided to stay and persist at the university.

From the analysis of both quantitative and qualitative data, a second research question was developed, asking if student's feel sense of community in online learning environments, what other factors influence a student's decision to persist in online courses? In this sample, it was clear that students remained at the university because they felt included within a caring community, could experience faith-based academics, and achieve their personal goals through the online courses at the university.

Summary

In this chapter, a factorial analysis was conducted and revealed two connection factors. The factors were then named based on the content of the questions that were loaded into each factor. Factor one contained the most questions, which centered on relationships while Factor two had only one factor loaded. Factor two questions revolved around a sense of reliance. A discussion of the findings is discussed in the following chapter.

Qualitative analysis was conducted on two questions, resulting in the high use of discussion boards, emails, and self-recorded videos as the most asynchronous communication methods in the courses. The second open-ended question resulted in five themes: Personal reasons, a sense of community, online course structure, faith-based education, and financial were themes of the student responses.

CHAPTER V

Conclusions, Implications, and Recommendations

Introduction

The study examined the effect of asynchronous and synchronous communication methods on a sense of community in online learning environments. The study showed the sense of community between students in online courses and the influence of synchronous and asynchronous communication methods. Participants in the study included 154 out of 734 students in online course, resulting in a 20.98% response rate. The Classroom Community Scale was used in the study and permission was given by the creator, Fred Rovai (2002b). Permission was given by the IRB at the school the study was conducted at and the surveys were sent out through Qualtrics.

The survey responses were collected, and the quantitative responses were analyzed in SPSS, using a factorial analysis. The qualitative questions were coded and analyzed for themes. Two factors were found from the analysis and the factors were labeled supportive relationships and connection. The qualitative results found that students found discussion boards, emails, and self-videos to be the most used methods of communication in their courses and were asynchronous methods used to create a sense of community. The second open-ended question resulted in five themes of why students

stay and persist at the university: Personal reasons, a sense of community, online course structure, faith-based education, and financial. From the analysis of both quantitative and qualitative data, a second research question evolved, examining if student's feel sense of community in online learning environments, what other factors influence a student's decision to persist in online courses? The themes showed that students decided to stay and persist because they felt connected and supported by faculty and staff as well as connected through a shared religious foundation within academics.

Discussion of the Study

The purpose of this study was to examine the effect of online communication methods, both synchronous and asynchronous, on developing a sense of community in the online learning environments at a small private university in Texas. This study was a modified replication, using the Classroom Community Scale (Rovai, 2002b). This study was guided by the question what are the effects of synchronous and asynchronous communication methods on a student's sense of community in online courses? Through the analysis of the quantitative and qualitative questions, another research question evolved, asking what variables influence a student's decision to persist in online courses? The following conclusions were based on the quantitative and qualitative responses. There were two factors that were found significant to a sense of community in online courses.

The question this study asked was: what effects of online communication methods were, both synchronous and asynchronous, on developing a sense of community in the online learning environments? A factorial analysis resulted in two significant factors

along with themes from the open-ended question. Factor 1 (supportive relationships) consisted of seven questions. These questions focused on feeling like the course was a family, feelings of trust among students, confidence that other students would support each other, and the ability to rely on other in the course. The data analysis supports prior research that emphasizes the importance of connection and a sense of community in courses (Hrastinski, 2009; Jones, 2011; Tinto, 1975, 1987, 1993; Rovai, 2002c; Siemens, 2004). Data analysis also supports the importance of social presence in online courses (Whiteside et al., 2017). Factor 2 (sense of reliance) consisted of one question. The question was related to feelings of sense dependence on members of the course. This data analysis revealed the students did not feel a sense of dependence on one another and did not rely on each other in the course.

