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Patterns of One-Course Cohort Participation in Online Teacher Education Programs

Janeal Crane Smith
Walden University

Walden University

College of Education

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Janeal Smith

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Review Committee
Dr. Cheri Toledo, Committee Chairperson, Education Faculty
Dr. Paula Dawidowicz, Committee Member, Education Faculty
Dr. Linda Crawford, University Reviewer, Education Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
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Abstract

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by

Janeal Crane Smith

MA, University of Utah, 2009

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Online higher education is a field that can benefit significantly from further research on innovative pedagogical methods designed to support students and decrease attrition rates. One method shown to improve engagement and retention of students in online environments is to include interactive engagement. This case study explored the patterns of students' interactions and assessment performance in an introductory teacher education one-course cohort. The study used a conceptual framework incorporating Bandura's social learning theory and Siemens' theory of connectivism. The study assessed archival data, from Adobe Connect recordings and records of competency pass rates, on the interactions and patterns of behavior between instructors and participants, and their association with the final assessment results. Data were analyzed by type and frequency of interaction, organized with NVivo software. The findings were that the pattern of understanding and applying level questions, as classified by Bloom's Revised Taxonomy, provoked the most responses, comments, and questions from the participants. Applying had the highest direct response and suggested an interpretation about online students wanting to respond to questions from instructors that prompt higher-level thinking skills and stimulate interactions. No patterns of behavior were evident between the student interactions and final assessment performance. The results indicate positive implications for social change in the role of the instructor to facilitate understanding and among participants who engage in positive learning interactions. The education profession could benefit from further research with a focus on content questioning best practices, retention methods, and the nature of social and learning interactions in online education.

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Dedication

I would like to dedicate this work to my wonderful and supportive husband, Chase, and my daughter, Olivia. Thank you for making it all worth it. I also want to acknowledge my parents, Kevin and Deborah, who believed in me for so many years.

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Thank you to my committee chair, Dr. Cheri Toledo, and my methodologist, Dr. Paula Dawidowicz, for their time, patience, and assistance in finishing my dissertation. I'm also grateful to supportive family and friends during this process.

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Chapter 1: Introduction to the Study

Education is an evolving field and has been since the introduction of structured, formal education in the United States. A major evolutionary development from recent decades is the emergence of online degree and learning programs. This case study sought to assess patterns and behaviors in a one-course cohort online learning opportunity. While evidence exists of cohorts' effectiveness for online learning due to the benefits of a social element in distance learning, most prior research has focused on cohorts maintained throughout an entire degree program (Cowan, 2012; Cumming-Polvin, 2009; Milheim, 2011). Gaps exist in the literature supporting the innovation of completing one-course cohorts. This study was designed to offer online instructors and programs additional resources, including pedagogical methods, that will benefit students by engaging them in the course content through positive interaction and reflective practices, helping them to finish coursework and degrees.

This chapter focuses on the historical background and support of a conceptual framework in devising a study purpose, questions, and nature driven by the literature. Definitions and assumptions are identified to clarify the research position. The chapter concludes with a discussion of limitations, scope, and significance within a social change lens.

Background

Online universities must go through extensive accreditation requirements and steps in order to provide effective and credentialed programs. The effectiveness and operations of online education have been explored from multiple angles by many

researchers and institutions offering courses and full degrees. Studies have widely explored effective online education practices in teacher education ranging from pedagogical methods to the degree of social interaction (Beaudoin, Kurtz, & Eden, 2009; Crawford-Ferre & Wiest, 2012; Milheim, 2011; Saltmarsh & Sutherland-Smith, 2010). In addition, regional and content accrediting bodies such as the National Council for Accreditation of Teacher Education (NCATE) and the Interstate Teacher Assessment and Support Consortium (InTASC) charge online programs with the task of creating degree offerings that are as effective as their brick-and-mortar counterparts (Council for the Accreditation of Teacher Education, 2014; The Interstate Teacher Assessment and Support Consortium, 2014). Thus, online education requires a necessary union of effective online pedagogical practices with accrediting requirements.

Effective instruction has many components. Some of the components identified by multiple researchers include: social and collaborative interaction and connections, flexibility, the accessibility of technology, prompt instructor feedback and involvement, and real-world application (Bandura, 1977; Cook, 2012; Crampton & Ragusa, 2012; Crawford-Ferre & West, 2012; Dykman & Davis, 2008c; Green et al., 2010; Kress, Thering, Lalonde, Kim, and Cleeton, 2012; Siemens, 2005; Sutherland-Smith & Saltmarsh, 2010). In keeping with the idea of application and relevance, another option for creating successful online programs is the organization of a competency-based approach.

According to Hodge (2007), there are two competing views of the historical background of competency-based education: societal and theoretical. Proponents of the

societal origins view argue that competency-based education stemmed from pressures in society and is not necessarily embedded in any kind of scientific or theoretical basis. Proponents of the theoretical view, on the other hand, argue that this is grounded in two theories of behavioral psychology and systems theory (Hodge, 2007). Regardless of what view is held by educators on the historical background, the current form of competency-based education, in the United States, is grounded in using set tasks and skills to determine the amount of knowledge gained throughout the course (Johnson, 2008; Chang, 2007; Testa, 2008). Johnson (2008) stressed that competency-based education is not about the seat time or hours spent in class, but instead is focused on what students can do, model, and demonstrate prior to moving forward. A student's level of competency is also connected to higher-order skills and application, as described by Bloom's Revised Taxonomy of cognitive learning (Anderson et al., 2001; Figure 2). According to Johnstone and Soares (2014) and Kinser (2002), competency-based learning is the future of education and schools not following this "disruptive innovation" format are getting left behind (p. 13).

According to the U.S. Department of Education (2012), online higher education programs have high levels of attrition. This attrition has caused both researchers and educators to be concerned with finding methods that motivate and effectively support struggling students in both traditional and competency-based programs (Drouin & Vartanian, 2010; Heyman, 2010). New pedagogical methods and new applications of existing pedagogical methods may provide a road to progress and graduation (Rossi, 2010; Yoon, 2003). Possible methods could be found in the area of social learning and

peer interaction. Education is a social activity, with students learning to share to gaining skills constructing knowledge through modeling and interaction (Bandura, 1977). Researchers have suggested an online community or cohort approach to building knowledge as possible methods for engaging this social need (Engstrom, Santo, & Yost, 2008; Maddix, 2010). Online communities were originally seen by educators as a forum to socialize without a strong learning component (Wenger, 1998). Wenger's (1998) definition of communities of practice expanded this view to include students interacting for a shared learning goal.

Cohorts became an option in brick-and-mortar institutions as a route that would allow a social connection and relationship to build among students completing a program in the same order (Conrad, 2005). While this traditional method has proven to be a useful system for supporting and guiding students towards graduation, the organization of online education does not always allow for students across the nation and globe to meet at one standard time for every course (Conrad, 2005). This study specifically examined programs at Falcon University (pseudonym), a competency-based online university that has introduced an alternative cohort option.

At the time of this study, Falcon University offers licensure students a choice of completing their courses as a one-course cohort, a shared experience of reviewing and applying the content knowledge using synchronous learning methods, in order to pass the course.Falcon University's cohort experience varies from the traditional cohort model and competency-based asynchronous learning in an attempt to include a more social and guided learning opportunity in individual teacher education courses. Falcon's one-course

cohort model requires students to register, complete prework prior to the three synchronous meetings, and interact with instructors and peers by answering questions and discussing the content. This cohort model can be applied to any competency-based course, allowing students the choice to learn synchronously versus individually. However, no research exists exploring the utility of this more flexible cohort model for a course-to-course application in online learning environments.

There is a significant research gap concerning cohorts and online learning. While evidence exists of the effectiveness of cohorts for online learning and the benefit of the social element in distance learning, most extant research has focused on cohorts maintained throughout an entire degree program (Cowan, 2012; Cumming-Polvin, 2009; Milheim, 2011). There is specifically a gap in the literature on the benefits of completing one-course cohorts and whether or not the social interactions and level of content questioning influence students' performance on course assessments and their overall online educational experience. This study was designed in part to address this gap and inform instructors on pedagogical methods in online environments of potential benefit to students.

Problem Statement

The problem addressed by this case study was to explore the patterns of students' social interactions and assessment performance, as well as the nature of questions that lead to social interactions among participants in a one-course cohort. It specifically examined these in the context of an introductory online education course, Foundational Perspectives of Education, at Falcon University. The current lack of literature on online

one-course cohort options for teacher licensure makes it unclear whether or not this approach provides an effective alternate use of the social nature of learning and provides the benefits expected with new collaborative technologies, as suggested by Maddix (2010).

With the advent of online teacher education programs, a significant number of students have enrolled to gain teacher certification, with 100,000 earning education bachelor's degrees online, as of the most recent U.S. Department of Education survey (2012). While the methods and practices continue to improve in online instruction, there are weaknesses among the programs and online pedagogical approaches and many students struggle in a foreign and isolated digital learning environment (Beaudoin et al., 2009). Utilizing effective online instructional methods, along with providing one-course cohort options or shared experiences throughout a course, may be beneficial for those who learn best in a social and team-based environment (Crawford-Ferre & Wiest, 2012; Learning Theories Knowledgbase, 2012).

Purpose of the Study

The purpose of this case study was to explore the online one-course cohort and the social experiences, content question interactions, and patterns of behavior in assessment of the students.

Research Questions

This study was designed to answer three primary research questions:

Research Question 1 (RQ1): What types of content questions lead to interactions among licensure students in a synchronous, one-course cohort learning session?

Research Question 2 (RQ2): What patterns of student interaction and questioning occur in synchronous, one-course cohort sessions?

Research Question 3 (RQ3): What patterns of student interaction and final assessment performance occur in synchronous one-course cohort sessions?

Nature of the Study

This qualitative case study research was designed to explore the patterns of students' social interactions and assessment performance in online education. It also explored the nature of questions that trigger social interactions, specifically examining interactions among participants in an online teacher education introductory one-course cohort. This research is important because many students continue to struggle in an online learning environment, creating a need for alternative instructional methods to benefit students who learn better in a social-based, organized classroom (Bruckman, 2002; Green et al., 2010; Stahl et al., 2002).

To answer the research questions, I collected three types of data: synchronous discussions, observations, and pass rates.The synchronous discussions recorded all student-initiated and submitted comments and questions through the archived one-course cohort sessions, as well as any instructor comments or questions. These discussions classify students' interactions in response to the questions and discussion prompts throughout the one-course cohort sessions. I observed archived recordings of the one-course cohort sessions (three) with the purpose of documenting spoken student interactions not represented in the discussions. I also analyzed student-instructor interactions, including the questions asked. These questions were compared to the

published question versions in the revised Bloom's Taxonomy (Figure 2) for identification on cognitive questioning level, in accordance with Anderson et al. (2001). I also analyzed one-course cohort students' pass rates on the final assessment, focusing mainly on breakdown of individual competency areas. This was done to probe the patterns that occur between social interaction and pass rates.

All data was collected, coded, and analyzed for themes related to the research questions and purpose of this case study. The alignment of these data types with the research questions is given in Table 1.

Table 1

Research Questions and Data Alignment

Research Questions	Observations	Discussions	Pass Rates
What types of content questions lead to interactions among licensure students in a synchronous, one-course cohort learning session?	X	X	
What patterns of student interaction and questioning occur in synchronous, one-course cohort sessions?	X	X	

What patterns of student interaction and final assessment performance occur in synchronous one-course cohort sessions?	X	X	X

Conceptual Framework

The conceptual framework for this study was based on Bandura's social learning theory and Siemens's theory of connectivism (Bandura, 1977; Siemens, 2005). Bandura's (1977) social learning theory posits that individuals learn by interacting with others, a concept in alignment with the study investigation, which included students taking on roles on both ends of the spectrum, as observer and as leader. According to Bandura, this modeling and observation leads individuals to imitate the learning and behavioral outcomes, thus building their own knowledge in the process. As students in one-course cohorts interacted in a synchronous digital environment, they observed each other's questions, answers, and behavior versus the usual asynchronous activities associated with online learning.

Connectivism works on multiple levels to undergird the purpose and nature of this case study. According to Siemens (2005), connectivism is a theory fit for the new modern digital age, connecting learners to each other and to the content through technology. With a focus on networks and the connections between entities and individuals, Siemens (2005) argued that learning is happening all the time and from multiple sources, and that knowledge is constantly changing, so those networks keep learners connected to the changes (para. 33). According to the lens of Siemens' definition, students who are

involved in the one-course cohort are connected to each other via technological means, as well as through common learning and course goals and a desire for social interaction. They accordingly share experiences that are based on the networks that have brought them together.

This case study approach to research documented the social experiences of the participants through the level of questioning and patterns of behavior in the one-course cohort sessions. The research questions were designed to answer how students participating in the one-course cohort displayed patterns of social interactions dependent on the level and types of content questions asked and how they related to their final assessment performance. These participants' experiences in the one-course cohort built on their social learning and interaction, as they were required to interact socially through the one-course cohort prior to meeting the learning outcomes of the course's final assessment. This aligned with Bandura's (1977) and Siemens's (2005) recommendation of learning that occurs when working in groups with superiors and peers, and with Siemens's recommendation that this learning take place in a technological setting.

Operational Definitions

Cohort: A group of students engaged in a degree program, usually in advanced content areas (i.e., education, engineering, medicine), at the same time (Engstrom et al., 2008). In this study, this term is used generally in contrast to the more specific *one-course cohort*.

Content questioning: Inquiries related to a content area that deal with clarification, understanding, and application of the content in a real-world classroom environment (Anderson et al., 2001).

Learning communities: Communities of students built on the goals of incorporating social activity, providing content questions and answers, inspiring reflection, and giving learning support (Cowan, 2012; Lockhorst, Admiraal, & Pilot., 2010; Pratt & Palloff, 2005; Wenger (1998). Also referred to as communities of practice.

Level of questioning: Related to content-area inquiries and supported by the taxonomy, first described by Bloom (1956) and revised by Anderson et al. (2001), in which the cognitive domain of the question requires students to respond with either a higher or basic form of thought or application. Churches (2014a; 2014f) identified remembering or basic rote memorization as a lower form of cognitive development compared to creating or constructing meaning from existing elements.

One-course cohort: In the context of this study, a cohort in which students completed their work in a single course together, but were not necessarily continuing in the same courses thereafter. The term *one-course cohort* is specifically used in this study to refer to a one-course cohort approach in a competency-based program, and is used in contrast to traditional cohorts, which are referred tosimply as cohorts.

Online learning: A focus on the tools and technologies utilized in the learning process, whereas distance education is a focus on location (Yoon, 2003). Also referred to as online learning, including Web-based learning, e-learning, and computer-based learning.

Social interactions: Basic social activities (i.e., joking, sharing of personal anecdotes and information) supports a friendly, collaborative atmosphere, but active learning social interactions encourage focus on task-related information (i.e., questions, clarification) and regulation of learning and social activities (i.e., group roles, planning, monitoring; Janssen, Erkens, Kirschner, & Kanselaar, 2012).

Social learning: A process by which students gain a deeper understanding of the content and skills of the course, through interactions with others. These interactions lead to observation and modeling of desirable learning traits and abilities (Learning Theories Knowledgebase, 2012). Social learning stems from a number of learning theories, with the focus of the work on Bandura's (1977) social learning theory.

Assumptions

The design process in qualitative research begins with a focus and assumption of "understanding people and programs in context" (Patton, 2002, p. 119). Inherent in that initial assumption of taking on a qualitative case study, the following assumption was also made:

1. Students responded honestly and voluntarily to questions posed, as well as with comments made during the one-course cohort sessions.

2. Teacher education student participants in the one-course cohort sessions would be representative of the total student population.

Scope and Delimitations

There is a lack of research and evidence on one-course cohorts and the social interactions shared by participants. The scope of the research is on enrolled students in a

teacher education program. The student population ranges in age and location across the United States and in some military bases overseas. The participants are students in the introductory education course, Foundational Perspectives on Education, and enrolled in a one-course cohort lasting three weeks. This offering differs from the traditional method of completing courses at Falcon University, as their approach is competency-based, with students learning at an individual and asynchronous pace. As the purpose of the case study was to gather data regarding one-course cohorts through the patterns of social interaction shared by those participating in the one-course cohort sessions, the population described is accurate and correctly identified.

While connectivism and social learning theory were chosen to support the inclusion of a social-based one-course cohort for online learners, other socially-oriented theories were not included for a number of reasons. Vygotsky's theory of social development argues that growth of knowledge and cognitive ability is always preceded by social interaction (Learning Theories Knowledgebase, 2014). In other words, social development and communication must happen first, then learning can occur. This theory has a social element, but the argument for development based on social interaction is not valid compared to the students at many online universities, including Falcon University. The online universities cater and market to students who have gained experience through other forums (i.e., previous schooling, work, community involvement), which preceded the social interaction.

Constructivism is also another group-based and active participant learning theory. Constructivism holds that learners are creating knowledge through their experiences and

construction of understanding by activity, including group work and personal choice (Siemens, 2005). While constructivism holds with the importance of interaction and learning by creating and doing, Siemens points out that this theory, along with others, is lacking in an acknowledgement of the role of technology and networks in learning. As online learning relies so heavily on technology and networks connecting students to each other, the instructor, and the content, constructivism does not offer the framework to support these goals compared to connectivism and social learning theory.

This qualitative case study was a focus on one course, specifically an introductory teacher education course offering a one-course cohort opportunity to engage with the content, instructor, and peers. This organizational offering has transferability in other online course settings, as well as higher education learning environments; however, the social experiences shared and observed in the study by the students in this one-course cohort were unique dependent on a number of factors, including age, ability, personal situations, group dynamics, content questions, and instructor role and personality. These unique factors limit the transferability of a completely similar experience to different groups and settings.

Limitations

The limitations of the study stem from the purposive sampling, mode of data collection (archived sources), and ability of researcher as an observer. The interaction with participants was limited to observational and archived resources, as well as due to the distance between participants and researcher. The sample was chosen as a result of access to students and the introductory education course, as well as the one-course cohort

being limited in availability in alternative courses. The ability of the researcher in observing and interpreting the nuances of all participants' interactions or instructor's questioning could lead to misinterpretation or missed patterns. There could also be an issue of bias, in regards to the researcher looking for patterns between the social experiences gained within the one-course cohort sessions and the intended outcomes of the course over reporting the results objectively.

The researcher took the following considerations in relation to the limitations by transcribing the archived one-course cohort sessions, instead of just an observational narrative. The archived discussions and observations were evaluated using coding, looking for recurring patterns. Analysis did not occur until the coding was completed, limiting the initial biases of patterns and connections from occurring. Bloom's Revised Taxonomy and published questioning verbs were referenced for clarification on cognitive level of questions and responses (Anderson et al., 2001; Figure 2). The sampling connected to the purpose of the study and provided the group for the study to understand the social experiences of those involved in the one-course cohort.

Significance of the Study

Even though much research has been conducted on online education, specifically online teacher education, there is a gap in proven pedagogical methods for improving students' retention, pass rates, and successful graduation. In that gap is a lack of research on brick-and-mortar teaching methods, such as cohorts and learning communities, being revised and updated for an online learning environment. This case study provides data from current teacher education students electing to participate together in a one-course

cohort through an introductory education course and the resulting outcomes and experiences. These licensure students chose this one-course cohort opportunity instead of completing the course through the asynchronous method of the competency-based model.

