A HERMENEUTIC PHENOMENOLOGICAL EXPLORATION OF THE IMPACT OF TECHNOLOGY ON THE COLLABORATIVE PRACTICES OF RURAL MIDDLE SCHOOL TEACHERS

by

Kimberli Simmemon Dailey

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University

2017

A HERMENEUTIC PHENOMENOLOGICAL EXPLORATION OF THE IMPACT OF TECHNOLOGY ON THE COLLABORATIVE PRACTICES OF RURAL MIDDLE SCHOOL TEACHERS

by Kimberli Simmemon Dailey

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

Liberty University, Lynchburg, VA

2017

APPROVED BY:

Donna Joy, Ph.D., Committee Chair

Nancy K. DeJarnette, Ed.D., Committee

Marcia Williams, Ed.D., Committee

ABSTRACT

This qualitative study described the impact of collaboration and technology-based communication on the professional experiences of rural middle school classroom teachers. A hermeneutic phenomenological approach was used to determine if technology-based tools, such as online discussion boards, email, social networking sites, and short message service (SMS) texting has made an impact on instructional collaboration for rural middle school teachers. The theory guiding this study was connectivism (Siemens, 2005) as it addresses the concept that in the digital age knowledge is stored outside the learner and distributed knowledge as it relates to the connections formed between individuals and/or networks (Downes, 2005, 2010). Data collection methods included surveys, individual interviews, focus group interviews, and electronic journaling to provide insight into teacher professional communities and reflective practice. Data analysis was achieved through the use of the hermeneutic circle and followed van Manen's approach. The results of this study indicated teacher collaboration was important for professional growth and the use of technology makes teacher collaboration more efficient. The hermeneutic phenomenological approach utilized in this study provided rich details to add to the body of research concerning teacher collaboration and the utilization of technology by teachers to give and seek professional support.

Keywords: teacher collaboration, teacher reflective practice, technology, professional teacher communities

Table of Contents

List of Tables

List of Abbreviations

Short Message Service Texting (SMS)

National Board of Professional Teaching Standards (NBPTS)

National Center for Educational Statistics (NCES)

Personal Learning Network (PLN)

Family Education Rights and Privacy Act (FERPA)

Institutional Review Board (IRB)

Center for Leadership in School Reform (CLSR)

Pioneer Regional Educational Service Agency (Pioneer RESA)

English Language Learner (ELL)

CHAPTER ONE: INTRODUCTION

Overview

Collaboration and reflection have been acknowledged as essential methods for fostering the professional growth of teachers for several years (Schlechty, 2002; 2011). Teacher interaction requires time, a limited resource for most classroom teachers, and teachers are often isolated due to constraints created by schedules and location (Feger & Arruda, 2008). The development of technology-based communication tools and collaborative, electronic networks, however, may conserve some of the time teachers invest in these activities (Zhao & Rop, 2001). During the past two decades access to technology and digital based communication has increased dramatically. In 2000, approximately half of all adults in the United States were online, and by 2017 that number increased to approximately 90% (Pew Research Center, 2017). As digital communication becomes increasingly pervasive, learning through the use of technology has become self-directed, informal, and on demand (McLoughlin & Lee, 2010). I designed a hermeneutic phenomenological study in an attempt to define teachers' collaborative experiences in regards to digital collaboration. Chapter One provides the background for the study, presents the problem that necessitated the research, gives a brief overview of the literature related to the topic, identifies the importance of the research, and lists the research questions that guide the study.

Background

While much attention is given to instructional reform in the classroom, teachers have been left alone to grapple with the day-to-day struggles created by the movement to standards-based classrooms (Hu, 2005). Teachers indicate professional learning in its current state is episodic and often disconnected from what is needed to improve classroom performance

(Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009). Collaboration among teachers takes different forms and varies in intensity of work accomplished (Hu, 2005). Teachers identify time as a constraint for participating in professional development, and recent fiscal restraints may make it difficult for schools to provide professional time for teacher collaboration (Coughlin & Kadjer, 2009; Schmitt, 2004; Speitel, 2003). Research prior to the recent economic crisis, however, demonstrated the United States was already behind other countries in providing public school teachers with time for "extended learning opportunities and productive collaborative communities" (Darling-Hammond et al., 2009, p. 6). In a study of mathematics interventions, Murray, Ma, and Mazur (2009) noted sharing ideas, getting feedback, and communicating as beneficial to teachers, while time and scheduling were identified as the primary limitations to peer collaboration.