The open-ended questions helped illuminate which communication methods were used in the course and which most contributed to a sense of community in the online course. The use of asynchronous communication methods outnumbered the use of synchronous communication methods in online classes. There was zero use of any social media use within the online courses. Discussion boards were the primary source of asynchronous communication with a 41.09% response rate and were the student's main source of communication. The effects of using the discussion boards allowed students to engage in conversation back and forth, disclose personal information, and dialogue with peers and instructors. Discussion boards helped build rapport among the students, specifically when sharing personal information and receiving feedback or encouragement

from students and instructors. When it came to affecting a student's a sense of community, discussion boards were the most impactful as reported by the participants.

Emails were the second most reported asynchronous communication method, with a 36% response rate. The responses showed that emails were effective and efficient, showing that students felt more connected with quick responses. There was a level of accessibility that emails provided, that discussion boards did not, and students felt more connected when their peers or instructors were accessible which supports the research (Palloff & Pratt, 2013).

Lastly, self-recorded videos were reported at 12.36%, which is a significant decrease from the previous communication methods. Participants stated that having their instructors and peers post videos helped put a face to the person and made it feel like they were actually learning and interacting together. Participants reported that they were not always comfortable with making self-recorded videos but did help provide a way for the teacher to know them in a deeper way than just seeing a name on a screen or an avatar. Self-recorded responses had more discussion about the instructor, implying that students liked seeing their teacher and receiving video feedback from their instructor.

The second opened-ended question asked students what factors influenced the student to complete his or her degree at the university, which helped give light to why students decided to stay. The responses were analyzed and coded, resulting in five themes: Personal reasons, a sense of community, online course structure, faith-based education, and financial. Personal reasons ranged from a sense of personal calling, family encouragement, personal goals, or career aspirations. The theme financial showed

that students had already invested both time and money into their degrees and it would be a loss of time and money if the student decided to leave. A sense of community was strong theme of why students would be retained and persist at this university, based on the relationships that were created and encouraged, specifically with staff and faculty. Another strong theme was the importance of having a faith-based education, which seemed to have a connection to the theme of community.

Implications

Schools that offer online courses can gain important information about how a student's sense of community can be impacted by communication methods which then can improve methods of communication in online learning environments. This information can also aid develop a better understanding when it comes to enrollment strategies, retention efforts, academic planning, course scheduling, and training of faculty and staff. If students can experience a sense of community in a virtual setting through the use of mainly asynchronous communication methods, then universities can work to develop best practices in online course in order to aid student success, engagement, and retention.

As shown in Factor one (supportive relationships), students enrolled in online courses want to be supported and cared about by their classmates and feel that they are supported by each other as well as their faculty and staff. This factor points to the importance of peer and faculty/staff involvement in online courses, confirming previous research (Whiteside et al., 2017.) The results of the study support the research that states that in online courses, relationships are developed through communication, shared

experiences through virtual discussion boards, and the openness of the students and instructors to join together as a group in an online format (Brown, 2001; Glenn, 2018; Jones, 2011; Whiteside et al., 2017).

Factor 2 (sense of reliance) implies that online students do not rely on each other, but this does not mean reliance equates to supportive relationships. As an online student, the virtual world can be isolating because students are not face-to-face. When a student enters an online class, they have communication methods to create relationships and community, but not a sense of reliance on one another. This result implies that students enrolled in online courses already know that online courses are individualistic in nature, rather than a traditional face-to-face course, that promotes learning cohesively. However, the importance of social presence and trust in online courses is another implication from Factor 2. Garrison's (2009), definition of social presence includes the chance to "... communicate purposely in a trusting environment and develop interpersonal relationships by way of protecting their individual personalities" (p. 352) and Factor 2 points to this occurring in the online courses. The students did not rely on other students, protecting their individuality, but also reported feeling supported within their learning environment, implying that students can develop social presence within online learning environments.

The results of the open-ended questions showed that being in a community is also one of the major themes of why students will be retained and persist to graduation at this university. Students want to be successful in their academics and to grow socially as well. The results showed that feeling connected and a part of a community is a crucial for student success and retention. The theme of providing a faith-based education was

shown to be strong theme for why students made the decision to attend the university as decide to stay and persist at the university and this supports the literature that that community is developed by sharing similar experiences and values (Palloff & Pratt, 2007; Rovai, 2002b). This implication can lead to further development of faith-based universities for recruitment and retention efforts. The themes of community and faith-based education seem to be connected, although that could be done in future research.