While enrollment continues to increase in online education programs, the attrition rates are higher than traditional brick-and-mortar institutions (Hart, 2012; Heyman, 2010). A case study exploring the social experiences, content question interactions, and patterns of behavior in assessment of students in the one-course cohort can lead to further research and opportunities that support students, both traditional and nontraditional. The statistics on various reasons for withdrawing, as well as opportunities resulting from gaining a degree, illustrate the positive social and educational change that can come from improved online pedagogical tools to supplement traditional methods that are not always effective for all students.

Implications for Social Change

In addition to the benefits gained by students who complete a degree and use schooling to better their own situations and that of their families and communities, there are benefits from social interactions in online learning environments. Carter (2012) found that cohorts and learning communities required preservice teachers to become active agents in their education, as well as in their communities. This role and partnership between learners supports the idea that schools lead students to become more democratic and thoughtful members of society, eager to enact change for the better. "The online sharing of community knowledge becomes adaptive knowledge creation within the individual, which in turn impacts the wider community" (Green et al., 2010, p. 266). By

offering one-course cohorts, students have the opportunity to practice collaborative skills and develop strong networking skills benefiting them, their communities, and their educational partnerships. According to Bonk (2009), collaboration allows participants to bring their singular views, resources, talents, and networks from across the country together to share and learn from each other. Not only can this lead to innovative instructional methods between pre-service educators, but can also inspire social change classroom-to-classroom as working educators. Bruckman (2002) argued, "Students should be encouraged to be a part of civil society, pursuing interests in collaboration with others" (p. 461). Indicating a need for pre-service educators to engage in these skills as they learn for future benefit to their students.

Educational systems need to graduate students who are not only proficient in their content areas, but also able to interact socially and emotionally with diverse individuals and groups with respect and responsibility (Durlak, Dymnicki, Taylor, Weissberg, & Schellinger, 2011).

Chapter Summary and Organization of the Study

The setting and background of online education ranges from online courses in a brick-and-mortar institution to fully-online competency-based degree programs. Online educational opportunities have risen in enrollment in recent years, but continue to have higher attrition rates than their traditional university counterparts (Hart, 2012; Heyman, 2010). The goal of this research was to use social-based learning methods, like cohorts and learning communities, and implement that within an online learning environment. While cohorts have been used in online programs before, there is a gap in literature on

the benefit to students who choose to participate in a one-course cohort option versus the standard competency-based asynchronous approach. Not only can this provide the social element that many online students crave, but also allows for the flexibility of distance and competency-based learning to remain intact (Conrad, 2005; Engstrom et al., 2008; Hart, 2012).

This qualitative case study research used archived discussions, observations, and student pass rates to explore the patterns of students' social interactions and assessment performance, as well as the nature of questions that lead to social interactions among participants in an online teacher education introductory one-course cohort. While limitations existed within the study, as well as complete transferability, the steps taken to prevent bias and combat the limitations enabled the case study to provide a starting point for further research and dialogue on learning approaches that can benefit students who desire diverse opportunities of study, along with developing a connection to the school, instructor, and peers within their courses.

The preceding information of Chapter 1 reviewed the background of the study topics, including competency-based online programs, cohorts and communities, and social learning theories by Bandura (1977) and Siemens (2005). The problem statement and purpose of the study were outlined, as well as the research questions. The conceptual frameworks of social learning theory and connectivism were explored further. The logistical elements of the study were also outlined, including the nature of the study, definitions of terminology used throughout, assumptions of the research and researcher,

scope of the study and limitations. Finally, the significance and social impact were evaluated to accord value to the study.

The literature review of Chapter 2 is organized as four sections of synthesis on the topics of online teacher education programs and competency-based education, cohorts and learning communities, social learning theory, and connectivism.

Chapter 2: Literature Review

Introduction

This qualitative case study research explored the patterns of students' social interactions, assessment performance, and the nature of questions that lead to social interactions among participants in an online teacher education introductory one-course cohort. The study was designed to address a gap in the literature in regards to one-course cohort offerings and the role of social learning for online learning, from course-to-course. One-course cohorts differ from a traditional cohort and competency-based approach, in that students have a choice to participate and do not continue through subsequent courses with the same student participants, nor do they complete it at their own pace. As online education is a different approach and experience than a traditional brick-and-mortar institution, the one-course cohorts offered can also be unique to the synchronous and asynchronous flexibility demanded by students in online programs, by utilizing the technology and instructional resources available, while still engaging students in a social learning environment (Kalin; Goos & Bennison, 2008; Lewis et al., 2010-2011; Pratt & Palloff).

Some researchers have argued that online learning has significantly altered the state of education and continues to grow in enrollment and reach (Saltmarsh & Sutherland-Smith, 2010). Globally, 33% of all current higher education students have taken at least one online course (Dykman & Davis, 2008a; Dyment, Downing, & Budd, 2013). Online learning allows for increased flexibility with students' schedules, and also increases access to educational opportunities for nontraditional students (Dyment et al.,

2013). However, researchers have also asserted that online education, and specifically competency-based online education, requires a different approach with students that focuses on the whole person and not just academic knowledge (Chang, 2006; Clary & Wandersee, 2009; Dykman & Davis, 2008b). One aspect of this whole-person approach is tied to the theories of Bandura and Siemens, social learning theory and connectivism, respectively. Bandura's social learning theory asserts that the power of learning from each other comes through observation, modeling, and imitation (Bandura, 1977; Learning Theories Knowledgebase, 2012). Siemens' theory of connectivism, while similar in supporting the need for social interaction, focuses on this through the digital age of interaction and learning through networks, complex organizations, and adjusting to pattern shifts (Davis, Edmunds, & Kelly-Bateman, 2008; Siemens, 2005).

This chapter highlights and synthesizes the literature published on the topics of online education, cohorts and learning communities, social learning theory, and connectivism. Subcategories include teacher education competency-based programs, benefits and barriers of communities and cohorts, cognitive domain of questioning, types of social interactions, social-emotional practice, and applications and challenges to connectivism.

Literature Search Strategy

The reviewed literature was collected using the Walden University Library system and utilized keywords relevant to the topics of online education, cohorts, learning communities, social learning, and connectivism. The literature search was designed to identify research that was directly related to online programs for relevance, and/or which

discussed the value of social learning on students' motivation and success in their online degree programs. The keywords were first searched separately, then some were combined to ensure a gap existed in the research (i.e., Bloom's Taxonomy and questioning; cohorts and online education). All data was limited to dates after 2000 and searched first from 2012 to the present. The following keywords were used to search the Academic Search Complete, Education Research Complete, ERIC – Educational Resource Information Center, and ProQuest Central databases: *online education*, *teacher education program*, *online*, *social interactions*, *Bloom's Taxonomy*, *cohorts*, *communities of practice*, *learning communities*, *social learning theory*, *social learning*, *questioning*, *social-emotional competence (SEL)*, *connectivism*, and *competency-based education.*

Online Teacher Education Programs

The research on online programs covers a range of degree offerings, thus, it is necessary to look specifically at teacher education programs, as well as the variations found within a competency-based educational approach. According to the U.S. Department of Education's most recent data, over 100,000 students are enrolled in higher education online teacher licensure programs (2012). Yoon (2003) distinguished between the jargon used to describe differing online programs, stating:

> Online learning, virtual learning, Web-based learning, technology-based learning, e-learning, network-based learning, and computer-based learning emphasize the learning technology and tools used. Distance education and distributed learning focus on the difference in location between a learner and teacher, or in many cases, among the learners (p. 20).

The various forms of online learning, described by Yoon (2003) have a place in education and increased enrollment supports students looking for flexibility in online options. Online programs have a higher level of attrition versus their traditional campus-based counterparts (Drouin & Vartanian, 2010; Heyman, 2010). While some researchers believe that online degrees are not as effective as campus-based degrees for every type of learner, this belief has not stopped a general increase in the number of students enrolling in online programs, especially nontraditional students (George, & Dron, 2011; Heyman, 2012; Rossi, 2010; Willging & Johnson, 2009; Yoon, 2003). This increased enrollment has been attributed to the flexibility and availability of instruction and resources, regardless of time, geography, or background (Cook, 2012; Crawford-Ferre & Wiest, 2012).

Researchers have defined the characteristics of successful online learners in their studies and the benefit of offerings within the online sphere, but often do not discuss how those without the stated skills can still find success (Beaudoin et al., 2009; Crawford-Ferre & Wiest, 2012). With online course enrollment increasing, the difficulties students face have become more apparent and manifested in an increase in withdrawal rates. Heyman (2012) and Beaudoin et al. (2009) identified several themes as influential in a successful online course and learner experience:

- student support and connection with the university,

- quality of interaction among the students,

- level of confidence to complete work and requirements, and

- the students' self-discipline and time management skills.

These themes are consistent with Willging and Johnson's (2009) and Hartnett et al.'s (2011) exploration of the reasons that students give for dropping out of school, including a lack of a social opportunity, motivational factors, and a lack of success in their courses.

Dykman and Davis (2008a) attributed this increased attrition rate to a changed view of the role education plays, which is now beyond only about teaching students to learn. This is where the role of the instructor and type of curriculum approach is so important for student success. Rossie (2010) and Sutherland-Smith and Saltmarsh (2010) found that the first year is one of the most important for online students to find success and stay within the university system. The types of courses taken, pedagogical options, processes, policies, and instructors' roles are important in retaining students during this important time (Rossi, 2010; Sutherland-Smith & Saltmarsh, 2010).

Competency-Based Education

Falcon University was established as an alternative route for students to earn degrees versus expensive state universities and colleges (Johnstone, 2005; Kinser, 2002). According to Johnstone (2005), the founders were concerned about the current state of educational institutions and felt they were not adequately preparing students for the future. "Universities increasingly adopt innovative teaching models, which focus on the development of skills instead of the reproduction of knowledge" (Caniels, 2005, p. 41). Falcon University was not only innovative in its conception, but also innovative in the unique role of those involved within the school system and how resources aided knowledge acquisition and demonstration of abilities.

There is a new movement in education valuing the role of technology in allowing students and educators to be learning everywhere, all the time (Cook, 2012). Falcon University supports this concept to seek out a different approach with the role of the teacher, combating what Dykman and Davis (2008a) and Crampton and Ragusa (2012) referred to as the "sage on the stage," as wll as the curriculum and students (Cook, 2012). Instructors view online education as being more difficult to teach than traditional postsecondary education, this can be offset by using competency-based learning, learning communities, diverse resources, and a more mentor-geared instructor role (Berge, 2008; Crawford-Ferre & Wiest, 2012; Johnson, 2008). Thus, Falcon University was founded as a competency-based approach to education using nontraditional instructor roles and knowledge assessment.

The competency-based learning approach was considered by many educators and administrators the future of education and others in academia had to catch up to the new offerings of online competency-based education (Johnstone & Soares, 2014; Kinser, 2002). The idea is to award a degree based on the competencies performed versus seat time or the completion of courses (Chang, 2007Johnson, 2008). Testa (2008) defined competency-based education from Falcon University's point-of-view as students making progress when they can pass the assessments associated with each course. However, the definition of competency-based education has some variety among other researchers and sources. Competency-based education from a curriculum perspective is about defining all aspects of work performance, according to O'Donoghue and Chapman (2010), the tasks skills, task management skills, contingency management skills, and job/role environment

skills. Then teachers are aware of expectations for student achievement and how to instruct to meet those competencies (O'Donoghue & Chapman, 2010).

On the other hand, competency-based learning is defined by the goal of allowing students to learn and show progress is alternative forms. O'Donoghue and Chapman (2010) advised against being married to the competencies and not allowing for other manifestations of ability and experience, detracting from a balanced curriculum. Mosalanejad, Shahsavari, Sobhanian, and Dastpak (2012), Hodge (2007), and Chang (2006) focused on defining competency-based learning in terms of the outcome, as in competencies allow for students to show abilities and experiences by demonstrating an intended outcome of learning. This makes competency-based learning more of a self-directed and self-regulating activity, which includes the six factors of "effective learning, fondness for learning, learning motivation, active learning, independent learning, and creative learning" (Chang, pp. 266-267). However, competency-based learning has also been found to be more effective for the students when feedback is given and particularly tailored to their deficits and strengths, work and assignments are related to real-world application, and alignment exists between resources, assignments, and final assessments (Caniels, 2005).

Falcon University uses objective and performance assessments to gauge these intended outcomes and aligns the assessments with the end results, thus allowing for competencies to be the focus and goal of each course (Nicastro & Moreton, 2008). This is further represented by Testa (2008), who argued the one important requirement of competency-based education is alignment. The competencies need to align with the

course resources, assignments, and assessments. Competencies also need to be "generally recognized and accepted as having reasonable reliability and benefits for use by a wide spectrum of both learners and teachers" (Beaudoin et al., 2009, p. 287). The review of competency-based learning designs by Sluijsmans, Prins, and Martens (2006), in particular the 4C/1D model, discussed first the purpose of competency-based learning, which is to close the gap between what is learned in an educational setting and what is needed to be successful on the job; then, stressed that alignment between what content is being taught, how it is taught, and finally how it is assessed is going to differentiate effective competency-based programs from those that will not provide the same long-term career-oriented results. With a competency-based online approach, it is also necessary to not just inundate students with online resources without the ties to application and practice, this is where the intersection is between knowledge transfer and competency-based engagement (Stahl et al., 2002).

A competency-based approach is not designed for all students to be successful, there is a degree of self-direction required (Johnstone, 2005; Tigelaar, Dolmans, Wofhagen, & Van der Vleuten, 2004). "…a competent individual is one who effectively and efficiently accomplishes a task [instructs] in a given context using appropriate knowledge, skills, attitudes, and abilities that have adjusted and developed with time and needs" (Bawane & Spector, 2009, p. 393). However, competency-based learning does recognize that learning can be formal and informal and come from a variety of experiences and paths (Johnstone, 2005). Connectivism, discussed later, also supports the

idea of knowledge gained through informal activities and experiences, especially in the technology-rich and connected 21st Century (Siemens, 2005).

Methods of Online Teacher Education

When Falcon University was first formed in 1995, there were no standards for online higher education programs. There are now standards for online universities seeking regional and national accreditation and Falcon University is regionally accredited through the Northwest Commission on Colleges and Universities, not only in the Teachers College, but also in the other colleges of Business, Information Technology, and Nursing (Kinser, 2002). Thus, having been recognized and valued within the educational system of competency-based education, the next steps are to determine what makes a great teacher education program within this structure.

While there is research on online programs, studies relating directly to online teacher education programs are scarce and many come from outside of the United States. Tigelaar et al. (2004) discussed the first steps of creating a teacher education competency-based program as needing to first define the teaching competencies, these include curriculum, pedagogical methods, and content knowledge. Bawane and Spector (2009) outlined the following competency areas for online teacher education programs: (1) content and pedagogy, involving the instructional methods of the teacher; (2) collaboration and networking, incorporating the newest technologies available to connect students to each other and to real-world classroom application opportunities; (3) social issues, understanding the ethical and moral codes for educators to prepare students to

make an impact in their communities; and (4) technical issues, knowing how to access and integrate technology, as well as modeling the use for future teachers.

Researchers also found specific elements of the course design, including, an active role for students, informal education opportunities, hands-on activities, flexibility, and a blending of technology, organization, and pedagogical methods, combined into an effective online experience for preparing pre-service teachers (Clary & Wandersee, 2009; Yoon, 2003). The three-part study completed by Dykman and Davis (2008b) and the work of Cook (2012), championed careful and creative organization and planning as a key initial step in creating effective teacher education programs. Other researchers argued for instructors who have an adult education-oriented teaching philosophy as a way to improve teaching, decision-making, and curriculum planning (Cook, 2012; Milheim, 2012). As mentioned by Saltmarsh-Sutherland and Smith (2010), the role of the instructor is vital to a successful experience for students. Some instructors still consider face-to-face the more effective mode of delivery, but many educators are now recognizing the positive impact from online learning, specifically in reaching future teachers (Bawane & Spector, 2009).

Additional research has examined the characteristics of both effective and ineffective online programs (Cook, 2012; Crampton & Ragusa, 2012; Crawford-Ferre & West, 2012; Green et al., 2010; Kress et al., 2012; Sutherland-Smith & Saltmarsh, 2010). Their research found barriers common to adult learners like intrapersonal (i.e., family, work, financial) and institutional (i.e., lack of explicit teaching, technology issues, no value in experiences), and the value of effective programs that cater to those unique

learners and their learning styles. They also addressed the need for educators to develop new communication skills that utilize the technology and online resources available, as well as differentiating instruction for the unique learning styles. However, their final summation is that "sound pedagogical methods" are going to determine success and progress, this is independent of an online or brick-and-mortar classroom (Kress et al., p. 78). The inclusion of sound pedagogical methods is also echoed by Norton and Hathaway (2008) who argued against using pre-packaged online courses that simply pass along the information versus fully engaging and challenging the students. This is accomplished by effective course design, echoing what was previously noted by Clary and Wandersee (2009) and Yoon (2003), or in other words, "course materials must be of high quality…assignments must be professionally meaningful, and that high quality feedback and communication is essential" (Norton & Hathaway, 2008, p. 479).

Another element of an effective online teacher education program, specifically one that utilizes available resources for the benefit of future instructors, is technology. Saltmarsh and Sutherland-Smith (2010) interviewed students and instructors involved in online teacher education programs to assess the possibilities for stimulating learning through the technology medium. They found that instructors saw themselves as innovators and both students and instructors agreed that it was a collaborative process to be successful. According to the research, technology used in online programs must be easy to use, accessible, available, and promote continuous interaction among the students (I-Chun, 2012; Kalin, 2012). The collaborative nature of technology is especially important in teacher education programs, which will benefit students long-term in

forming communities that promote the sharing of instruction, assessment, and learning strategies (I-Chun, 2012). Research stressed the need for teacher education programs to include a socially collaborative learning environment for optimal interaction and success (Lockhorst, et al., 2010). These teaching practices not only prepare students to be successful in courses, but specifically prepare pre-service teachers by providing an example of pedagogical methods in practice. "Learning occurs at the intersection of the social, cognitive, and teaching presences inside the classroom" (Cook, 2012, p. 49). Yoon (2003) discussed three types of interactions essential to students' success in an online classroom: (1) learner-instructor, (2) learner-content, and (3) learner-learner. Sutherland-Smith and Saltmarsh (2010) found that students who preferred an online educational delivery system, still benefited and desired interaction, while maintaining the autonomy of Internet-based learning. This social element was echoed in much of the literature on online teacher education programs, supporting the next sections on learning communities, cohorts, and theories involving social learning.

The final element discussed by research for effective programs is the role of the instructor as a pedagogical model, guide, lifelong learner, and content expert. According to Berge (2008), as technology and interactions change in an online environment, traditional teaching methods need to be questioned and adapted to meet the needs of a new generation of learners. Russell, Kleinman, Carey, and Douglas (2009) advocated for online courses for teachers, both pre-service and inservice, as they provide learning opportunities not always available in certain areas, age groups, nor specializations. While some concerns expressed by Dyment et al. (2013), Clary and Wandersee (2008), and

Stahl et al. (2002) were the increased workload and challenges to the instructor and the issues of technology skills and practice for students in online teacher education programs. However, Dyment et al. (2013) argued in their study on teacher education engagement that effective student learning practices started with effective teaching practices.