With the technology-based communication tools available to teachers today, solitary planning of instruction is no longer necessary. Collegial networks are important in the professional growth and development of teachers (Bertrand, Roberts, & Buchanan, 2006; Hu, 2005; King & Newman, 2000; Schlechty, 2002, 2011). Time and fiscal constraints to collaborative networks could be reduced through alternative routes using technology-based communication (Hew & Hara, 2007; Kale, 2005; Pontydysgu, 2007). E-mail, short message service (SMS) text messages, message boards, instant messages, wikis, social networking sites, and podcasts are tools that can be utilized to support communication allow teachers to constantly exchange ideas and information without the restrictions of face-to-face meetings. Due to the constant exchange of knowledge in a technology-based teacher collaborative network, the theoretical framework of connectivism is embedded in this research (Siemens, 2005).

Situation to Self

As an educator who has received training in collaboration and presented at Working on the Work conferences for the Center for Leadership in School Reform as well as the system in which I work, I have a vested interest in teacher collaboration. As developments in communication technology grew, I became curious about how this might impact collaboration in schools, particularly in rural areas, such as the one where I live. Due to economic conditions, many schools were restructured with less staff and this created situations of isolation for many teachers such as myself who previously worked in collaborative environments. As a qualitative researcher, however, I have an obligation to acknowledge any experiences, which may lead to bias, so I can consciously lay them aside to examine the conditions of teacher collaboration in rural areas and if the developments in communication technology are impacting teacher professional practices.

I utilized an ontological philosophical assumption to guide this study. This assumption allowed me to acknowledge the unique experiences of the individual participants because it supported the idea of multiple realities (Creswell, 2014). Acknowledging ontological issues also allowed me to attempt to look for and show connections through the differences in the participants and their experiences. According to Creswell (2014), "Worldviews arise based on discipline orientations, students' advisors/mentors inclinations, and past research experience" (p. 37). Due to the nature of this hermeneutic phenomenological study, where I attempted to understand and interpret the multiple experiences of the participants, I was guided by a social constructivist worldview.

A social constructivist worldview lends itself to understanding the world in which we live and work (Creswell, 2014). According to van Manen (2011), social constructivists try to

discover what makes a good professional, such as a teacher or nurse, act in a particular manner. Through acknowledging how my own background directed my interest, conducting interviews, and analyzing journal entries, I held to this worldview. According to Creswell (2014)

> Researchers recognize that their own backgrounds shape their interpretation, and they position themselves in the research to acknowledge how their interpretation flows from their personal, cultural, and historical experiences. The researcher's intent is to make sense of (or interpret) the meanings others have about the world. (p. 37)

My purpose in conducting this qualitative study was to add rich detail to the body of research. I sought to communicate participants' experiences in a manner as similar to how they lived the experienced itself as possible. This personal participation in the study, however, did not come without certain assumptions that must be addressed. As previously stated, I already acknowledged my own experiences with teacher collaboration and technology-based communication. As with my own experience, the participants brought their own life experiences into the research. While I interviewed, recorded and reported the participants' words, I also interpreted and reported themes and findings from the research. As the data collection and analyses uncovered new information and issues, my approach and interpretations of the data continued to adjust.