Limitations

The response rate of the survey was a limitation in this study. At total of 154 responses were yielded out of 734, which was a response rate of 20.98%. Another limitation was that the sample may have not been an accurate representation of the population. The researcher's role at university was also a limitation as the researcher was also an adjunct instructor. The private and faith-based nature of the school was another limitation, so the findings are non- generalizable to other college populations.

Recommendations

For future research, I would recommend replicating the survey using a larger population of private faith-based schools in Texas. Another future recommendation would be a modified replication at a non-faith-based school that offers online courses. Conducting a modified replication at a public sector school could examine the difference in relationships and the influence of faith-based education as an influence of persistence. Another future recommendation would be to expand the study to gain feed feedback from instructors and methods they use to connect with their students. Lastly, future research could expand on the level of diversity by conducting the study at minority-serving

institutions. Another recommendation is to further this study with qualitative interviews of online students to gain further insight on students' perception of a sense of community and what influences a student's sense of community. Further research could also examine difference between graduate students and undergraduate students

I would recommend future research to examine programs that use more synchronous communication methods and compare levels of a sense of community to those who use mainly asynchronous communication methods. I believe this information could be utilized in how courses are developed and created as well as how professors and instructors are trained to teach online courses. The findings from this research could be beneficial for administrators and instructors to be aware of, as technology grows and allows for more personal connections without face-to-face contact and incorporate that technology in the online courses.

Final Reflections

As the growth of online education continues to grow and provide students an opportunity to learn outside the classroom, it is important to understand what effects a student sense of community to help understand factors of persistence. The study sought to examine the effect of a sense of community in online learning environments and found that a student's sense of community is influenced by communication methods. The use of asynchronous communication was used more heavily than synchronous methods, but students still expressed feelings of community, care, and support within their online courses with the use of asynchronous methods.

The online learning environments were able to be areas of connection and community through the use of mainly asynchronous communication, rather than the use of both synchronous and asynchronous communication methods. This knowledge is crucial in the development of online learning courses as online learning continues to grow in numbers, yet still reports issues with retention and persistence (Allen & Seaman, 2016). The study also found that students will choose to stay at the university based on feeling connected to peers and faculty/staff as well as desiring an education that integrates faith into the curriculum.

Overall, there could be great implications and research done to study a student's sense of community and how that impacts retention and persistence in online learning environments. Future research is important to aid the growth of online learning in higher education as well as to tackle the low retention rates that go along with online learning. Continuing to study the factors that influence students to be more successful, persist to graduation and for schools to create more holistic, engaging, and interactive online learning environments.

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APPENDIX A

Classroom Community Scale

DIRECTIONS: Below you will see a series of statements concerning a specific course or program you are presently taking or recently completed. Read each statement carefully and place an X in the parentheses to the right of the statement that comes closest to indicate how you feel about the course or program (SA = strongly agree, A = agree, N = neutral, D = disagree, SD =strongly disagree). There are no correct or incorrect responses. If you neither agree nor disagree with a statement or are uncertain, place an X in the neutral (N) area. Do not spend too much time on any one statement but give the response that seems to describe how you feel. Please respond to all items.