Other researchers have also stressed effective teaching practices for online programs, including modeling applications, including cohorts and collaborative learning, and integrating emerging technologies (Cowan, 2012; Lewis, Koston, Quartley, & Adsit, 2010-2011; Lockhorst et al., 2010). Researchers indicated many students see their education process as a key element in their professional development, one in which they learn the knowledge and application necessary to teach children (Green et al., 2010). However, studies confirmed that the standards (i.e., outlined by CAEP and INTASC) do not define how to teach the content, instead they provide what content to teach (Council for the Accreditation of Teacher Education, 2010-2014; Green et al., 2010; The Interstate Teacher Assessment and Support Consortium, 2014). Thus, distance teacher educators need to address best online pedagogical practices. "Teacher education represents a unique form of teaching in which both the content of the teaching and the practice of the teaching form the basis of what is being taught" (Green et al., 2010, p. 260). Instructors in effective online teacher education programs not only teach the content, but also model the methods, technology, and tools necessary for classroom application.

Cohorts and Collaborative Learning

Much of the research on collaborative learning communities and cohorts focused on the learning community aspect and less on cohorts. There is a lack of literature on the

topics of cohorts in teacher education programs and a complete absence of anything related to one-course cohorts. A study of the desirable and undesirable characteristics of educators working in collaboration with one another found characteristics directly related to educators' ability to work effectively and willingly with others as desirable, while negative affectations were linked to undesirable characteristics (Liff, 2003). A need for collaborative skills not only sets apart effective student experiences, but also for the course development and continued professional development of online teacher education programs (Johnson, 2008, I-Chun, 2012; Bruckman, 2002). Research noted that collaborative interactions in both face-to-face and online adults courses developed skills, such as critical thinking, "transformative learning," reflection, and a shared development of knowledge (Pratt & Palloff, 2005, p. 4).

A common element in the research is the importance of having in online programs a sense of community tying students together and to the school (Cowan, 2012; Heyman, 2012; Norton & Hathaway, 2008; Cook, 2012). In a study that compared self-paced and cohort-based online courses, Russell et al. (2009) found that cohort-based programs can have a positive effects on teachers' abilities to learn, engage in meaningful dialogue about their profession, and increase pedagogical practices. Cohort-based programs incorporate the need for community and interaction into a system that also enables students to finish their courses in a timely manner, marrying the elements of community and academic progress together (Russell et al.; Engstrom et al., 2008).

Community Benefits

Students build up a sense of community within the university experience while collaborating, but there are also additional reasons for including the opportunities in the online learning environment. Research reported students and faculty related feeling isolated when working online and involvement in community or cohort learning experience and connection with and among the course participants decreases that isolation (Pratt & Palloff, 2005). Falcon University, being self-paced, does not allow for cohorts of students to complete each course together. However, there is room to incorporate the research on instructional and collaborative methods inherent in cohort experiences into a course-based approach.

Heyman (2012) found in a Delphi study assessing factors influencing students' success in online programs "the importance of a sense of community for online students was noted frequently by panelists and through research on retention in general" (para. 41). A study of different online programs by Norton and Hathaway (2008) found that the role of a group had some of the most significant impact on the students' success. It provided support and collaboration more than any other resource. Sluijsmans et al. (2006) agreed with the assertion of providing support, but also discussed how learning communities, specifically in e-learning courses, engaged learners in the study in critical thinking, the sharing of ideas, and encouraging an ability to defend and challenges one's way of thinking. Milheim (2011) stressed learning communities, and instructors being focused on building effective communities, as one of the most important factors for successful online education. She discussed this further in relation to philosophies like

humanism, and the role of instructors for facilitating dialogue and discussion. Maddix (2010) also supported learning communities as one of the major factors in allowing students in online programs to build skills like critical reflection and communication. These skills come from a learning community that encourages and supports students through interactions and learning in a safe, social context (Maddix, 2010).

However, the research noted a difference between simply participating in an online community and a learning community. Learning communities develop from shared experiences and goals, a sense of belonging, and support (I-Chun, 2012). A learning community has also been found in some teacher education programs to elicit long-term post-graduation participation in teachers who still crave the support and interaction with fellow teachers (I-Chun, 2012). I-Chun (2012) explained the importance of communities in teacher education, specifically in maintaining a connection for continued pedagogical development:

> Researchers in teacher education have particular interest in communities of practice as a method for diminishing the gaps and disconnect between the stages of teachers' professional development. Supporting a professional continuum of learning that spans pre-service teacher education, induction of beginning teachers, and continued professional development is a key challenge of teacher education (p. 271).

Communities versus Cohorts

While the role of a community or cohort in online education is supported by the literature for building trust, critical thinking skills, and motivation, the definition of a

learning community and the methods for fostering it have been discussed by various

researchers. Drouin and Vartanian (2010) defined community as needing the two

components of relationships among individuals and commitment to the goals and values

common to the group. Their 2010 study researched students' perceptions of and desires

for a learning community online as compared to face-to-face courses, and what factors

contributed to these elements. Interestingly enough, the results showed that students were

satisfied with the degree of community involvement in both face-to-face and online

courses, suggesting that face-to-face does not have an advantage over online (Drouin &

Vartanian, 2010).

Other researchers have built on the ideas of Wenger's (1998) communities of

practice, wherein "groups of people who share a concern or a passion for something they

do and learn how to do it better as they interact regularly" (para. 4). Goos and Bennison

(2008) built on the social theory of learning advocated by Wenger and the four

components of "meaning (learning as experience, practice (learning as doing),

community (learning as belonging), and identity (learning as becoming)" (p. 42). Conrad

(2005) defined the following attributes and outcomes of a learning community:

> The creation of community simulates for online learners the comforts of home,
>
> providing a safe climate, an atmosphere of trust and respect, an invitation for
>
> intellectual exchange, and a gathering place for like-minded individuals who are
>
> sharing a journey that includes similar activities, purpose, and goals (p. 2).

Research has referenced this definition, along with Wenger's, of community when

addressing how online students are finding success in a nontraditional environment

(Carter, 2012; Cowan, 2012; Lewis et al., 2010-2011). Bonk (2009) stressed the ability of different technologies to join together individuals in ways not previously possible that build knowledge, trust, and academic conversation. The increase in online collaborative tools has also made it available across time and distance, and among experts and novices alike (Bonk, 2009). Cowan (2012) and Cumming-Polvin (2009) described studies combining communities of practice in a cohort experience for an enhanced interaction between students; describing them as groups of people that share concerns or interest in a topic, are looking to increase their knowledge in an area, inclusive to newcomers in the same area, and building a rapport in asking for understanding and further knowledge during the learning process. For pre-service teachers specifically, communities of practice require them to participate in constructing an educator identity through interaction with other future teachers (Carter, 2012; I-Chun, 2012). Research proposed this time as being more focused on collaborative interactions and learning than any other (Bonk, 2009). This interaction builds a connection between theory, content, and practice by distributing the knowledge across a larger group and developing understanding through the ensuing communication (Lewis et al., 2010-2011).

While degrees of a community are part of the cohort experience, cohorts are unique in their structure and purpose. As mentioned, no research exists on the effects of a one-course cohort, all literature described further refers to online established cohorts. Cohorts traditionally follow students from the beginning of a program to the end, with the same group staying together and moving from course-to-course. Research supports the importance of a cohort model in students' learning experience and in building a strong

connection and community among participants (Cowan, 2012; Engstrom et al., 2008).

Not only was there a social benefit, but studies found many students felt invested in their

own learning, as well as in the learning and progress of others in the cohort (Engstrom et

al., 2008) In addition, students found that dialogue and communication allowed them to

better understand the content and navigate the requirements and content more effectively

(Cowan, 2012; Engstrom et al.). "Due to its close-knit nature, a cohort has a strong

potential to become a learning community whose members acquire, use, and share their

collective knowledge" (Engstrom et al., 2008, p. 151). Thus, the connection exists

between communities, collaborative learning, and cohorts. Students gain knowledge

through their studies, but knowledge is then solidified and shared through interactive

opportunities like cohorts, which in turn, create communities of learning and practice.

- Following Wenger's (1998) framework of a community of practice and the
  defining components of a cohort, the following strategies have been found
  throughout the research on elements needed for a successful cohort community
  experience:

- Cohorts and communities are different and as such, successful programs need
  both to be effective and allow for collaboration to exist (Cowan, 2012; Lockhorst
  et al., 2010, Pratt & Palloff, 2005).

- Cohort communities build on the existing experiences of students (Cowan, 2012;
  Engstrom et al., 2008).

- Pre-service teachers are unique, as is the act of teaching; thus, communities need to focus on professional development as well (Carter, 2012; Cowan, 2012; I-Chun, 2012).

- Students need multiple levels of expertise and resources to gain an understanding of the social, mental, emotional, and psychological aspects of teaching (Cook, 2012; Cowan, 2012; Kalin, 2012).

- Communities and cohorts need to have a specific purpose and design in connecting pre-service teachers to each other and to their communities, not just for the sake of including a community element (Carter, 2012; Kalin, 2012).

- Cohorts should require students to learn by doing, actively and effectively preparing them for the classroom (Carter, 2012).

- Utilizing Web 2.0 tools (i.e., social networking, folksonomies, online multi-player games, podcasts, blogs, wikis) will connect learners together effectively and allow for an easier information exchange; as well as incorporating technology that is common for inservice teachers (Goos & Bennison, 2008; Kalin, 2012; Lewis et al., 2010-2011; Pratt & Palloff, 2005).

- Instructors are part of the collaborative process and contribute to the formation of a community by being present, providing effective feedback, and modelling expected behaviors; "…good instructors created community; poor instructors didn't (Conrad, 2005, p. 12; Pratt & Palloff, 2005)."

- Instructors also benefit personally from community involvement in professional development and a connection to the students, school, and colleagues (Lockhorst et al., 2010).

- Communities, collaboration, and trust among participants needs to be in place from the first day of the course (Pratt & Palloff, 2005).

- Teacher education programs employ communities of practice to engage pre-service educators into discussions about problems and issues common in the classroom (Green et al., 2010).

In addition to the elements addressed, technology is an important facet of effective online collaboration; however, keeping in mind, "pedagogy must drive technology," meaning that any technology used to facilitate learning communities or cohorts must be based on sound pedagogical methods and not technology for the sake of technology (Kalin, 2012, p. 3). Research on different community approaches has found that the technology used, specifically the ease of use and accessibility, contributed to students' increased participation in interactive discussions (Goos & Bennison, 2008). Goos and Bennison's (2008) study on pre-service mathematics teachers found students wanted notifications sent to their email of new posts made, this kept them abreast and updated on the discussions, even when they were not logged in to the system. "When we select pedagogically sound models for "learning community" and combine these with appropriately chosen technologies, new kinds of learning become possible" (Bruckman, 2002, p. 462).

A final thought, Cumming-Polvin (2009) pointed to Wenger's communities of practice in how pre-service teachers develop the understanding to move from novice to experienced teacher. Her study of pre-service teachers focused on building the socio-cultural bonds of future teachers through communities of practice. Pre-service teachers interviewed reported developing a deeper understanding of what it means to be a teacher based on their interactions through communities, in other words, what Cook (2012) described as "real learning" (p. 51). The focus on communities and interactions is a key piece of social learning theory and the support for social and emotional learning curriculum included in educational programs.

Questions and Bloom's Taxonomy

The purpose of a cohort or learning community is to engage students in the learning process, along with providing the social support desired, and in some cases, needed for a successful online program (Han & Johnson, 2012). However, there is a distinction noted by researchers with the level of cognitive mechanics in the types of tasks, assessments, and activing questioning by the instructor and peers eliciting the most fruitful collaboration and group interactions (Gok, 2011; Weigel & Bonica, 2014). Dr. Benjamin Bloom, in 1956, led a group of educational psychologists on a mission to devise a ranking of the various cognitive domains and sections that differentiate the type of learning taking place (Bloom, 1956). This ranking was incorporated into other psychologists' work and revised in 2001 to include the highest cognitive level, which is creation (Anderson et al., 2001). The revised taxonomy includes the following framework:

- Remembering: The basic recall or retrieving of facts from reading or seeing information, also includes defining or listing data (Churches, 2014a). Questions at this level include, "What is…" or "Can you list the three…" (Bloomstaxonomy.org, 2015).

- Understanding: Building links and connections between knowledge. This is a step beyond remembering, as knowledge is not simply recalled but related to other knowledge gained (Churches, 2014b). Questions at this level include, "How would you compare…" or "How would you contrast…" (Bloomstaxonomy.org, 2015).

- Applying: Knowledge at this level is implemented into a specific scenario or example, and often results in products like presentations or simulations. This level builds on the previous two by incorporating knowledge and connections to a product, often in a real-world scenario (Churches, 2014c). Questions at this level include, "What approach would you use to…" or "How would you apply what you learned to develop…" (Bloomstaxonomy.org, 2015).

- Analysing: Knowledge or concepts are broken down into parts, determining how those parts relate to others or to an overarching purpose. This level of the taxonomy requires the other three levels to understand the content to the point that you can differentiate and organize it (Churches, 2014d). Questions at this level include, "What inference can you make…" or "Can you make a distinction between…" (Bloomstaxonomy.org, 2015).

- Evaluating: Knowledge and content is judged based on criteria and standards. Evaluation is a step beyond analysis, using those results of analysis to determine the value or placement of knowledge (Churches, 2014e). Questions at this level include, "What judgment would you make about…" or "How would you improve…" (Bloomstaxonomy.org, 2015).

- Creating: Taking the knowledge pieces or elements to create a functional whole or making a new structure through the steps of planning, analysis, and evaluation. Creation builds on the previous taxonomy steps to move beyond thought or abstract ideas to concrete plans and implementation based on the knowledge gained (Churches, 2014f). Questions at this level include, "Design a…to perform…" or "Solve the problem by…" (Bloomstaxonomy.org, 2015).

Educators began implementing Bloom's Revised Taxonomy into the planning process, considering what action verbs would best describe the level of thinking desired in the students. Activities and assessments were created with these actions in mind (Tyng & Othman, 2013; Dong, 2014). There was also support on the need for students to be taught the different levels of Bloom's Taxonomy of learning, then they can check their own mental processes through "classification, combination, and refinement" (Dong, 2014; Haghanikar, Murphy, & Zollman, 2012, p. 271). This is all considered to be an active learning and engagement style, versus passive reception of material and information (Weigel & Bonica, 2014).

In an online environment, Bloom's Taxonomy is a tool to create questions that engage students to think critically with the content, independent of distance from instructor or resources. Thormann, Gable, Fidalgo, & Blakeslee (2013) described the role of an online educator as a "facilitator who guides learners to engage critically with the material and collaborate with other students, and rarely imparts knowledge directly" (p. 298). Researchers suggest attention be paid to Bloom's Taxonomy as questions are prepared for courses, which will encourage higher-order thinking skills "by building up from lower-level cognitive skills" for discussion and task-related activities (Callens, 2014, p. 20; Gok, 2011). Callens (2014) concluded with the difference between the lower-level cognitive skills and the meaningful learning that occurs at the higher-level questioning:

> The focus shifts to the remaining five categories of Bloom's Revised Taxonomy when instructors encourage knowledge transfer: understand, apply, analyze, evaluate, and create. It is here, beyond the remember tier, meaningful learning occurs. Meaningful learning, unlike rote learning, provides students with the knowledge and cognitive processes they need for successful problem solving (p. 22).

Barriers

Research provides support for cohorts and communities; however, barriers exist that prevent or discourage students from interacting. Some literature recounted students viewing collaborative activities as a time commitment that draws them away from other options; while this might be discouraging to educators attempting communities and

cohorts, Kalin (2012) noted that it might "imply that students want to find ways to collaborate – if only they had the time" (p. 17;). Some community members also viewed participation in the community only as a requirement to fulfill and stated that they did not benefit from the experience when forced; rather, they could be compelled through other students' participation and the instructor's role within the community (Rossi, 2010). While some researchers argue against the value of learning communities within an online environment, many researchers agree that the benefit to social interactions through cohort and communities has been verified (Bruckman, 2002; Conrad, 2005). In addition, research also described when implemented and maintained correctly, students went from seeing collaboration as simply a requirement of the learning to valuing it as a key part of the online education process (Conrad, 2005; Rossi, 2010).

Another barrier can stem from the role of the instructor in either assisting or hindering collaboration. Pratt and Palloff (2005) outlined both methods for effective building of online communities and collaboration and on challenges that exist. Ideas for collaborating online include: small-group assignments, "research assignments asking students to seek out and present additional resource material to their peers," group work on case studies, simulations, shared facilitation, homework forums, asynchronous discussions, and "papers posted to the course site with mutual feedback provided" (Pratt & Palloff, 2005, pp. 9-10). Additional challenges discussed by Pratt and Palloff (2005):

> Turf protection and mistrust, decision-making processes, limited resources,
> dropping out, reduced participants, broad representation, communication, solid
> leadership, time commitment, teams that play too much, courseware issues and

limitations, technical difficulties, course design issues, cultural differences, and faculty issues (p. 33).

While the barriers and challenges exist, researchers still value and argue for the inclusion of community within the online experience and advocate for proper instruction and organization to facilitate collaboration (Bruckman, 2002; Pratt & Palloff, 2005; Rossi, 2010).

Within the framework of collaboration lies the connection to social learning theory and connectivism, both of which highlight and advocate the inclusion of a learning community and interaction among participants for the learning to fully come to fruition (del Moral, Cernea, & Villalustre, 2013; I-Chun, 2012).

Social Learning Theory

Yoon (2003) summarized the goal of social learning in terms of the level of understanding and depth gained by students. "For meaningful learning experiences to occur, learning should emerge from students' interactions with meaningful contents, the course instructor, and peers" (Yoon, 2003, p. 20). Teaching online, as discussed, can be difficult for a myriad of reasons, not including taking what was a very social-oriented process of campus education and moving it to an isolated online experience (Dykman & Davis, 2008b). Bandura (1977) proposed his theory of social learning as an explanation for the impact others have via "observation, imitation, and modeling" (Learning Theories Knowledgebase, 2012). In other words, individuals learn from each other by interaction, discussion, and reflection. Bandura (1977) outlined four elements of effective modeling:

- Attention includes factors that increase the amount of attention paid to the individual modeling, which can include the complexity or uniqueness of the task and the value in completing it.

- Retention involves how well individuals remember the information, which includes working memory and cognitive organization of facts and knowledge.

- Reproduction is the physical and mental capability to recreate the product modeled.

- Motivation includes reasons for wanting to model, including promised or possible results (Bandura, 1977; Learning Theories Knowledgebase, 2012).

These elements of effective modeling place import on the value and need for students to have valid and authentic peer and instructor interaction, especially in an online environment.

There is an increased emphasis on students learning together through effective social interactions (Bruckman, 2002; Green et al., 2010; Stahl et al., 2002). A study reviewing students' reasons for dropping out of online programs found that communication and social interaction between the student and instructor and peers was a major factor in the decision to withdraw (I-Chun, 2012; Willging & Johnson, 2009); while one major criticism of online learning, mentioned by Milheim (2011), is the lack of social learning and interaction. Students have a real need for social interaction and the benefit of online education is found within the ability to communicate across platforms and with anyone who has a computer (Beaudoin et al., 2009; Cook, 2012; Crawford-Ferre & Wiest, 2012; Rossi, 2010). "Online environments present an educational domain

unique in their potential for interaction, participation, and collaboration" (Rossi, 2010, p. 1).