1. I feel that students in this course care about each other (SA) (A) (N) (D) (SD)
2. I feel that I am encouraged to ask questions (SA) (A) (N) (D) (SD)
3. I feel connected to others in this course (SA) (A) (N) (D) (SD)
4. I feel that it is hard to get help when I have a question (SA) (A) (N) (D) (SD)
5. I do not feel a spirit of community (SA) (A) (N) (D) (SD)
6. I feel that I receive timely feedback (SA) (A) (N) (D) (SD)
7. I feel that this course is like a family (SA) (A) (N) (D) (SD)
8. I feel uneasy exposing gaps in my understanding (SA) (A) (N) (D) (SD)
9. I feel isolated in this course (SA) (A) (N) (D) (SD)
10. I feel reluctant to speak openly (SA) (A) (N) (D) (SD)

11. I trust others in this course (SA) (A) (N) (D) (SD)
12. I feel that this course results in only modest learning (SA) (A) (N) (D) (SD)
13. I feel that I can rely on others in this course (SA) (A) (N) (D) (SD)
14. I feel that other students do not help me learn (SA) (A) (N) (D) (SD)
15. I feel that members of this course depend on me (SA) (A) (N) (D) (SD)
16. I feel that I am given ample opportunities to learn (SA) (A) (N) (D) (SD)
17. I feel uncertain about others in this course (SA) (A) (N) (D) (SD)
18. I feel that my educational needs are not being met (SA) (A) (N) (D) (SD)
19. I feel confident that others will support me (SA) (A) (N) (D) (SD)
20. I feel that this course does not promote a desire to learn (SA) (A) (N) (D) (SD)

(Rovai, A.P., 2002b, p. 208).

APPENDIX B

Classroom Community Scale Scoring

CCS raw scores vary from a maximum of 80 to a minimum of zero. Interpret higher CCS scores

as a stronger sense of classroom community. Score the test instrument items as follows:

- For items: 1, 2, 3, 6, 7, 11, 13, 15, 16, 19; weights: Strongly Agree = 4, Agree = 3, Neutral = 2, Disagree = 1, Strongly Disagree = 0
- For items: 4, 5, 8, 9, 10, 12, 14, 17, 18, 20; weights: Strongly Agree = 0, Agree = 1, Neutral = 2, Disagree = 3, Strongly Disagree = 4
- Add the weights of all 20 items to obtain the overall CCS score.

CCS subscale raw scores vary from a maximum of 40 to a minimum of zero. Calculate CCS

subscale scores as follows:

- Connectedness (social community); add the weights of odd items: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19
- Learning (learning community); add the weights of even items: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20

(Rovai, A.P., 2002b)

APPENDIX C

Control Variable Survey Questions

1. What is the length of your current online course? (5 weeks) (16 weeks)
2. How many weeks have you completed in your current online course? (1-3) (4-6) (7-10)
4. Each week, on average, how many discussion posts and responses to peers do you make? (1-5) (6-10) (11 or more)
5. During your class, how often have you received feedback from your instructor? (very rarely) (sometimes) (fairly often) (quite often) (almost always)
6. Which of the following communication methods were utilized by your professor and/or classmates?
 - Social Media (Facebook, Twitter, Instagram, Snapchat, Whatsapp)
 - Discussion boards
 - Self-recorded videos
 - Phone calls
 - Text messages
 - Skype
 - Zoom
 - Google Hangouts
 - Emails
7. Of the methods selected, please discuss whether they contributed to feeling more connected in the course and why or why not.

8. There are a number of factors that can influence whether or not a student will decide to continue his or her degree. What factors influence your decision to complete your degree at this university?
9. If you would like to be entered into the drawing to win one of four \$50 Amazon gift cards, please enter your email below

APPENDIX D

Informed Consent

You are invited to take part in a research survey about developing a sense of community in online courses. Your participation will require approximately 10 minutes and is completed online on your computer. There are no known risks or discomforts associated with this survey. If you choose to be in the study you can withdraw at any time without adversely affecting your relationship with anyone at LeTourneau 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 would like a summary of this study's results, you can contact the researcher at the email address above. If you have any questions about whether you have been treated in an illegal or unethical way, contact the Stephen F. Austin State University's Office of Research and Sponsored Program at 936-468-6606. Please feel free to print a copy of this consent page to keep for your records.

Consent:

I have read the above information about the research study. I have been given a chance to ask questions and, if asked, my questions have been answered. If I have more questions, I have been told whom to contact.