Not only do online environments provide a domain conducive to collaboration, but the "media-rich environment" can often promote engagement and participation more intensely for the student participants (Berge, 2008, p. 408). Students reported the benefit received from learning from and about others (Bonk, 2009; Stahl et al., 2002). Kress et al. (2012), Stahl et al. (2002), and Dyment et al. (2013) found that students were enlightened and commented specifically on the positive results of hearing the views of others through questioning, inquiry, and teaching each other. Dykman and Davis (2008b) stressed the importance of students taking turns being in a leadership or expert role among their peers. Not only is this a benefit for students, but as Dyment et al. (2013) reflected, also for instructors seeking engagement from students in their online courses. However, Sluijsmans et al. (2006) stressed that inclusion of social learning interactions without practice will not increase nor support students' learning success.

Social Learning Application

So what are the elements of practice and effective social learning? Many researchers, including Lockhorst et al. (2010) stressed the importance of having goals, milestones, and defined roles for student interactions. Dyment et al. (2013) and Cook (2012) discussed using a myriad of synchronous applications such as chat rooms, wikis, blogs, Adobe Connect (used in the study), and social media. Synchronous learning is when both the instructor and students are online at the same time, while asynchronous modes are flexible and takes place on the schedule of the student (Crampton & Ragusa,

2012; Crawford-Ferre & Wiest, 2012; Kress et al., 2012; Pratt & Palloff, 2005; Yoon, 2003). Kalin (2012) asserted that the right technology can make synchronous communication happen effectively, while also improving the ability to communicate asynchronously. Russell et al. (2009) studied the elements of self-paced and cohort-based online programs and found among participants that when discussion boards were available, participants used them often to interact with peers and the instructor. Yet this requires students and instructors to create profiles and be engaged in meaningful online interactions to receive the benefits (Cook, 2012; Dykman & Davis, 2008c).

Researchers also reported evidence of instructors needing to maintain an active role in the course discussions for the students' benefit, including creating a safe learning environment, modeling interactions, and facilitating further insight and discussion (Berge, 2008; Cook, 2012; Crampton & Ragusa, 2012; Crawford-Ferre & Wiest, 2012). In fact, Zins, Payton, Weissberg, & O'Brien (2007) found that students flourished with teacher support and high expectations, in turn leading to bonding, engagement, academic achievement, and satisfaction with the school experience. Instructors also needed to consider evolving technologies and interaction methods to maintain an effective environment in the face of multiple learning styles and changing abilities (Cook, 2012; Stahl et al., 2002). In addition, they have to always maintain a "situated social space," or in other words, recognize that social practices in education need a purpose and place, not just for the sake of having a community or social network component (Carter, 2012).

One large piece of successful social interaction is to include a time for reflection; where students can react to what was learned and said and how to incorporate that

knowledge within the current system (Lockhorst et al., 2010). "This pedagogy remains best practices because by engaging students in this way, we begin to demonstrate the social construction of knowledge" (Kalin, 2012, p. 3). Higher-level thinking skills like application and reflection are related to the interactions between learners, according to Wertsch (2008) and Engstrom et al. (2008). Wertsch (2008) concluded, "The means for influencing oneself originally were means of influencing others or others' means of influencing an individual" (p. 67).

Definitions of Social Interaction

Increased access to the internet and a new variety of communication options has changed the way individuals interact online, specifically in online education programs (Kang & Munoz, 2014; Lee, 2012; Thormann et al., 2013). Researchers have argued for the inclusion of social learning in the online classroom, as it engages students in the learning and meets an inherent need for connections (Callens, 2014; Hart, 2012). The definition of social learning and interaction in educational settings ranges by researcher and focus, from disclosure of personal facts to collaborative navigation through the content. While a degree of personal social interaction has a place in the online learning environment in order to create a comfortable and positive climate, social learning interactions are defined as the following (Janssen et al., 2012; Kang & Im, 2012):

- Asking questions that require more than yes or no answers (Janssen et al., 2012; Kang & Im, 2012; Kang & Munoz, 2014).

- Active engagement in the conversation with an exchange of ideas (Janssen et al., 2012; Kang & Munoz, 2014; Lee, 2012; Shoenthal, 2015).

- Critical thinking generated through higher level activities, such as "classifying, summarizing, inferring, comparing, explaining and applying their prior knowledge to new context" (Haghanikar, Murphy, & Zollman, 2012, p. 271; Han & Johnson, 2012; Kang & Im, 2012; Lee, 2012; Thormann et al., 2013).

- Use of conceptual and procedural skills to approach problems and construct knowledge and solutions (Haghanikar, Murphy, & Zollman, 2012; Janssen et al., 2012).

- Metacognitive regulation of learning and strategies for understanding (Janssen et al., 2012; Lee, 2012).

- Sharing experiences and reflecting on the learning process (Han & Johnson, 2012; Lee, 2012).

Social-Emotional Competence

Research exists on the importance for students of all ages to gain a social-emotional competence (Liff, 2003; Oberle, Schonert-Reichl, & Thomson, 2010; Riggs, Jahromi, Razz, Dillworth-Bart, & Mueller, 2006). Social-emotional competence, or social and emotional learning (SEL) as it is also known, is the idea of skills including "inhibition of impulsive behavioral responses, awareness and regulation of feelings, accurate perception of the perspective of others, correct identification of problems, and development of positive and informed problem solutions and goals" (Riggs et al., 2006, p. 300). According to research on social and emotional learning, the following competencies need to be addressed when promoting the social-emotional characteristics:

- self-awareness

- self-management

- social awareness

- relationship skills

- responsible decision-making (Oberle et al., 2010; Zins et al., 2007)

These competencies are part of an effective teacher education program, same as the academic competencies addressed previously. Social learning theory is built on the idea of students learning from each other, which requires participants to utilize the aforementioned skills and social-emotional competencies. Not only does it support the social learning theory, but Sutherland-Smith and Saltmarsh (2010) argued that effective pedagogy includes social interaction, collaboration, and teaching students to engage in a dialogue of perspectives and opinions.

While many researchers would argue social-emotional competence should be learned at a younger age and in fact, schools have programs for younger students to engage in activities that help build social-emotional learning and skills; however, many agree that it is a set of skills that can be fostered at any age and benefit those who engage in constructive social activities (Durlak, Dymnicki, Taylor, Weissberg, & Schellinger, 2011; Riggs et al., 2006). Not only is social-emotional competence linked to interaction and social activities, but is also connected to executive functions (i.e., planning, initiating tasks and learning, connecting to working memory, attention shifting) and theory of the mind, which would imply a benefit to an older and more mature learner (Riggs et al., 2006). Researchers also agree there is evidence of a relationship between negative social experiences and deficits in said executive functions; thus, placing further import on the

role of positive social interactions for all ages (Riggs et al., 2006; Zins et al. 2007). A meta-analysis completed by Durlak et al. (2011) highlighted studies documenting connections between the elements and characteristics of social-emotional competence and students' academic success. Students were more successful when engaging in social learning than in academic study alone. Zins et al. (2007) focused on the role social-emotional competence plays on connecting and investing students in the state of their schools and enhancing the characteristics that accompany contribution like satisfaction, belonging, motivation, as well as academic success.

Cumming-Polvin (2009) discussed the role of social-emotional competence in learning, when he said, "Supporters of socio-cultural perspective of literacy argue that a close relationship exists between cognitive skills, cultural technology, and societal institutions through which understandings and practices are developed" (p. 83). Liff (2003) argued that the role of college faculties is to develop both the mental and social aspects of a student's educational experience. Bruckman (2002) argued that peer interaction and accompanying support is not just a technical aspect of online learning, but also an emotional one. Not only is it important of the learning experience, but there is also research to support the role of peers in effective development and peer rejection as a forecast of adjustment challenges (Oberle et al., 2010). In fact, the research concluded that students never truly learn alone, as it is a collaboration with instructors, peers, and family; meaning that for educational systems to graduate students prepared for an interactive workplace and long-term social success, they need both the academic skills, as well as responsible social and emotional behavior and skills (Durlak et al., 2011; Oberle

et al., 2010). Oberle et al. (2010) concluded the following about the benefits of social and emotional learning:

> Emotional well-being and positive emotions such as happiness, self-confidence, and optimism are stably linked to successful life outcomes valued by society, such as reaching out socially instead of withdrawing, and ultimately forming more and better relationships with close friends (p. 1333).

Connectivism

Much like the value placed on social learning by Bandura, Siemens (2005) proposed the theory of connectivism as a learning theory for the digital age of social media and online knowledge acquisition. This theory highlights the role of technology in affecting how individuals live, communicate, and learn (Siemens, 2005). Siemens found that learning theories created prior to the age of technology, like behaviorism, cognitivism, and constructivism, are limited in the degree to which outside processes are recognized for engaging learners (del Moral, Cernea, & Villalustre, 2013). Connectivism is based on three principles:

- chaos theory
- importance of networks
- theories of complexity and self-organization (Davis et al., 2008; Kop and Hill, 2008).

Chaos theory is an idea of seemingly unrelated properties being connected (Davis et al., 2008). "A network can simply be defined as connections between entities" (Siemens, 2005, para. 22). Individuals can be connected through all these networks to

others. The last element is the interplay between complexity and self-organization, where they interact and connect through systems, people, and networks (Davis et al., 2008). Basically, when knowledge is needed, being able to connect and plug in to find answers through interactions is the learning that occurs through connectivism. Kop and Hill (2008) also described the importance of communities (or nodes) in the development of knowledge, as it is connecting students to the knowledge. Learning also occurs in a cyclical manner, as connections and application need to take place over and over again to stay current in the knowledge (Kop & Hill, 2008). Cook (2012) argued for technology, understanding differing opinions, and self-directed learning to be included in elements that allow connectivism to occur. These elements allow for thought processes to shift, realign, or change when new knowledge is gained through resources and interactions. "Being prepared to teach and learn in a continuous model that engages the instructor, the students, and the content will change how educators use new technologies to encourage and sustain learning and eliminate boundaries that exist for students in teaching and learning" (Cook, 2012, p. 51).

Connectivism can exist in many forms, as long as the elements of digital connections and changing knowledge are part of the equation. Stahl et al. (2002) wrote about computer-supported collaborative learning, which focused on how individuals can learn together with the help of computers. This specific subset of collaborative learning is available based on the connections formed between people using the networks and applications of the Internet and technology. It also changes the role of the computer from a tool to one that provides the means for students to engage in the collaboration and

learning from others (Stahl et al., 2002). However, Lockhorst et al. (2010) stressed that the connections and learning need to take place within a set task, not just a random pairing of individuals.

Students are familiar with social media, an online presence, and computer-based learning, thus allowing for the requirement in class to merely be an extension of what is already part of their lives (del Moral et al., 2013). Because connections are the "lifeblood of an effective online class," students need to interact with the knowledge through networks of individuals in the course and around the world (Cook, 2012, p. 51). Bruckman (2002) advocated the role of computer networks and connections as a method for engaging students in real-world issues and learning:

> By connecting learners to the real world, they [computer networks] can connect students to real problems, creating a more authentic context for learning. Learning sciences researchers have found that when learning is situated in real-world settings, and focused on authentic problems that have meaning for students, then students develop a much deeper understanding of the material. (p. 466)

Not only then can connectivism build relevance in an academic setting, but it also connects students to issues outside of school and allows for opportunities to enact positive social change. In fact, some researchers have argued that the very nature of online collaboration and "connectivist learning environments" forces learners and participants to consider collaborative and innovative problem solutions (del Moral et al., 2013, p. 114).

Challenges to Connectivism

Though touted as a learning theory for the digital age, there are some who question the validity of connectivism as an actual learning theory. Kop and Hill (2008) and Davis et al. (2008) discussed detractors' views of why connectivism does not fulfill the role of a developmental theory. Some researchers argue that connectivism does not explore the processes of how individuals learn (Davis et al., 2008). However, Kop and Hill (2008) explained how connectivism does provide information on how learning occurs, by the connecting of learners to nodes and networks. This describes the view of connectivism as knowledge residing in multiple locations outside of the individual and would imply a theory of how learning occurs.

Applications of Connectivism

The ability to see connections between ideas, individuals, and concepts is a "core skill," according to Siemens (Kop & Hill, 2008). As educators seek to instill knowledge and the ability to gain knowledge in a digital age into the students, connectivism relates to the final product of learners out of the educational system. Researchers argued for the application of connectivism in an online environment, as connectivism advocates for a self-directed learner, one who can seek out the content, as well as communicates to clarify it (Davis et al., 2008; Kop & Hill, 2008; Siemens, 2005; Yoon, 2003). A study completed by del Moral et al. (2013) also discussed the role of connectivism in online learning objects, defined as "minimal learning content units," which are included within a collaborative connectivist framework (p. 106). This framework described by del Moral et al. (2013) consists of four steps in utilizing the networks and application in learning:

- Students first collect the data and resources, while learning to store, file, and organize the new material.

- Reflect on the information and access critical thinking skills to create new meaning and methods of learning.

- Then connect to existing or form new learning communities and work groups to share the learning and form new understanding through interaction.

- Publication as the final step consists of sharing the learning and knowledge gained, as well as learning to edit and insert into new forms.

Connectivism provides a framework from which online learning can have organization, choice, and social interactions within an experience conducive to knowledge formation. Not only did the learning objects fit within this framework, according to del Moral et al. (2013), but they also fit within the idea of making learning accessible and initiated by the learners. Other researchers, including Berge (2008) and Kalin (2012), found those who are comfortable with the digital technology will benefit more from working in groups, absorbing information through online resources, and navigating the networks for connections. However, this also requires more of online instructors, Kalin (2012) described:

> Our task, then, as technical communication instructors should be to provide our students with increased rhetorical awareness of the ways in which they already interact and communicate within social networks, thus enabling them to better situate themselves within these networks (p. 2).

While not the only application of connectivism, online learning is one that utilizes the autonomy of the learner and the reliance on learning communities for continued knowledge development.

Chapter Summary

Researchers support the important roles of collaboration, communities, and cohorts in an online environment (Conrad, 2005; I-Chun, 2012; Kalin, 2012). Social learning theory and connectivism provide a conceptual framework through which the social aspects of interaction, technology, and learning can be viewed (Bandura, 1977; Siemens, 2005). Falcon University, among other online learning ventures, has attempted to make teacher education programs available to a variety of traditional and nontraditional students through a variety of technological mediums, built around a competency-based approach (Johnstone, 2005).

The gaps in the literature regarding cohorts, social learning, competency-based education, and connectivism need to be explored further to provide research supporting an innovative form of online classroom interaction. The exploration will take place through looking at the social experiences, content question interactions, and patterns of behavior in assessment of students in a teacher education one-course cohort. Social interaction is part of a successful and effective online experience, as it promotes the students' social-emotional well-being, along with an academic one (Durlak et al., 2011; Janssen et al., 2013). Building this into a unique one-course cohort experience, as well as engaging discussion through higher level content questioning, can allow for students to

form relationships and build cognitive skills, while still permitting the autonomy and flexibility inherent in online education (Anderson et al., 2001).

The previous information was explored through the literature by looking at online teacher education program and the role of competency-based learning, the use of cohorts and learning communities, the role of collaboration and social learning theory, and influence of connectivism. Chapter 3 will discuss the research methods by outlining the research design and rationale, exploring role of the researcher through methodology, biases, and the steps to maintain a trustworthy and quality case study.

Chapter 3: Research Method

Introduction

The purpose of this case study was to explore the online one-course cohort and the social experiences, content question interactions, and patterns of behavior in assessment of the students. The patterns of behavior and questioning involved in the learning and assessment processes shared by the students, along with the social interaction and network experiences gained, provided the students with tools to make progress among future coursework without requiring the traditional cohort arrangement. This structure differed significantly from Falcon University's normal online process of competency-based, individual-rate of learning by incorporating more opportunities for group learning and knowledge building.

Chapter 3 is organized as a discussion of research design and rationale, along with identifying my role as the researcher in the case study. The methodology is detailed by reviewing the areas of participant selection, instrumentation, recruitment, participation, data collection, and the data analysis plan. Issues of trustworthiness and ethical procedures outline the steps I took to ensure a quality case study.

Research Design and Rationale

The following questions were explored to understand the one-course cohort experience through the eyes of those students who participated and interacted:

- Research Question 1 (RQ1): What types of content questions lead to interactions among licensure students in a synchronous, one-course cohort learning session?

- Research Question 2 (RQ2): What patterns of student interaction and questioning occur in synchronous, one-course cohort sessions?

- Research Question 3 (RQ3): What patterns of student interaction and final assessment performance occur in synchronous one-course cohort sessions?

The purpose of this case study was to explore the online one-course cohort and the social experiences, content question interactions, and patterns of behavior in assessment of the students in an introductory teacher education course. This was accomplished through analyzing the patterns found in students' synchronous discussions, observations of behaviors, and assessment pass rates. The one-course cohort is underrepresented in the literature and the goals of this case study were to provide research supporting an alternative cohort approach offering a social component while maintaining the flexibility desired in an online degree program (Bandura, 1977; Kress et al., 2012; Siemens, 2005). As social interaction is an often cited reason for remaining in an online program, the one-course cohort also offers a community opportunity to balance the high rates of attrition within online education (Dyment et al., 2013; I-Chun, 2012; Willging & Johnson, 2009).

The work used a case study as the framing tradition for the qualitative research. Qualitative research relies primarily "on human perception and understanding" (Stake, 2010, p. 11). A qualitative study emphasizes that in human affairs research, there is a different solution or expectation in each event and experience (Stake, 2010). This understanding supported both the choice of qualitative, as well as that of a case study.

The purpose of a case study is to seek answers to questions about the specifics of the specific case. As Gillham (2010) stated, a case study that also "seeks a range of different kinds of evidence, evidence which is there in the case setting, and which has to be abstracted and collated to get the best possible answers to the research questions" (pp. 1-2). This specific case study explored the social experiences shared by participants in a one-course cohort opportunity. These experiences included patterns between academic progress and social interactions and the degree of social collaboration to higher-level questioning. A case study was the correct approach for meeting the goals and providing data to help answer the research questions, especially as the questions sought to identify the said patterns and interactions within the "real life context," precisely the purpose of a case study (Woolside, 2010, p. 1).

Role of the Researcher

My research roles during this study included observing various archived one-course cohort meeting interactions and being the sole collector and analyst of data. I was also an instructor for the same course type used for the one-course cohort, along with two other instructors at the institution. However, the archived one-course cohort offering was run by one of the other instructors and I had no supervisory interaction with the participants. The recordings, archived chat discussions, and evaluation information were all collected after participants had moved on from the course,and the students did not have any contact with me because I was not their instructor. I transcribed materials from the three one-course cohort sessions and changed the names to identifying numerals so as to anonymize student identities.

I engaged in research in the course and university in which I work, as the high rate of attrition and motivational issues related to online education have credence and relevance in my working environment (Hart, 2012; Heyman, 2010). The one-course cohort, while offered with a course that I taught, was not facilitated by myself and therefore presented an opportunity for me to gather data to assess whether or not positive social patterns and experiences resulted from this offering for future reference and pedagogical/instructional resources.

I was aware of my biases in relation to the university, my position, and the goal of the cohorts. These biases included a hope for a discernible pattern between cohort participation and final assessment performance and further understanding of effective methods of instruction and interaction. In order to negate these biases, I presented the information as collected, coded based on findings and not assumptions, and based my analysis on data findings. Being aware of biases is a step towards circumventing them in an effort to present the data honestly and openly.

Methodology

The following subsections present the methodology for engaging and recruiting participants, study instrumentation used, plan for data collection, and procedure for data analysis. This methodology provided the process for participation and data collection pertinent to the purpose of the qualitative case study.

Participant Selection

I did not chose the individual participants; they were all enrolled in the course Perspectives of Education and had already joined in the live one-course cohort sessions in

a past month. All participant data were archival, and the participants were drawn from a variable population of students enrolled in the teacher education program at Falcon University. While that characteristic was shared by all participants, the rest of the population traits varied from individual to individual. Falcon University's student population is located in all 50 states, in both rural and urban areas. Students' educational backgrounds ranged from Associate's degrees to no college experience, and students were often working at least part-time, if not a full-time job. Student ages ranged from 20s to 60s, with an average age of 36 years.

I used purposeful convenience sampling to select the participants. The sampling strategy most commonly used in qualitative studies is purposeful sampling (Patton, 2002). Among purposeful sampling, the subcategory case of convenience, wherein participants are chosen based on what is available, easiest, and cost effective, was most applicable for this study, as the participants were chosen based on their voluntary enrollment in the one-course cohort (Patton, 2002). While convenience is not always the most desirable form of purposeful sampling (Patton, 2002), it was the most appropriate method for the study and provided participants who fit the parameters and purpose.

As previously stated, the criteria for finding and recruiting participants was based on two things: registered in the university's teacher education program and the introductory education course and enrolled in the one-course cohort. Participants included all those engaged in the one-course cohort, as they were part of the archived recordings and discussions, and their pass rate data was available through the university's system.

As the case study asked for social learning experiences through patterns and content questioning gained by reviewing and observing archived data, the number of participants was based on the number who signed-up and attended the one-course cohort sessions. Thirty-four students registered for the archived one-course cohort and represented an ideal amount for a study of this size and purpose, which fell within the suggested range for a case study from various research sources (Patton, 2002; Woolside, 2010).

Based on the criteria for participants, recruitment had already occurred through the process of signing-up students for the one-course cohort, as the data was archival. The initial process of registering students for the one-course cohort is by email sent through the university email system from the instructors. It is then up to the student whether he or she will engage in the one-course cohort or continue through the course individually as a traditional competency-based online approach. Those who attended were recorded and interactions were archived. Informed consent was not required, as archived recordings and pass rates were provided by the university and identifying names and details were removed.

No money, academic progress, or other incentives were offered to student participants. Participation by students in the one-course cohort was completely voluntary. There is an assumption that participants acted honestly and openly about their social interactions and responses to various content questioning throughout the live cohort sessions. There is also an assumption that their behavior was unfettered during the duration of the one-course cohort sessions. In turn, names and identifying information

were kept confidential in an effort to maintain anonymity and integrity with the purpose

and subject matter.

The idea of saturation in relation to sample size is common in qualitative studies.

Saturation refers to the point where the sample size and subsequent data collection can no

longer shed new light on the analysis and results of the research (Mason, 2010). In that

case, the sample size has become too large. In keeping with the goals and purpose of the

study, the sample size was sufficient in providing data on the social learning experiences

and patterns of behavior from participants.

Instrumentation

The following data were collected: archived synchronous discussions,

observations of archived recordings of live cohort sessions, and post-cohort assessment

pass rates. The instrumentation tools to enable the collection of the data were observation

and note-taking protocols for insights gained during the sessions, pass rates and

breakdown of assessment results, and the chat pod functionality of emailing the complete

chat contents in Adobe Connect (Adobe, 2015). The observation forms and assessment

matrix were researcher-produced tools; while the pass rates were obtained through Falcon

University and the instructors and the archived discussions were available through the

Adobe Connect resources (2015).

The research questions explored the patterns of students' social interactions and

assessment performance, as well as the nature of questions that lead to social interactions

among participants in an online teacher education introductory one-course cohort (Table

1 for alignment). An effectual method in recording and understanding these patterns of

behavior is through direct observation and participants' own words and responses. Thus, the observations and archived synchronous discussions provided the most accurate description of what they think, observe, and learn within the one-course cohort sessions. The pass rates and assessment details helped identify patterns of social learning versus accomplishment in students' interactions during the live one-course cohort sessions and their final assessment scores in those competencies and asking whether social interactions with the content prepared them for the assessment (Appendix A, B, and D for researcher-created recording instruments).

The pass rate and breakdown of competencies passed within the final assessment provided the outcomes associated with the questioning and patterns of social interaction during the synchronous one-course cohort sessions (Appendix C for assessment competencies and Appendix D for assessment analysis matrix). The assessment results were provided by the university for each student enrolled in the one-course cohort. Assessment detailed each competency and the number of points passed or failed in each competency. These scores were compared to the questions and responses throughout each one-course cohort session, in order to compare areas students participated and interacted with the final score of each student in that competency.

The observation collection tool was created to focus on the questions that activated participants' higher order thinking skills, as well as social interactions with the other participants through dialogue (Appendix A for collection tool). These questions posed by the instructor during the one-course cohort sessions were recorded and archived, as well as the spoken responses and interactions from and between participants.

The tool was organized using Bloom's Revised Taxonomy (Figure 2) of cognitive

domains of learning and questioning, the competencies tied to the initial question, and the

responses from students and instructor (Anderson et al., 2001).

The final piece of data collected was the written discussions from the synchronous

one-course cohort sessions. There are three sessions and three discussions were collected.

The Adobe Connect application used by the instructor allowed a chat pod to be opened

and accessed during the one-course cohort session (Adobe, 2015). The instructor asked

questions to which students typed answers in the pod, as well as answered other questions

posed by students or provided anecdotes and experiences to complement the content.

These discussions are emailed and archived at the end of each session. Students' names

and comments are recorded throughout the one-course cohort. These discussions provide

examples of how participants interact throughout the one-course cohort, how often

comments were made, whether misunderstandings of content arose, or questions that

were commonly asked. These discussions related to the research questions in providing

support for the experiences gained through shared interaction, as well as whether

communication improves the learning (Table 1 for alignment; Han & Johnson, 2012).

The discussion collection tool recorded comments and responses, record the questioning

level using Bloom's Revised Taxonomy (Figure 2) leading to responses, and the

competencies tied to each response, comment, or question (Appendix B for discussion

collection tool; Anderson et al., 2001).

Quantitative validity focuses more specifically on the careful construction of the

data collection tools to ensure measurements and collection are correct (Patton, 2002). In

qualitative research, on the other hand, "the researcher is the instrument. Validity in qualitative methods, therefore, hinges to a great extent on the skill, competence, and rigor of the person doing the fieldwork" (Patton, p. 14). In order to maintain content validity for the study, I, as the researcher, have to carefully prepare the observation tool, as well as detailing methods for collecting and organizing the data.

Procedures for Recruitment, Participation, and Data Collection

For each of the data collection tools, the following procedures occurred:

- Archived data review observations: Data was collected by using the archived recorded one-course cohort sessions to make observations of student-to-student and student-to-instructor interaction. Observations were also made of the level of content questioning presented by the instructor, as well as any questions asked by participants. Question level was evaluated using Bloom's Revised Taxonomy (Figure 2; Anderson et al., 2001). Each participant was given a unique title which was matched with the results of the final assessment and discussions in the archived chats. The number of participants was thirty-four enrolled, with an average of seven to ten per session. Data was archived using the recording ability of Adobe Connect and was emailed to researcher (Adobe, 2015). No direct interaction took place with participants, as all data was collected after the close of the live one-course cohort and students' identities were changed by the researcher to maintain anonymity. Three observations were completed for each of the three one-course cohort sessions. Total duration for the one-course cohort and

observations was one month, as there were three weeks for the one-course cohort sessions and one week to observe archived one-course cohort sessions.

- Assessment Results: Assessment data, including a breakdown of participant's results on each course competency, was collected after the completion of the one-course cohort sessions for each participant. Students scheduled the assessment for anytime following the final one-course cohort session, so data collection could take up to a month or two to gather all results for each one-course cohort participant. Names were changed by the researcher to the identifier matching the discussions and observations and was collected and saved by researcher.

- Archived synchronous discussions: The discussion data was collected at the close of each one-course cohort session, as the chat pod was cleared out before the next meeting. As there are three one-course cohort sessions, three archived discussions were collected. The duration for data collection was three weeks, as the discussions were collected immediately following the end of the one-course cohort sessions. These discussions were emailed directly to the researcher, printed off, and student names were changed by the researcher for anonymity and alignment with identifiers used in assessment results and observations.

After the third one-course cohort session and individual assessment results were available, there was no requirement of follow-up data from participants or course instructor.

Data Analysis Plan

The plan for analysis of data and connection of data to the research questions was addressed by each instrument (Table 1 for alignment):

- Archived data review observations: The analysis of the observations searched for patterns among the behavior of the participants, particularly in response to questions posed by the instructor or other participants. Observations were used in conjunction with the archived discussions to provide a full picture of students' social learning behavior through the duration of each one-course cohort session. Results were coded, using axial coding, by patterns and using Bloom's Revised Taxonomy (Figure 2) when addressing content questions and responses (Anderson et al., 2001).

- Assessment Results: The results of each participants' assessment, including the complete breakdown by competency, were evaluated for patterns in relation to the behavior observed and collected through the archived sessions. The assessment is a multiple-choice, scenario-based proctored assessment. Scores detailed the number of questions passed and failed in each competency and by specific topic (Appendix C for competencies). Results were coded, using axial coding, by patterns and using Bloom's Revised Taxonomy (Figure 2) when addressing content questions and responses (Anderson et al., 2001).

- Archived synchronous discussions: The three discussions obtained after the close of each one-course cohort session provided data on the interactions of the participants with each other, the instructor, and the learning of the content. This

was a data point to understand the social experiences of participants and whether there are patterns of behavior in relation to the level of content questioning during the one-course cohort opportunity and in comparison to final assessment results. Results were coded, using axial coding, by patterns and using Bloom's Revised Taxonomy (Figure 2) when addressing content questions and responses (Anderson et al., 2001).

All three forms of data were collected, printed off, and coded by hand. The coding looked for common themes and patterns among participants' interactions and responses to posed questions in the one-course cohort sessions and the results on the final assessment. Codes were also input into the software program, NVivo, for additional analysis tools and results in the form of graphs and visual organizations (NVivo 11, 2015).

Negative or discrepant cases should be sought out and analyzed for further understanding on data that negates or does not conform to the research questions or majority of data collected (Creswell, 2007). Any discrepant cases were addressed and analyzed in Chapter 4, while discussing the data results.

Issues of Trustworthiness

Maxwell (2005) argued that a discussion of validity and trustworthiness goes beyond generalized statements, as a researcher needs to outline specific methods for combating threats to the qualitative process. The strategies to obtain internal validity or credibility and negate these threats in this case study included triangulation, a search for discrepant cases, and a link to prior theory (Maxwell, 2005; Miles, Huberman, &

Saldana, 2014). Triangulation calls for data from a variety of data sources and incorporating different methods. The data pulled from assessment scores, cohort interactions, and researcher observations meet this definition. Discrepant cases were described previously and the need to find and highlight for an improved analysis of results was also included. The conceptual framework of Siemens' (2005) connectivism and Bandura's (1977) social learning theory provided the background and starting point for the purpose of the case study and support for data collected.

While the direct transferability is limited to other programs, as one-course cohorts are not offered in other online programs, there are still pedagogical tools available from the researched methods. Maxwell (2005) described this as "the development of a theory of the processes operating in the case studied, ones that may well operate in other cases, but that may produce different outcomes in different circumstances" (p. 138). In this vein, a focus on offering valid social learning interactions in an online setting while maintaining flexibility and using questions rooted in the higher cognitive domains of Bloom's Taxonomy can provide a working example of methods to integrate in other online teacher education programs (Haghanikar, Murphy, & Zollman, 2012).

Dependability can also be identified as a study that has "reliability" and "auditability" (Miles, Huberman, & Saldana, 2014, p. 312). Dependability in this case study was assured by defining clear research questions, explicitly outlining the researcher role within the case study's site, a connection to and based on theories of learning, utilizing the aforementioned method of triangulation, and consistent data checks for bias and "deceit" (Miles, Huberman, & Saldana, 2014, p. 312).

Confirmability or objectivity is framed by the notion of having a relatively neutral study, free from researcher biases (Miles, Huberman, & Saldana, 2014). Acknowledgement previously of researcher biases and explicit detailing of the research methods, collection tools, and analysis process increased the level of confirmability in the case study.

Ethical Procedures

The process for IRB approval first took place with Walden University's IRB department, then with Falcon University's, where data will be collected. A Letter of Cooperation and Date Use Agreement from the IR Department at Falcon University was obtained prior to the final approval process, along with other required approval forms.

All collection was for archived data, where identifying descriptions and names were removed, leaving the ethical concerns at a minimum. There were possibilities of participants in the previous archived one-course cohort sessions who did not attend all sessions and that data will be accounted for in the analysis and results sections. As data was collected in the researcher's own university, there may have been a question of bias or ethical concerns; however, with the data being confidential and archived, any interaction previous to the one-course cohort between participants and researcher did not have an effect on the data or results.

Data was collected and saved on a secure removable hard drive and password-protected computer with confidentiality maintained of participants and archived data. The data will be destroyed following the recommended period of five years.

Chapter Summary

This qualitative case study explored the patterns of students' social interactions and assessment performance, as well as the nature of questions that lead to social interactions among participants in an online teacher education introductory one-course cohort. A case study approach was chosen as it provides a framework through which the participants' interactions could be viewed in their real world context, in this case being an online learning one-course cohort (Woolside, 2010). The conceptual framework made up of the social-based and interactive theories of social learning theory and connectivism support this chosen approach (Bandura, 1977; Siemens, 2005).

The role of the researcher included being an observer, collector, and analyst of the data. It is also the role of the researcher to examine possible sources of bias, along with steps for preventing or addressing these throughout the case study. The researcher also outlines the methodology and steps for data collection, using the case study approach and research questions as a guide.

The selection of participants was a result of purposeful sampling and access to students in a teacher education program and participating in a one-course cohort opportunity (Patton, 2002). The observations, archived discussions, and assessment results data supported the research questions and sought to address the role of social interactions and content questioning in one-course cohort sessions in preparing students for the final assessment and intended outcome of passing the course. Analysis looked for patterns and themes among data, code, and analyze by hand and using the software, NVivo (NVivo 11, 2015).

Trustworthiness in the form of credibility, transferability, dependability, and confirmability outline methods for improving the neutrality, consistency, value and truth, and conclusions with a reach (Miles, Huberman, & Saldana, 2014). Steps for achieving these elements included triangulation, discussions of generalizability, focus on addressing researcher bias, and an approach based on existing theories of social learning. The ethical procedures involved in IRB approval and data collection were also detailed.

This chapter is organized into four sections with additional subsections under methodology and issues of trustworthiness. The research design of case study is described and the rationale for the chosen approach. Following, is an explanation on the role of the researcher, including connections to the participants and possible biases. The methodology accounts for the data collection processes, instrumentation, participant selection and recruitment, and plan for analysis. The final section is a review of issues related to trustworthiness, ethical procedures, and validity and reliability within the study. Chapter 4 addresses the results of the study and is organized as setting, demographics, data collection, data analysis, evidence of trustworthiness, and results.

Chapter 4: Results

Introduction

The purpose of this qualitative case study was to explore the online one-course cohort and the experiences, content question interactions, and patterns of behavior in assessment of the students. The one-course cohort represented a gap in the literature and the goals of this case study were to provide research supporting an alternative cohort approach offering a social learning component while maintaining the flexibility desired in an online degree program (Bandura, 1977; Kress et al., 2012; Siemens, 2005).

The following questions were explored to study the students' patterns of behavior in social and learning interactions:

- Research Question 1 (RQ1): What types of content questions lead to interactions among licensure students in a synchronous, one-course cohort learning session?

- Research Question 2 (RQ2): What patterns of student interaction and questioning occur in synchronous, one-course cohort sessions?

- Research Question 3 (RQ3): What patterns of student interaction and final assessment performance occur in synchronous one-course cohort sessions?

Chapter Organization

The chapter begins with a review of the setting and demographics of the participants. The data collection process is also presented before the data analysis accounts for the method of organizing and coding data, while the issues of trustworthiness are explained from the previous chapter. The final section is a

presentation of the results obtained and a discussion of the findings' alignment with the research questions.

Setting

The study data were archival in nature, which granted limited insight into individual situations and reactions related to the one-course cohort setting. The organization of the Adobe Connect meeting space, instructor's pedagogical approach, and participants' personal setting may have affected their participation, but the data collected did not provide a definite answer.

The virtual meeting space offered by Adobe Connect (Figure 1), included individual pods for attendance, presentations, in the case of the data collection room, three PowerPoint presentations, a chat/discussion pod, and document upload. There was also an additional pod with instructor-created trivia questions brought up at different points throughout the one-course cohort. Participants interacted in three ways, either through the phone, answering questions in the trivia pod, or by typing into the discussion pod. Data collection consisted of extracting information from video recordings of the live one-course cohort sessions so as to identify patterns through the three interaction options.
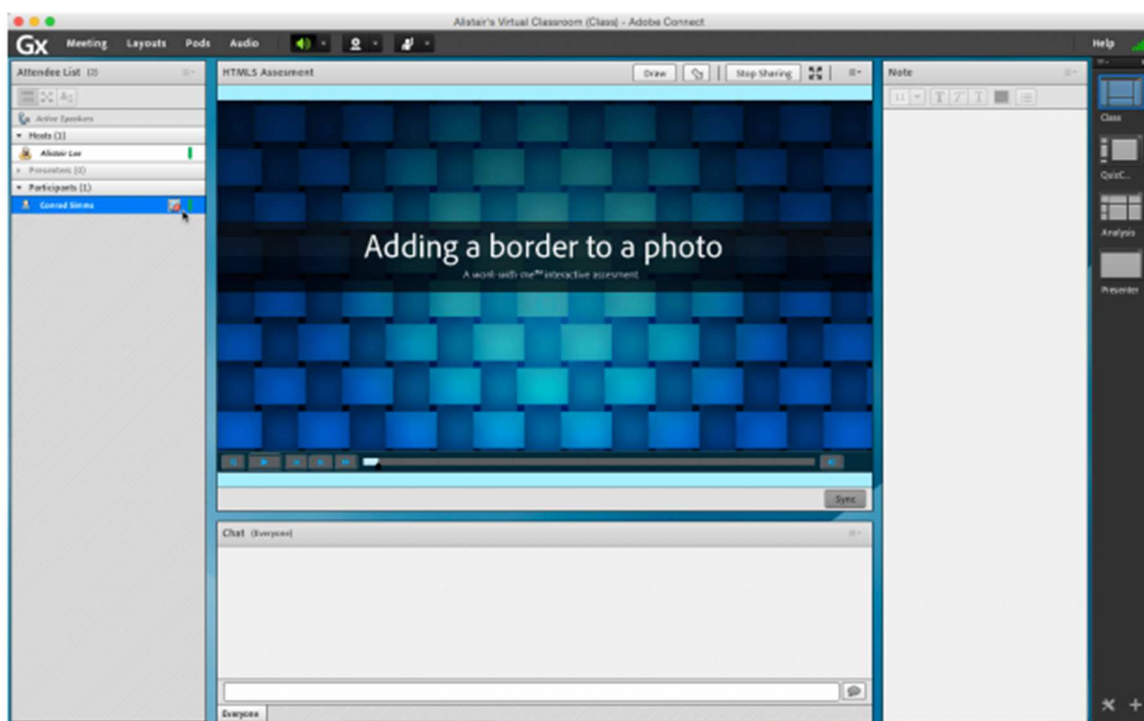
Figure 1. A screenshot showing an Adobe Connect virtual classroom.