- I agree to take part in this project which aims to understand student perspectives on developing a sense of community in online courses and effect of various methods used in online learning. I understand that agreeing to take part means that I am willing to complete the survey accurately and honestly to the best of my ability.
- I understand that any information I provide is confidential and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party. I understand that this research may be included in a research article, but that no identifying information will ever be reported.
- I also understand that my participation is voluntary, that I can choose not to participate in part or all of the survey, and that I can withdraw at any stage of the survey without being penalized or disadvantaged in any way. I understand that once I complete and submit the survey, I am no longer able to withdraw my participation.

Selecting the I agree button below indicates that you are 18 years of age or older, and indicates your approval and consent to participate in this survey.

Yes, I give consent and voluntarily choose to participate in the survey

No, I do not want to participate in the survey.

APPENDIX E

From: "Olshine, Rachel"
Date: Monday, January 29, 2018 at 2:46 PM
To: "Digmann, Ashley"
Subject: Request permission to use survey

Good afternoon Dr. Digmann,

Thank you for speaking with me on Friday! I enjoyed our conversation so much and wanted to thank you again for taking the time to speak with me! As daunting as a dissertation is, it was reassuring to speak with you about your experience and what you are now presently doing and how your educational experience has helped you achieve those new roles and responsibilities.

I would like to request permission to replicate your study in Texas using a larger sample and use the survey included in your work. I appreciate your guidance and time spent with me on the phone. Thank you and have a blessed day!

Rachel Olshine, M.Ed., LPC, NCC
Global Student Success
School of Health Sciences & Professional Studies
903-233-3496 (w) | 903-241-5123 (c)
www.letu.edu

Wed 1/31/2018 6:16 AM
Rachel,

I enjoyed the conversation as well, and am looking forward to hearing about your dissertation as you progress! You have my blessing to replicate the study and use the surveys from my study as well. Please do not hesitate if you have any questions! Best wishes on your dissertation writing!

Ashley

ASHLEY DIGMANN, Ed.D. '06

Education Department Chair
1200 W. University Ave. / Mitchell, SD / 57301
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On Oct 3, 2018, at 12:29 PM, Olshine, Rachel <RachelOlshine@letu.edu> wrote:

Good morning Dr. Rovai,

My name is Rachel Olshine and I am a doctoral student at Stephen F. Austin State University in Texas. I am completing my dissertation on community in online environments and I would like to request to use your instrument (CCS) for my dissertation. Thank you and take care.

Rachel Olshine, M.Ed, LPC, NCC

Doctoral Candidate, Doctor of Education

Academic Advisor

Global Student Success

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Good day,

You may use the CCS for your research. Make sure you reference the source Internet & Higher Education journal article in any report you write.

Best wishes.

Alfred P. Rovai, Ph.D.

Sent from my iPhone

VITA

Rachel Lee Olshine graduated from Ben Lippen High School in Columbia, SC in May 2002. She attended Columbia International University in Columbia, SC and received her Bachelor of Science in Communications in December 2006. She then went to work at Heartlight Ministries, a therapeutic boarding school in Hallsville, TX. She earned her Master's in Counselor Education from Clemson University in Clemson, SC in May 2011. She went to work as a licensed professional counselor at Heartlight Ministries from 2011 to 2013. She then transitioned to East Texas Baptist University as a therapist and Student Development Specialist from 2013-2015. Currently, Rachel is serving as Director of Career Services at LeTourneau University in Longview, TX. At LeTourneau, she has also served as an adjunct professor in the School of Psychology and Counseling, academic advisor, and licensed counselor. Rachel was accepted into the 2016 doctoral cohort and attained her Doctor of Education degree in educational leadership from Stephen F. Austin State University in May 2019.

Permanent Address: 2300 Bill Owens Pkwy, Apt 924 Longview, TX 75604

Style manual designation: *Publication Manual of the American Psychological Association, Sixth Edition*

Typist: Rachel L. Olshine