Demographics

Demographic information was not collected for the archived one-course cohort sessions. According to the general demographic data collected by Falcon University, teacher education students vary significantly in ethnicity, previous college experience, income, and age. At the time of the study, Falcon University students were found in all 50 states and in some territories and overseas. The statistics collected by the university suggested that the student participants enrolled in the one-course cohort vary across multiple categories.

Data Collection

The initial number of participants who signed up to attend the one-course cohort synchronous sessions was 34 participants. Of those 34 participants, 15 participants

attended at least one of the synchronous sessions and 12 had all three data points collected. Three of the 15 participants were missing the pass rates from the final assessment, as they had withdrawn from the university prior to taking to the final assessment.

Each data point consisted of archival data and was collected through the secure website at Falcon University. The location of the one-course cohort sessions was the Adobe Connect room of the instructor and each participant took the final assessment at home using an online proctoring service. There were three one-course cohort sessions held for the cohort in which data was collected. Each session was held once a week for one hour. The final assessment was completed for each participant at various times depending on personal schedule. Each student in the course, whether they were enrolled in the one-course cohort session or not, had to take and pass the final assessment with a 59% cut score or higher to complete the course. The assessment was scheduled through an online proctor service and students took the assessment at home during the scheduled time period. The given amount of time for the assessment was 90 minutes. I collected all of the course data in one day, including accessing of archival data. Additional organization and preparation for analysis, including live synchronous one-course cohort transcriptions, took one week.

The one-course cohort session recordings, synchronous discussions, and participants' assessment results were recorded using three different researcher-created tools (Appendices A, B, and D). Using the Archived Observation Protocol tool, I organized the data from transcriptions and synchronous discussions according to the

questions asked by the instructor and students' responses to the recorded questions (Appendix A). I then classified the questions asked by participants and the instructor into six categories using Bloom's Revised Taxonomy: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating (Anderson et al., 2001; Figure 2). The classification of taxonomy level of questions and student and instructor responses categorization was done by session for each of the three synchronous live sessions.

Using the Synchronous Archived Discussion protocol, I sorted data from the synchronous discussions transcript by comments and responses from participants and the instructor (Appendix B). If comments were in response to a question, the question was categorized using the aforementioned Bloom's Revised Taxonomy (Anderson et al., 2001). I also labeled the comments and responses within the course competency corresponding to the content discussed. If the content or question was not clear using the synchronous discussion transcript only, the transcriptions of the live sessions were referenced for anything spoken on the phone during the session. I completed this sorting of comments and responses by students and instructor and the categorizing of questions using Bloom's Taxonomy for each of the three sessions, per the guidelines provided by Anderson et al. (2001).

I completed the Participant Analysis Matrix using both the synchronous discussion transcripts and live synchronous session transcripts (Appendix D). I created the transcriptions by watching the recordings of the live sessions and transcribing the audio using transcription software. Each participant was assigned an individual matrix using identifiers and was organized via comments made not in response to a question,

responses directly from a question, either from another student or the instructor, and questions asked by the individual participant. These were then classified according to the eight competencies covered throughout the live sessions and on which the students were tested on in the final assessment (Appendix C). There was also a category for any questions or comments that were not directly related to a competency, including those considered housekeeping or logistical comments and questions. The participants' scores from the final assessment were also recorded in the final column. Each of the three synchronous discussions and live session transcripts were sorted according to student identifiers into the individual's matrix.

I made two additions to the Participant Analysis Matrix once collection began and after the previous chapter was completed. A column for the pass rates of each individual competency obtained by the participant was added, as this was lacking previously, and it became apparent that in order to identify patterns of behavior, the pass rates must be present with the other data. A row was also added at the bottom to be able to include any questions and comments that were not related to a competency. As collection and sorting began, there were many questions and responses to material not on the assessment, ranging from questions on how to mute one's phone during the synchronous sessions to responses of gratitude at the close of a session. These were recorded to provide an analysis of the entire observation and transcript of the live synchronous sessions. No other changes or additions were made from the previous analysis plan discussed in Chapter 3.

A few unusual circumstances presented themselves during data collection, including three students who had withdrawn after enrolling in the cohort, but prior to taking the assessment and the lack of data for the students who registered for the one-course cohort sessions, but did not attend any of them. Archival data from the recordings and synchronous discussions was not available for any student who was on the original registration list, but did not attend any of the live one-course cohort sessions. These students were labeled as not attending and it was identified whether they had passed the assessment or had withdrawn from the university before completing the course. The three students who attended at least one of the one-course cohort sessions, but withdrew from the university, had data available from the recordings and synchronous discussions, but assessment data could not be obtained, as they had not taken the assessment. With regard to the participants who attended and took the assessment, no other unusual circumstances were found.

Figure 2 below shows the learning and knowledge engagement taxonomy first discussed by Benjamin Bloom in 1956, and later edited and revised by Anderson et al. (2001) to include the highest level of knowledge interpretation, creating. All interpretation and classification of questioning throughout the one-course cohort sessions was done using Anderson et al.'s (2001) revised taxonomy version.
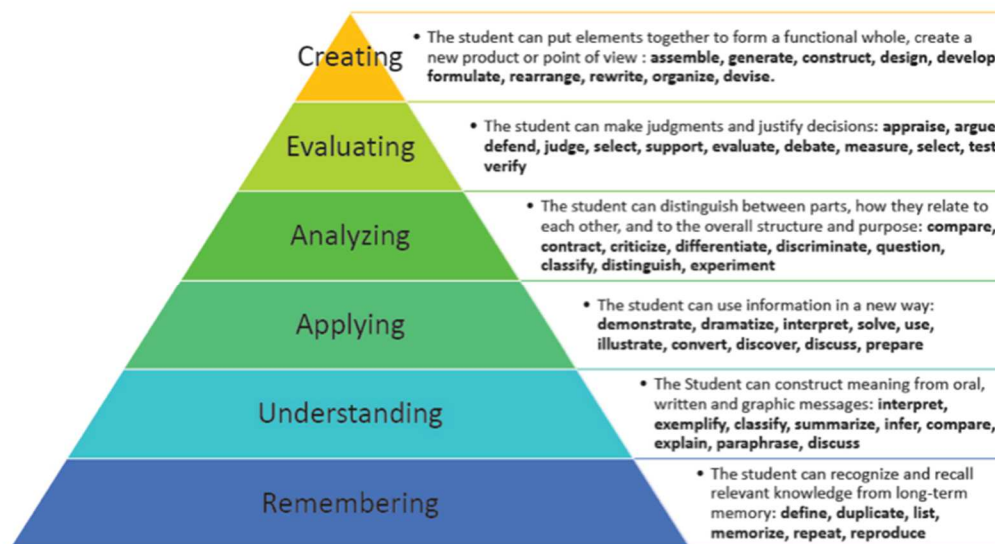
Figure 2. A graphical depiction of Bloom's Revised Taxonomy by MVCSD. (2014).

Teaching with the revised Bloom's taxonomy. Retrieved from

http://www.mtvernoncsd.org/staff

Data Analysis

I began the data analysis process by categorizing the data within the three

instructor tools that I created for the analysis of the data (Appendices A, B, and D). The

tools were uploaded into the NVivo software for the organization and coding steps

(NVivo 11, 2015). Nodes were created to organize the collections tools by question level,

using Bloom's Revised Taxonomy (Figure 2), and by the individual competencies

covered in the assessment (Anderson et al., 2001). Child nodes were linked to the

question level parent nodes and coded by instructor questions and responses, and student

responses and questions. The child nodes under the individual competencies were coded

by comments, responses to questions, and questions. There were three additional nodes

created for data that did not fit within those existing nodes or discrepant cases. The first was for data that had no question level (i.e., comments on the weather or showing of gratitude at end of session). The second for three students who had withdrawn from the university before completing the assessment. The third for comments or questions made that were not related to an assessment competency (e.g. logistical questions on the cohort).

The next step in the data analysis process called for the interpretation of the codes, looking for patterns, and identifying the role of discrepant cases. This was accomplished by using the visualization option in NVivo to produce a chart and diagram of patterns in the types of responses and questions at the different taxonomy levels. In addition, a table of the assessment results and patterns of interactions among the one-course cohort participants was produced. Discrepant cases were coded as well and included in the visuals. The results of both the data analysis and resulting discrepant cases will be addressed more fully in the results section below.

Evidence of Trustworthiness

The plan to maintain credibility was to employ triangulation through multiple data sources, search out discrepant cases, and link the findings to prior theory. These three methods for credibility were included in the data collection and analysis process and did not require corrections or changes. The three data points provided triangulation, while discrepant cases and the link between data findings and theory will be discussed further in this chapter, as well as the concluding chapter.

Transferability depended on providing examples and methods for other online courses and learning options outside of the one-course cohort sessions provided for Falcon University students. While direct transferability is limited due to the formatting of the one-course cohorts, there are pedagogical methods and tools available. The findings on higher-level questioning, social interactions, and patterns of behavior have merit in many online learning arenas. The following chapter will also include a discussion of the next steps in research using the data collected or study elements as a starting point.

Dependability was maintained by defining three clear research questions reiterated throughout the study and when reporting findings. First, explicit explanation of the researcher's role, specifically in relation to the case study's site. Second, data checks for bias throughout retrieval of archival data, including deletion of original names once numeral was assigned. Third, referencing back to the theories of connectivism and social learning theory. Triangulation, as discussed before in relation to credibility, also helped support dependability.

Confirmability was maintained during the data collection and analysis by maintaining a relatively neutral study, free from research bias. This included holding to the previously detailed research methods, collection tools, and analysis process. It also included not allowing personal opinions based on connections to the collection site to drive analysis and results, whether analysis turned out to be favorable for patterns or not. In addition, I did not leave out discrepant cases in the analysis of results and reporting of findings in this chapter and in the following chapter.

Results

One-Course Cohort Session 1

All quotes included with the results and analysis from the discussion posts and phone conversations were recorded during the live one-course cohort sessions and were labeled with a pseudonym for both the instructor and student, depending on who was speaking. The instructor held a PhD, so the pseudonym assigned was Dr. Teal. All students were assigned a different pseudonym starting with an "s." The phone conversations and discussion posts were also labeled as well (e.g., Dr. Teal, phone conversation or Stephanie, discussion post). The phone conversation responses came from the instructor and from any students who spoke on the phone during the live sessions. The discussion posts were from students who interacted through written communication in the chat pod during the live sessions.

The first session of the one-course cohort covered the two competencies, Education and Federal and State Law and Exceptional Learners in Federal and State Law (Appendix C). The topics covered under those respective competencies were Topic 1.4 – Communities & Families, Topic 1.4 - Educational Laws, Topic 1.4 - Students as Individuals, and Topic 1.5 – Accommodating Needs of Learners. The instructor (labeled Dr. Teal) asked the majority of the initial questions, with some students asking questions in follow-up or unrelated to the content. The following questions are examples of the questions asked by the instructor to elicit interactions and responses from the students in regards to the material covered in the two competencies. The questions were identified by the taxonomy level.

- "What does the 1st Amendment grant?" (Dr. Teal, phone conversation; Remembering).

- "What does the 10th Amendment do?" (Dr. Teal, phone conversation; Remembering).

- "Okay, and the last one, what does the 14th Amendment grant?" (Dr. Teal, phone conversation; Remembering).

- "What is an example of when the child benefit theory applies to using public funds in private schools?" (Dr. Teal, phone conversation; Applying).

- "What types of records should a school keep year-to-year?" (Dr. Teal, phone conversation; Understanding).

- "Once they turn 18, who has access to their records?" (Dr. Teal, phone conversation; Remembering).

- "If a student has a history of bringing drugs to school, can you randomly search him or her?" (Dr. Teal, phone conversation; Applying).

- "How can students' various cultures be integrated into the curriculum?" (Dr. Teal, phone conversation; Applying).

Of the responses to the various questions asked during the first one-course cohort session, there were direct responses to the initial questions and follow-up questions. The answers and follow-up questions below are examples of the interactions that followed the line of questioning in the first session.

- "Equal protection clause" (Stacy, phone conversation).

- "Interpreters" (Sophia, phone conversation).

- "Do the kids get tested yearly?" (Sherri, discussion post).

- "Title VI of Civil Right Act" (Sarah, phone conversation).

- "Student and parent" (Samuel, phone conversation).

- "In the moment makes a big difference" (Summer, discussion post).

- "If a student has an iep the first year and they do well that year can the school take the iep away?" (Steven, discussion post).

- "Okay if they are smelling like drugs?" (Samantha, discussion post).

The final type of interaction in the first one-course cohort session was in the form of questions or comments unrelated to the content. Examples of this type of interaction follow.

- "Is it always necessary to print the slide?" (Scott, discussion post).

- "How do you put our phones on mute?" (Susan, discussion post).

- "When should I take the preassessment?" (Sharon, discussion post).

- "If I don't answer it's because I'm taking care of my kids" (Sally, discussion post).

One-Course Cohort Session 2

The second one-course cohort session covered the content in the competency, Social Issues and Influences on Education (Appendix C). The topics under this competency, included Topic 1.3 – Challenges Facing Students and Families and Topic 1.3 – Social and Cultural Contexts of Education. The questions that follow illustrate a sampling of the initial questions asked by the instructor to gauge the students' learning within the Social Issues and Influences on Education competency.

- "Homeless students must have a physical address to attend school?" (Dr. Teal, phone conversation; Remembering).

- "If a student tells you he or she is being abused, but asked you not to tell, you don't have to?" (Dr. Teal, phone conversation; Understanding).

- "If you know that a student is dealing with a danger described on this page or just really a danger in general, what are some program that can help?" (Dr. Teal, phone conversation; Applying)

- "What can we do to help?" (Dr. Teal, phone conversation; Applying).

- What are some characteristics of a student with autism?" (Dr. Teal, phone conversation; Remembering).

The student interactions that followed the initial questioning were either follow-up questions or questions to understand different aspects of the covered material, as well as comments and responses to the instructor and each other. The following interactions provide an example of the students' responses and questions.

- "Do you think that weekly progress reports helpful?" (Scott, discussion post).

- "True" (Susan, phone conversation).

- "Counselor" (Samuel, discussion post).

- "False" (Sharon, phone conversation).

- "In Indiana you just has to suspect" (Sally, discussion post).

- "This is a great point!" (Samantha, discussion post).

- "In terms of index cards, do I just put the disabilities and its terms or samples?" (Steven, discussion post).

The third type of interaction during the second one-course cohort session was categorized as the questions and comments that did not relate to the content and usually focused on clarification for the cohort session or the course requirements overall. The following examples sample the third type of interaction.

- "Can you remind everyone how to their phones?" (Sherri, discussion post).

- "Thank you for the session" (Sarah, discussion post).

- "See ya all next week thanks!" (Summer, discussion post).

One-Course Cohort Session 3

The third one-course cohort session covered content in the last two competencies, Technology in the Classroom and Personal Code of Ethics (Appendix C). The topics reviewed in those two competencies were Topic 1.7 – Technology for Teaching and Topic 1.9 – Ethics. As it was the final one-course cohort session, the instructor reviewed the two competencies, as well as offered to discuss any of the previously covered material from the other two sessions. The following questions are an example of the initial questioning from the instructor during the third one-course cohort session.

- "What is one thing you learned from this cohort that you feel will be useful when you start teaching?" (Dr. Teal, phone conversation; Applying).

- "What are some examples of technology that can be used in the classroom?" (Dr. Teal, discussion post; Applying).

- "Why is there a possible dilemma for teachers using social media to communicate with students?" (Dr. Teal, phone conversation; Applying).

- "What are some issues you can see from that?" (Dr. Teal, phone conversation; Applying).

- "Are there any questions on copyright before we move on?" (Dr. Teal, phone conversation; Understanding).

- "Why do you think as a teacher it is important for you to be ethical?" (Dr. Teal, phone conversation; Analyzing).

The student responses and questions were not as numerous during the third one-course cohort session and were mostly categorized in the third type of interaction, those that did not relate to the content. The following questions illustrate the various types of student responses and questions in the third one-course cohort session.

- "Smartboards" (Susan, phone conversation).

- "Privacy" (Samuel, phone conversation).

- "We are responsible for children" (Stacy, discussion post).

- "You are an example" (Summer, discussion post).

- "Principle 1" (Sarah, phone conversation).

- "Do charter schools not have to follow state and district standards" (Sally, discussion post)?

The third type of student interaction, those that did not relate to the content, were the most numerous from students in the third one-course cohort session. The following interactions provide a sample of the types of comments and questions during the session.

- "Thank you very helpful" (Sophia, discussion post).

- "Thanks for all the help…on to the final assessment" (Stacy, discussion post).

- "Tell me the number to put my phone on silence?" (Summer, phone conversation).

- "Do we need to participate in any of the other cohorts?" (Scott, discussion post).

Session Analysis

The questioning levels of Understanding and Applying were most notable by session. Far more students responded to Applying questions than to any of the other represented taxonomy levels. However, students asked the most follow-up and clarification questions at the Understanding level. This was consistent throughout the three sessions. There was not an identifiable pattern with the responses to Remembering questions, or from Analzying. On the one hand, Analyzing questions were the least represented, along with no questions categorized as Synthesizing or Creating. The higher-order thinking and questioning levels on Bloom's Revised Taxonomy were not represented or were limited in the questioning and responses. Remembering questions had the third highest number of direct responses, but students did not ask follow-up questions at this level.

There were far more interactions in the first one-course cohort session than in the other two sessions, which could be attributed to the review of two competencies with more material to cover. It could also be attributed to the variety of questions asked by the instructor. The third session had the least amount of questions and responses. Some questions asked by the instructor did not have a response at all from the students in the final one-course cohort session and the majority of comments made were unrelated to the content. Patterns were limited to the Understanding and Applying taxonomy levels on

categorized questions. All other taxonomy levels, unrelated questioning, and specific session interactions did not follow a pattern.

Research Question 1

The first research question (RQ1) for this study was: What types of content questions lead to interactions among licensure students in a synchronous, one-course cohort learning session?

Using Bloom's Revised Taxonomy (Figure 2) for classification, the first research question queried the different types of content questions that lead to interactions among the students enrolled in the one-course cohort. Interactions were categorized by relation to content material, social by nature, clarification of one-course cohort logistics, and showing gratitude at the end of the session. Of the six levels discussed by Anderson et al. (2001), only Remembering, Understanding, Applying, and Analyzing were identified in the data. Identification was done using the definition of each level and the examples provided by the authors (Anderson et al., 2001). Understanding was represented the most frequently in the data, this included initial questions to responses by both the instructor and students. Applying had the most direct student responses. Remembering and Analyzing had the lowest number of responses, as well as having zero student-led questions.

Figures 3–6 address the taxonomy level of the initial question asked during the one-course cohort session, using the session observations and synchronous discussions. From the initial question, the number of student direct responses and follow-up questions

are counted, as well as the instructor's responses and follow-up questions. The figures were categorized by taxonomy level.

The first level in Bloom's Revised Taxonomy (Figure 3) is Remembering or basic recall of content and knowledge. The types of questions in this level included asking students what the 14th Amendment was or a definition of the Child Benefit Theory. There were 37 initial questions identified as Remembering level. The following dialogue provides an example of interactions at the Remembering level:

- "Ensuring there is no discrimination based on gender is addressed by which law?" (Dr. Teal, phone conversation).
  - o "Title VI of the Civil Rights Act" (Sally, phone conversation).
  - o "Title VII of Civil Rights Act" (Susan, phone conversation).
  - o "Title IX of Education Amendment Act" (Scott, phone conversation).

The follow-up interactions from those 37 questions included one instructor response, eight questions by the instructor, and 14 student responses.

Figure 3. A graphical depiction of Bloom's Revised Taxonomy, Level 1: Remembering and Interations by Anderson, L.W., Krathwohl, D.R., Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New York, NY: Pearson, Allyn, & Bacon

The data from the second level of Bloom's Revised Taxonomy as shown in Figure 4 is Understanding. Interactions and learning at this level included questions of clarification on topics, such as whether an IEP (Individualized Education Plan) would need to be completed for each class. 149 initial questions were categorized as Understanding level. The following dialogue provides an example of interactions at the Understanding level:

- "If the student has an IEP but two of the classes are secular does the IEP still apply to the two classes?" (Sharon, discussion post).

  o "An IEP would be for public schools. So the IEP process applies in public schools. It would apply to all of the classes, it would apply to all of them that are outlined in the IEP process" (Dr. Teal, phone conversation).

  o "For example, my son has autism and it is part of his classes" (Susan, discussion post).

The subsequent interactions were 34 responses and seven questions from the instructor, and 21 responses and 35 questions from various students.
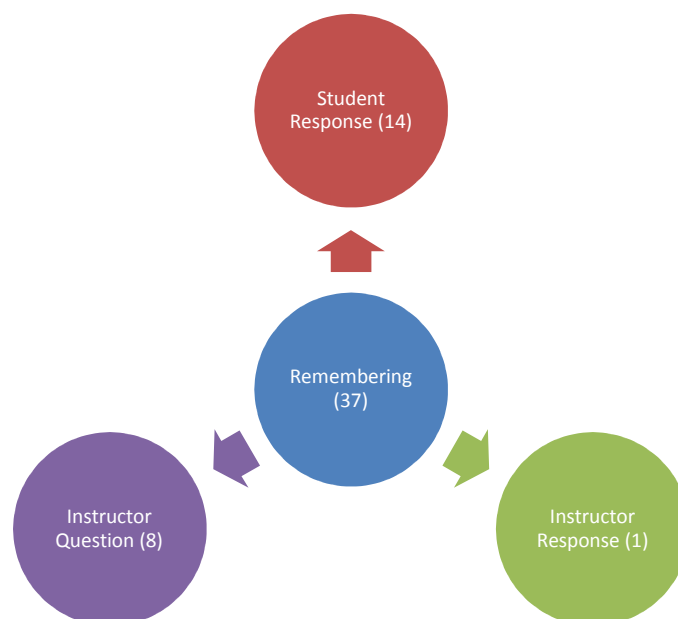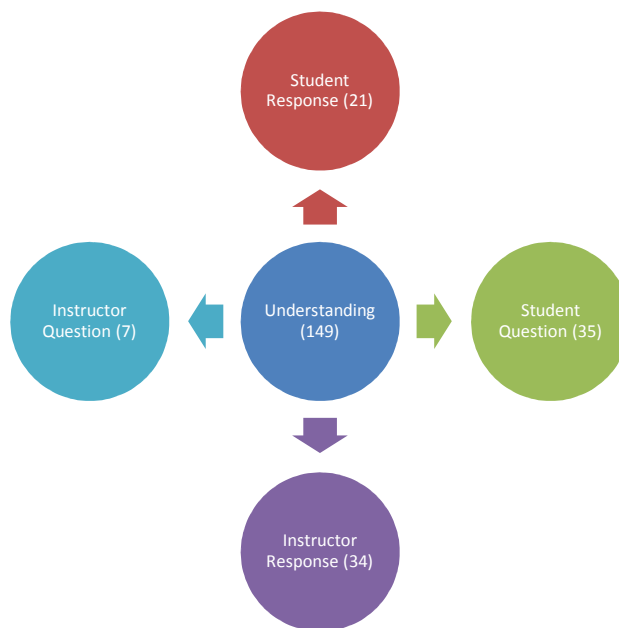

Figure 4. A graphical depiction of Bloom's Revised Taxonomy, Level 2: Understanding and Interactions by Anderson, L.W., Krathwohl, D.R., Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). *A taxonomy for learning,*

teaching, and assessing: A revision of Bloom's taxonomy of educational objectives. New York, NY: Pearson, Allyn, & Bacon.

Figure 5 provides a visual of the results from the third level of Applying in Bloom's Revised Taxonomy, which is a step beyond Understanding, asking learners to consider what the knowledge would look like in a real-world scenario. Examples in the one-course cohort sessions included asking students to think of examples when culture can be included in the curriculum and whether a scenario involving a teacher interacting with a student outside of school was ethical. The following dialogue provides an example of interactions at the Applying level:

- "What are some ways that you can stay in contact with the parents?" (Dr. Teal, phone conversation).

    o "Email, texting" (Steven, discussion post).

    o "Conferences" (Scott, discussion post).

    o "Texting is used regularly to all our staff and parents in our school" (Sharon, discussion post).

    o "What about Facebook?" (Dr. Teal, phone conversation).

    o "Save Facebook for only family, too many loopholes to watch out for" (Sharon, discussion post).

Applying level initial questions totaled 43. Instructor responses and questions were four and nine, respectively. The student responses were the highest number at 58 and follow-up questions totaled three.

Figure 5. A graphical depiction of Bloom's Revised Taxonomy, Level 3: Applying and Interactions by Anderson, L.W., Krathwohl, D.R., Airasian, P.W., Cruikshank, K.A., Mayer, R.E., Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New York, NY: Pearson, Allyn, & Bacon

Last, the data related to the fourth level in Bloom's Revised Taxonomy, as illustrated in Figure 6, is Analyzing. The interactions at this level included responses to questions about why students may discriminate against different cultures and the best course of action in a classroom situation. There were limited interactions recorded at this level. The following dialogue provides an example of interactions at the Analyzing level:

- "Why do you think as a teacher it is important for you to be ethical?" (Dr. Teal, phone conversation).

o "You are responsible for the children" (Sharon, phone conversation).

o "You are an example" (Sarah, phone conversation).

o "You never know how they are treated outside of school, so it's important
to be a positive person in their lives" (Samantha, discussion post).

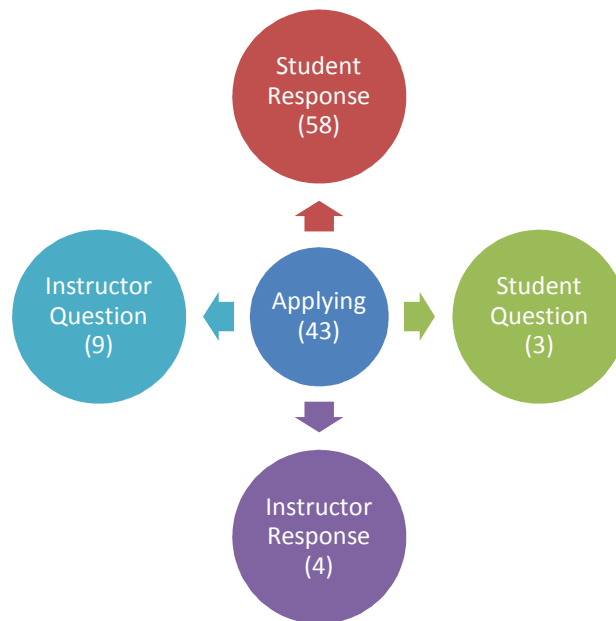Eight initial questions were asked and only four student responses.
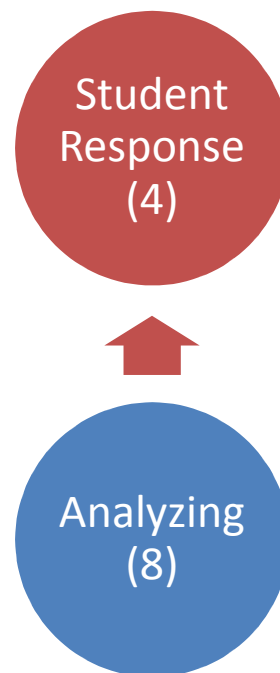
Figure 6. A graphical depiction of Bloom's Revised Taxonomy, Level 4: Analyzing and
Interactions by Anderson, L.W., Krathwohl, D.R., Airasian, P.W., Cruikshank, K.A.,
Mayer, R.E., Pintrich, P.R., Raths, J., & Wittrock, M.C. (2001). *A taxonomy for learning,
teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. New
York, NY: Pearson, Allyn, & Bacon

While each taxonomy question level presented in the one-course cohort sessions
(Remembering, Understanding, Applying, and Analyzing) elicited student responses,

Understanding and Applying level questions garnered the most, with applying totaling

the largest number of direct student responses (Figures 4 and 5). Students were more

willing to respond to questions that asked for application of the content than in questions

of recall or analysis.

- "What types of records should a school keep year-to-year and who has access to

  them?" (Dr. Teal, phone conversation).

  o "Vaccinations and standardized test results" (Sophia, phone conversation).

  o "Parents and student" (Steven, discussion post).

However, students asked more follow-up questions of Understanding than at the

Applying level and did not ask any follow-up questions at the Remembering or

Analyzing level (Figures 3, 4, 5, and 6).

- "ADHD is one that need an IEP?" (Sherri, discussion post).

  o "ADD or ADHD is usually 504, because they take a medication. Uh, that's

    usually what it's related to. Sometimes ADHD also though is coupled with

    like emotional stress or disturbance, they might have an additional issue"

    (Dr. Teal, phone conversation).

In answer to the research question, students responded to each other and the instructor at

every level represented in the archived one-course cohort sessions (Remembering,

Understanding, Applying, and Analyzing). However, the most interactions, both at the

response and question level by students were in answer to questions at the Understanding

and Applying level, with more responding to application questions and more asking their

own questions of understanding.

- "Can you explain the term learning readiness?" (Sharon, discussion post).

    o "Okay, learning readiness is just the idea that they are prepared to enter school because they have already been engaging in educational activities. So you know, the parents that are maybe able to send them to preschool, they're able to have set reading time. Students that come in that already are being exposed to all of the literacy, they know their colors, they have been doing those activities, that is learning readiness" (Dr. Teal, phone conversation).

Research Question 2

The second research question (RQ2) for this study was: What patterns of student interaction and questioning occur in synchronous, one-course cohort sessions?

The purpose of the second research question was to look for patterns among the students' interactions and levels of questioning, from initial questioning, during the archived one-course cohort sessions. The types of questions discussed in the first research question are also part of the question, using the criteria of Bloom's Revised Taxonomy to classify (Figure 2). In addition, the patterns of students responses and types and frequency of interactions, as well as those discrepant cases that did not fit within a category. The one-course cohort session recording transcriptions, as well as synchronous discussions were used to categorize the types of interactions in response to questions, or in some cases, independent of a question or prompting.

Figure 7 charts the various types of interactions (students and instructor) at each represented Bloom's Revised Taxonomy level (Figure 2). In addition, it shows the comments that did not fit into one of the taxonomy categories (Anderson et al., 2001).
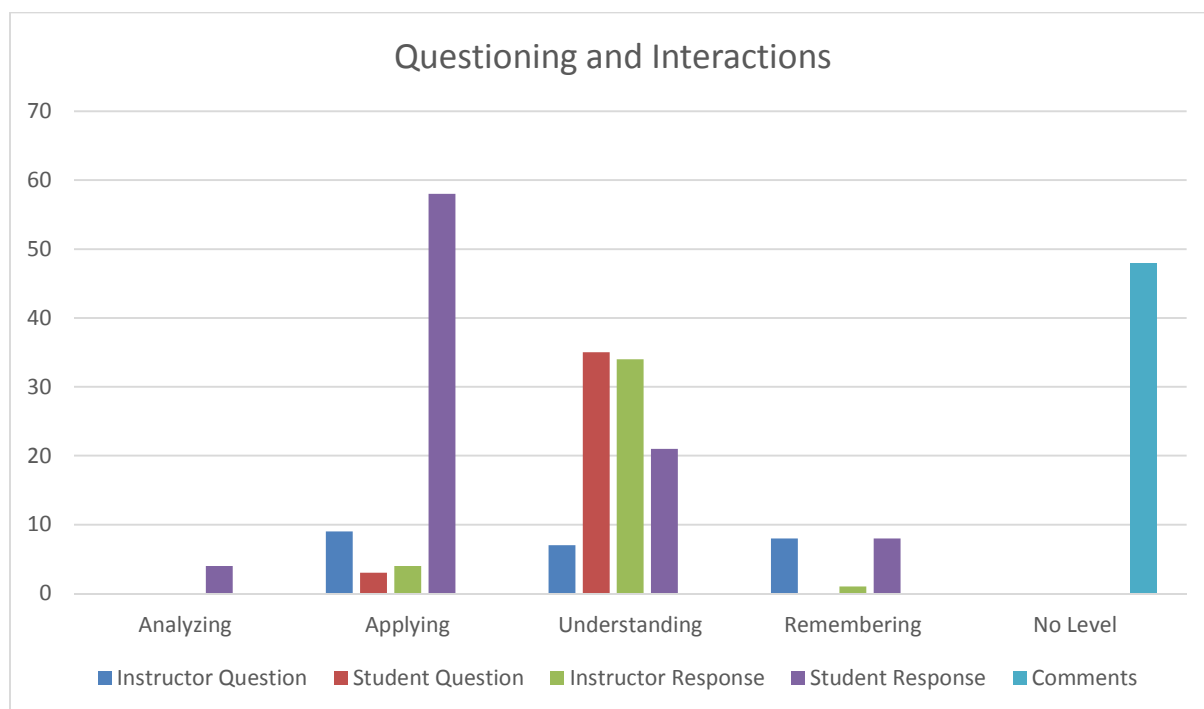
Figure 7. A bar chart showing the questioning and interaction distribution during one-course cohort sessions.

There were a number of themes first observed and coded in the analysis process. These themes included the following:

- The number of responses and questions at each taxonomy level.

- The introduction of a new category related to comments made by students that have no level and do not connect to the material.

  o "Hello I was using the wrong phone number" (Susan, discussion post).

- The small number of responses to Analyzing level questions, and no follow-up questions or comments.

- No follow-up student questions at the Remembering level.

- All student-directed questions came at the taxonomy levels of Understanding and Applying.

During the analysis, one pattern emerged. The pattern that was discovered related to what types of instructor questions prompted responses and follow-up questions. The most interactions came at the Understanding taxonomy level, but the most direct student responses came at the Applying level. Students functioned best at a higher level of thinking than Remembering, especially when asked for application of the material.

- "What is one thing you learned from this cohort that you feel will be useful when you start teaching?" (Dr. Teal, phone conversation).

  o "I have learned the importance of technology in the classroom. My daughters school uses laptops opposed to books which I didn't like the idea at first because I believed it handicapped kid's cappabilities in some ways" (Stacy, discussion post).

However, the highest levels described in Bloom's Revised Taxonomy, Evaluating and Creating were not present either through initial questioning to subsequent interactions (Figure 2).

Beyond the pattern of interactions at the application taxonomy level, there were interactions that did not follow a specific arrangement. Specifically, as students interacted more to Applying and Understanding questions than remembering, indicating that higher

level leads to more interaction, they did not respond as much to Analyzing questions.

This level did not follow the pattern that began to form with interactions at the

Understanding and Applying taxonomy level. Thus, while patterns were present in some

aspects between questioning and interactions, there were interactions that did not follow

any pattern of behavior (Figure 7). There were also 48 questions, comments, and

responses that could not be tied to any taxonomy level. These 48 interactions ranged from

gratitude at the end of the session, to questions about logistics of the assessment and one-

course cohort sessions.

- "I am taking the assesment today" (Scott, discussion post).

- "Thank you very helpful" (Stacy, discussion post).

- "Thanks for all the help…on to the final assessment" (Sharon, discussion post).

- "Thank you. I have a scheduled a meeting with you for Monday" (Samantha,

  discussion post)!

These interactions were not prompted by anything said by other students nor the

instructor. In course settings, even in the more unique one-course cohort setting, students

will have comments or questions, regardless of what preceeded them.

Research Question 3

The third research question (RQ3) for this study was: What patterns of student

interaction and final assessment performance occur in synchronous one-course cohort

sessions?

RQ3 addressed any patterns that became apparent through the performance of

students on the final assessment and the various interactions had during the one-course

cohort sessions. Each participants' score on the eight competency topics tested on in the assessment was recorded (Appendix C for competency topics), as well as comments, questions, and responses to questions posed by the instructor and fellow students during the one-course cohort sessions.

The tables on interactions and final assessment performance (Tables 2, 3, 4, 5, and 6) were created using students' scores on each competency topic and the interactions recorded through the archived recorded session observations and synchronous archived discussions. The competency topics were organized by percentage on the final assessment, with the number of students scoring within that percentage range and the comments, questions, and responses to questions posed by instructor and other students to the right. Each competency topic and the range of scores is represented in an individual table below.

Table 2 below represents the students' score range and various interactions on Topic 1.3. This topic includes the areas of "Challenges Facing Students and Families" and "Social and Cultural Contexts of Education." Topic 1.3 was covered during the second live session of the one-course cohort.

Table 2

Interactions and Final Assessment Performance on Topic 1.3

Assessment Competency	Questions	Comments	Responses to Instructor/Student Questions	Students
Challenges Facing Students and Families 90-100%	2		2	4
Challenges Facing Students and Families 70-79%			1	4
Challenges Facing Students and Families 60-69%			1	2
Challenges Facing Students and Families 50-59%				1
Challenges Facing Students and Families 40-49%		1		1
Social and Cultural Contexts of Education 90-100%	2	1	3	10
Social and Cultural Contexts of Education 50-59%				2

Table 3 below represents the students' score range and various interactions on Topic 1.4. This topic includes the areas of "Communities and Families," "Educational Laws," and "Students as Individuals." Topic 1.4 was covered during the first live session of the one-course cohort, along with the information in Topic 1.5 (Table 4).

Table 3

Interactions and Final Assessment Performance on Topic 1.4

Assessment Competency	Questions	Comments	Responses to Instructor/Student Questions	Students
Topic 1.4 – Communities & Families 90-100%		1		7
Topic 1.4 – Communities & Families 60-69%		1	2	5
Topic 1.4 – Educational Laws 90-100%	2	1	2	9
Topic 1.4 – Educational Laws 80-89%				1
Topic 1.4 – Educational Laws 60-69%		1		1
Topic 1.4 – Educational Laws 50-59%				1
Topic 1.4 – Students as Individuals 90-100%		1	3	6
Topic 1.4 – Students as Individuals 80-89%	1	1	1	1
Topic 1.4 – Students as Individuals 60-69%		1	2	4
Topic 1.4 – Students as Individuals 50-59%				1

Table 4 represents the students' score range and various interactions on Topic 1.5. This topic includes the area of "Accommodating Needs of Learners." Topic 1.5 was covered during the first live session of the one-course cohort, along with the information in Topic 1.4 (Table 3).

Table 4

Interactions and Final Assessment Performance on Topic 1.5 – Accomondating Learners' Needs

Assessment Competency	Questions	Comments	Responses to Instructor/Student Questions	Students
90-100%	1	2	2	4
70-79%	2	1	3	6
50-59%				2

Table 5 below represents the students' score range and various interactions on Topic 1.7. This topic includes the area of "Technology for Teaching." Topic 1.7 was covered during the third live session of the one-course cohort, along with the information in Topic 1.8 (Table 6).

Table 5

Interactions and Final Assessment Performance on Topic 1.7

Assessment Competency	Questions	Comments	Responses to Instructor/Student Questions	Students
Topic 1.7 – Technology for Teaching				8

90-100%		
Topic 1.7 – Technology for Teaching 80-89%	1	2
Topic 1.7 – Technology for Teaching 70-79%		1
Topic 1.7 – Technology for Teaching 50-59%		1

Table 6 below represents the students' score range and various interactions on Topic 1.8. This topic includes the area of "Ethics." Topic 1.8 was covered during the third live session of the one-course cohort, along with the information in Topic 1.7 (Table 5).

Table 6

Interactions and Final Assessment Performance on Topic 1.8

Assessment Competency	Questions	Comments	Responses to Instructor/Student Questions	Students
Ethics 90-100%				5
Ethics 80-89%			1	2
Ethics 70-79%			2	4
Ethics 60-69%			1	1

The themes found during analysis of performance and interactions included a range on the grade in each competency on the assessment. Some students scored above 90%, while others scored as low, on some sections as, 40%. This was most apparent in Topic 1.3 – Challenges Facing Students and Families, which had the lowest student score of any of the competencies. There also was a spread of responses, comments, and questions among individuals. Some individuals spoke more than others, and some of the competency topics had more interaction than others. Topic 1.7 - Technology in Teaching

had no interaction, while Topic 1.5 – Accommodating Needs of Learners had multiple comments.

While the second research question analysis demonstrated a few patterns, there were no patterns for Research Question 3 as I analyzed the data for taxonomy levels in relationships to the performance by students on the final assessment and the interactions within the one-course cohort sessions. Some of the lowest scores in certain competency topics showed that students did not ask questions or comment on the content, which could have led to a lower score (e.g., Topic 1.3 – Challenges Facing Students and Families or Topic 1.7 – Technology for Teaching). However, some of the highest scores reflected that same lack of student interaction, for instance, Topic 1.7 – Technology for Teaching and Topic 1.8 – Ethics. Some students might have benefited from the interactions in regards to performance on the final assessment, but this information did not translate into any discernible patterns for the one-course cohort as a whole.

Discrepant Cases

There was one discrepant case found and two types of nonrelevant data. The discrepant cases involved the data drawn from the assessment results and relating to the third research question. The student interactions and final assessment results did not yield any patterns or behaviors that connected to the research on social learning, nor with the assumption of positive outcomes (Bandura, 1976). This discrepant case was identified earlier when answering the third research question and reported when discussing the results and patterns.

The nonrelevant data involved students who signed up for the one-course cohort, but never attended a session, and students who signed up and attended one or more sessions, but withdrew from the university before completing the course and/or degree or did not engage in any learning interactions while attending the live one-course cohort sessions. For the first type, the participants who signed up for the one-course cohort, but never attended a session, out of the 34 students who initially signed up for the one-course cohort sessions, 19 students did not attend at least one of the sessions. Of those 19 students, three withdrew from the university, and the remaining 16 passed the course assessment.

For the second type of nonrelevant data, the participants who signed up and attended one or more sessions, but withdrew from the university before completing the course, three of the 15 participants who attended one or more one-course cohort sessions, withdrew from the university before completing the course assessment and their degrees. Of the 12 students who attended at least one of the sessions and passed the assessment, two did not interact in any way, whether over the phone nor in the synchronous discussions. Those two students observed interactions, but never engaged directly with the instructor nor their fellow students and were still able to pass the assessment.

The discrepant case was presented through analysis of the data and while answering the research questions, and provides additional examples of the lack of patterns among interactions, performance, and retention. The nonrelevant data also illustrated the lack of patterns. Students who attended the one-course cohort sessions passed, but so did students who did not attend nor interact with the instructor and their

fellow students. The interactions may have aided the students who attended sessions, but the lack of interactions did not impede them from gaining competency. This lack of pattern is also apparent with the three students who attended at least one of the sessions, but withdrew from the university. The interactions and engagement through the one-course cohort sessions did not provide those students the motivation to continue forward with their degrees. Additional research could provide more understanding on the discrepant cases and the nonrelevant data.

Chapter Summary

Using the archived data sources from the one-course cohort sessions, the data collection and analysis process was completed. The qualitative software program, NVivo, was used to organize and visualize the data and aided in the analysis and answering of the research questions (NVivo 11, 2015). The first research question addressed the types of content questions leading to student interactions in the teacher education one-course cohort learning sessions. According to the data and using Bloom's Revised Taxonomy to classify (Figure 2), Understanding and Applying level questions provided the most direct student response, with Remembering and Analyzing questions having less interactions (Anderson et al., 2001). The two highest question levels in Bloom's Revised Taxonomy, Evaluating and Creating, were not apparent among the initial questions nor in students' responses, comments, nor follow-up questions (Anderson et al., 2001).

The second and third research questions identified patterns, or the lack thereof, among the student interactions and questioning, as well as the interactions and performance on the final assessment. While some patterns were identified in relation to

the questioning and student interactions, including the information related to the first research question, there were also a lack of patterns in relation to students who made comments independent of initial questioning taxonomy levels. In addition, the data did not present any patterns that would relate the students' final assessment performance to the interactions during the one-course cohort sessions. This was also the case with the discrepant cases.

The final chapter provides an interpretation of the findings within the framework of the literature reviewed in the second chapter and the theoretical framework consisting of Bandura's (1977) social learning theory and Siemens' (2005) connectivism. Limitations of the study are revisited from the initial limitations outlined in Chapter 1, and recommendations are made for further research related to the data and findings. Finally, implications for social change and educational practices are discussed.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this qualitative case study was to explore the patterns of student interactions and assessment performance, as well as the nature of questions that lead to interactions among participants in an online teacher education introductory one-course cohort. It specifically examined these patterns in the context of a one-course cohort session at Falcon University. The patterns of behavior and questioning involved in the learning and assessment processes shared by the students, along with the social interaction and network experiences gained, provided the students with tools to make progress in future coursework without requiring the traditional cohort arrangement. These tools included increased understanding and application of the content and a connection to the university through social and learning interactions. This structure differed from Falcon University's traditional online process of competency-based individual-rate of learning, incorporating more opportunities for group learning and knowledge building.

Following analysis of the three data sources, two patterns and behaviors were noted:

Students in the one-course cohort sessions interacted more frequently with questions at the Understanding and Applying taxonomy level.

Remembering questions did not elicit responses as well as higher level thinking at the Understanding and Applying taxonomy levels described by Anderson et al. (2001).

In addition to the above patterns, there were also a number of findings that did not follow a pattern, including the number of student interactions unrelated and unprompted

by the Questioning level, the lack of response at the Analyzing taxonomy level, and student performance on the final assessment.

Interpretation of the Findings

While there were patterns present in the types of content questions leading to interactions and in the different taxonomy levels eliciting responses, there were also results that did not show a discernible pattern. In some cases, the results were not supported by the literature on social learning and learning communities. Bandura's (1977) elements of effective modeling includes attention to the task or information and retention in recalling the information from memory as part of the interactions, questioning levels, and final assessment performance. Students' interactions with each other and with the instructor during the one-course cohort sessions translated into continuous comments and questions requiring the frequent attention of participants to understand and apply the knowledge.

The retention of the content gained through interactions translated into every student who remained in the course and university passing the assessment. However, a number of students who did not attend any of the live one-course cohort sessions still were able to pass the assessment. According to Pratt and Palloff (2005) and Russell et al. (2009), communities of learning and cohorts take learning to a higher level of thinking and transform the individuals involved; while others succeeded on the final assessment, they did not experience the transformative learning of the cohort described by Pratt and Palloff (2005) and Russel et al. (2009). However, the outcomes of students' learning beyond the assessment and those who did not attend at least one of the one-course cohort

sessions falls outside of the parameters of the study. Future research should explore those themes and type of learning further.

Siemens (2005) advocated for connections to exist between learners, the content, instructors, and real-world issues and applications. The one-course cohorts engaged students in this process of learning together, with the data illustrating the positive interactions resulting from questions asking students to apply the knowledge to real-world situations in each competency (Figure 5). Some examples of these statements are:

- "If a student has a history of bringing drugs to school, can you randomly search him or her?" (Dr. Teal, phone conversation).

    o "Yes" (Samuel, phone conversation).

    o "In the moment makes a big difference" (Sophia, discussion post).

This conclusion is also supported by Bruckman (2002) and Cook (2012), with Bruckman further stating that connecting learners to real-world issues and applications can create "a more authentic context for learning" and "then students develop a much deeper understanding of the material" (p. 466). Not every question asked during the course of the sessions called for this level of application to classroom examples, but the Applying level questions had the most direct student response (Figure 5).

All of the students who attended at least one of the one-course cohort sessions passed the assessment, except for the three students who withdrew before taking it at all and therefore excluded. However, there were 16 additional students registered for the one-course cohort, but did not attend one session and still passed the assessment. While they did not connect and apply the content in the same meaningful ways that the students

who participated did, they were still able to pass the assessment. Whether these students

had a deeper understanding that extended past the assessment and into future coursework

for the students who attended is beyond the scope of the study data and findings.

As the findings showed, participants responded to Understanding and Applying

questions more often than Remembering and Analyzing level questions (Figures 3, 4, 5,

and 6). There were not any initial questions identified as the highest level according to

Bloom's Revised Taxonomy (Figure 2): Evaluating and Creating (Anderson et al., 2001).

It is important and necessary in online educational environments that the instructor

considers the taxonomy when preparing questions for students and to facilitate

engagement with the material in an active, critical thinking, and collaborative manner

(Callens, 2014; Gok, 2011; Thormann et al., 2013). As the identified questions and

interactions during the sessions did not involve students with the highest order thinking

levels, nor provide examples or models of those skills, they were not present nor engaged

with as actively as the lower levels. Students in the one-course cohorts responded to

questions that involved them in the process and asked for application of the material,

students are expected to continue to build these skills with additional application,

analysis, evaluation, and creation of knowledge and educational tools,. Future offerings

of the one-course cohorts would likely benefit from a focus on the types and levels of

questions presented.

One part of the purpose of this case study was to explore the patterns among

students engaged in an interactive online one-course cohort learning experience. The

other part of this case study was to address methods that would be effective for online

students and, in turn, increase retention rates. Of the 15 students who attended at least one of the cohort sessions, three withdrew from the university before taking the assessment and completing their degrees. Eighty percent (12 out of 15) of attendees successfully completed the course and moved forward towards attaining a degree, which is supported by what the studies concluded on reasons for retention, including social interaction and communication between peers and instructor (I-Chun, 2012; Milheim, 2011; Willging & Johnson, 2009). As in the case of the other conclusions from this study, there is support from the literature for the larger part of the one-course cohort population and additional research should elaborate on reasoning and motives to continue.

Limitations of the Study

Due to the nature of the data and its collection as archival data, there were not any limitations to trustworthiness that became apparent as collection and analysis were completed. The limitations were still accurate to the best of my ability to correctly observe and interpret the participants' interactions to identify patterns. The analysis was completed as thoroughly and unbiased as possible by collecting session data, transcribing recordings, changing names to identifiers to anonymize participants, and using software resources to categorize and code (NVivo 11, 2015).

I used transcriptions of the one-course cohort sessions instead of a traditional observational narrative. As a result, the study data came from direct instructor and participant responses, questions, and comments. Coding provided a visual translation of the data into patterns and themes, discussed in the previous chapter, and analysis did not occur until coding of all three data sources was completed. Initial biases and thoughts did

not influence the codes, nor was analysis fully completed until visual representations (Figures 3-7 and Table 2) were created. There are always possible influences and implications from the limitations present in research; however, the steps initially provided in Chapter 1 and followed throughout the data collection, coding, and analysis steps, maintained the trustworthiness of the case study.

Recommendations

While there is now a deeper understanding of one-course cohorts, online education, student interactions and questioning methods, one-course cohorts would benefit from further research focusing on additional questioning strategies, the nature of social and learning interactions in education, and retention methods.

One area for possible study with the participants in the one-course cohorts is to contact the students who withdrew from the university, but had attended one or more sessions. An interview looking at reasons for attrition may aid in shedding further light on motivations to stay or leave, especially if a student was engaging in social and learning interactions in their programs (Willging & Johnson, 2009; I-Chun, 2012; Milheim, 2011).

Another possible area of study is to focus specifically on the application of Bloom's Revised Taxonomy (Figure 2) in preparing the types of questions for students to engage with during the one-course cohort sessions (Anderson et al., 2001). If modeled correctly and consistently, students may engage and in turn, use the higher level thinking skills outlined in the taxonomy, but not found in the current case study.

Future research could also focus on whether students engaged in social learning and connectivist experiences do experience a deeper and more transformative learning process (Bandura, 1977; Bruckman, 2002; Cook, 2012; Siemens, 2005). Additional studies could compare the learning throughout the degree program between those who engaged in the one-course cohort learning options and those who did not. There is also a possibility of studying the learning styles these licensure students employ in their future classrooms as teachers.

Implications

Positive Social Change

Social and learning interactions have been found to actively engage students in the educational process, as well as in their communities (Carter, 2012). Licensure students not only benefited personally from the collaborative skills gained through the one-course cohort experience, but can also apply those skills long-term to their future classrooms. According to the data analysis, students responded most often to application questions (Figure 5).

"What is an example of when the child benefit theory applies to using public funds in private schools?" (Dr. Teal, phone conversation).

"Standardized tests" (Stacy, phone conversation).

"Title I funds and AP testing" (Samuel, phone conversation).

"Preschools are also for those with disabilities at the school district level" (Summer, discussion post).

They wanted to engage with each other, the instructor, and the content to apply it to their personal circumstances and knowledge base. Researchers have found that through collaboration, unique views can be brought together and individuals learn to navigate and interact socially and emotionally with diverse individuals and groups from around the nation and in some cases, the world (Bonk, 2009; Durlak et al., 2011). According to research and the findings, applying the information to oneself, then sharing through collaboration, helped these students understand the content and each other more thoroughly.

"Save Facebook for only family, too many loopholes to watch out for" (Scott, discussion post).

"True, Scott" (Summer, discussion post).

The students who attended the one-course cohort not only found success short-term in their course grade, but the skills learned will ideally follow them forward into their homes, communities, and classrooms.

Methodological and Practical Implications

While many patterns were not readily found, nor supported by previous research on social learning, connectivism, and retention, there are still implications to the practical and methodological educational sphere. Students responded to questions that asked for applying of the knowledge over recall or remembering, but did not respond as frequently to analysis-based questions. Finding methods to invite students to engage directly with the content and finding relevance, using the data, will elicit the most interactions and responses (Figure 5). Also, no questions were identified as Creating or Evaluating

content, so the instructor did not ask at those levels and students did not get an opportunity to respond. If students are not taught and modeled what Bandura (1977) described as the higher-order thinking skills found within Analyzing, Evaluating, and Creating, they will not be able to call on those skills further on in their own schooling, and in the case of licensure students, for their future students. Instructors should call on Bloom's Revised Taxonomy when creating cohorts and learning communities, especially in an online interactive forum like the one-course cohort, to ensure all levels of thinking and processing are represented and modeled (Anderson et al., 2001).

The 21st Century Knowledge and Skills Framework focuses on the teaching and learning standards and practices preparing students for success in the 21st century (Framework for 21st Century Learning, n.d.). Among the skills highlighted in the framework, collaboration, communication, social awareness, collaborative technology, and critical thinking are included. Licensure students will someday instruct their classrooms on these skills and learning resources, which requires practice and competence. The one-course cohort provides one method for preparing students for this task through collaboration, communication, technology literacy, critical thinking, and future 21st century pedagogical possibilities.

Conclusion

Based on the findings and analysis of the archival data and the purpose of exploring the patterns of students' interactions and assessment performance, as well as the nature of questions that lead to interactions among participants in an online teacher

education introductory one-course cohort for this study, the following conclusions were identified:

Patterns of questioning and interactions were found when questions were asked at the Understanding and Applying taxonomy level, with most responses stemming from application questions (Figures 4, 5, and 7).

Students who attended one or more sessions and did not withdraw, passed the assessment. However, there were discrepant cases of students being successful without engaging interactively with the instructor and other students, as well as withdrawing after attending at least one one-course cohort session.

Further research would benefit the educational practice of one-course cohorts in terms of understanding those who chose to withdraw, as well as the skills learned and applied in future coursework and as classroom teachers.

While further research would provide another level of understanding to the case of one-course cohorts, positive implications, both for social change and methodology and practical, can be found in the process of collaboration, active learning, higher-order and critical thinking skills, and modeling for future classroom instruction.

With more research needed to determine a long-term impact and alternative adaptations for one-course cohorts, past research and the current data of this study supports that students who stay engaged with the content, peers, instructor, and university will be successful in a course (Table 2; Anderson et al., 2001; Bandura, 1977; Cook 2012; Crampton & Ragusa, 2012; Crawford-Ferre & West, 2012; Dykman & Davis,

2008c; Green et al., 2010; Kress et al., 2012; Siemens, 2005; Sutherland-Smith &

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Appendix A: Archived Observation Protocol

One-Course Cohort Session #_____

Question	Question Level (Bloom's Revised Taxonomy)	Assessment Competency
Responses		

Appendix B: Synchronous Archived Chat Protocol

One-Course Cohort Session #_____

Comments/Responses	Question Level (if Response)	Assessment Competency

Appendix C: Perspectives of Education Competencies

Competency: 640.1.3 Social Issues and Influences on Education

    Topic 1.3 – Challenges Facing Students and Families

    Topic 1.3 – Social and Cultural Contexts of Education

Competency: 640.1.4 Education and Federal and State Law

    Topic 1.4 – Communities & Families

    Topic 1.4 – Educational Laws

    Topic 1.4 – Students as Individuals

Competency: 640.1.5 Exceptional Learners in Federal and State Law

    Topic 1.5 – Accommodating Needs of Learners

Competency: 640.1.7 Technology in the Classroom

    Topic 1.7 – Technology for Teaching

Competency: 640.1.8 Personal Code of Ethics

    Topic 1.8 – Ethics

Appendix D: Participant Analysis Matrix

Student #_____

Competency Topics on Assessment	Comments (not in response to questions)	Answers to student/instructor questions	Questions	Assessment Score
Topic 1.3 – Challenges Facing Students and Families				
Topic 1.3 – Social and Cultural Contexts of Education				
Topic 1.4 – Communities & Families				
Topic 1.4 – Educational Laws				

Topic 1.4 – Students as Individuals				
Topic 1.5 – Accommodating Needs of Learners				
Topic 1.7 – Technology for Teaching				
Topic 1.8 – Ethics				
Not related to competencies				