Problem Statement

The struggles with day-to-day classroom management issues and instructional planning in isolation lead teachers to seek the opportunity to collaborate with peers (Erkens, et al., 2008; Joy, 2009; Strahan & Hedt, 2009). Researchers noted the importance of teacher collegial networks as an integral part of student achievement, yet there is limited research to examine teachers' perspectives on the importance of teacher collaboration, the methods teachers utilize to establish

such connections with other educators, and the depth of the collaborative exchanges (Bertrand et al., 2006; Coughlin & Kadjer, 2009; Darling-Hammond et al., 2009; King & Newmann, 2000; Schlechty, 2002, 2011). Murray et al. (2009) explained, "rural teachers have even more difficulties to overcome" (p. 210) in peer collaboration due to time and scheduling constraints.

Purpose Statement

The purpose of this hermeneutic phenomenological study is to describe the collaborative experiences of rural middle school classroom teachers and to determine if the development of technology-based communication has made an impact on instructional collaboration and professional reflective practices. The focus of the study was to describe rural middle school teachers' perceptions and attitudes toward the impact of technology-based communication tools on professional collaboration and reflection. The theory guiding this study is connectivism as explained by Siemens (2005). Connectivism provides a framework for understanding learning within the complex networks present in the digital age of communication where knowledge is stored in a variety of ways including within individuals or in outside resources (Siemens, 2005).

Significance of the Study

While research is plentiful on specific professional learning communities for teachers and on implementing certain technologies in the classroom, research involving web-based teacher collaboration and reflection is limited (Feger & Arruda, 2008; Murphy 2004). Little research is available on the topic of teachers' perceptions toward using technology for collaboration (Coughlin & Kadjer, 2009). Research revealed the United States is falling behind other countries in teacher collaboration and as a result, student achievement suffers in comparison (Darling-Hammond et al., 2009). Only 17% of teachers indicated "a great deal of cooperative effort" while only 14% stated they make "conscious efforts to coordinate the content of courses"

(Darling-Hammond et al., 2009, p. 23). A greater understanding of teachers' perceptions towards collaboration and use of technology for collaboration is needed. Some studies conveyed a need to examine if teachers really benefit from technology-based discussions and reflection (Feger & Arruda, 2008; Murray et al., 2009; Zhao & Rop, 2001). More insight into teachers' perceptions and attitudes is needed to create greater flexibility for teachers to plan collaboratively. In schools where an investment in technology is prevalent, this flexibility presents circumstances to improve teachers' communication with their peers. This study also provides awareness of collaborative methods teachers are using to cope with loss of time that was originally used by school systems for professional collaboration, but was lost due to budget cuts. Additionally, this study adds to the body of research on the impact of technology-based collaboration on teachers' professional practices and perceptions.

Research Questions

The following research questions will guide this study:

RQ1: *What types of collaboration do rural middle school teachers seek to improve instructional practices?* Teacher perceptions and attitudes toward collaborative planning, whether it involves face-to-face collaboration or technology-based collaboration, for creating engaging student activities are important components of this study. Zhao and Rop (2001) indicated a need for more research regarding whether or not teachers really need communities and reflection to improve professionally. Coughlin and Kadjer (2009) called for additional research to better understand the nature of teacher collaboration in online environments as it is rapidly changing with the influx of new technologies.

RQ2: *What factors influence teachers to seek and sustain collaboration with others through technology-based communication?* In a study of online communication, Najafi and Clarke

(2008) determined teacher interest is vital in sustaining an online professional community, and when interest waned communication was discontinued. Coughlin and Kadjer (2009) noted the inability to maintain educational research regarding the use of online teacher collaboration at a pace equal to the emergence of new technology being used as a problem in maintaining quantitative and qualitative data.

RQ3. *How do teachers use technology-based communication tools to improve their professional practices?* In previous research, Murphy (2004) indicated the importance of collaborative practice to idea exchange, goal sharing, and challenging one's self through collaborative practice to refine and develop new ideas. Coughlin and Kadjer (2009) recognized teachers moved on to collaborate with new forms of technology before all the possibilities of the media being utilized are explored. In this study, the plan is to uncover teachers' perceptions of how collaborating with others influences instructional strategies, classroom management, and professional reflection. Coughlin and Kadjer (2009) noted a gap in the educational research by referring to the topic of online collaboration by teachers as a "moving target" (p. 5). The intent of this research was to elaborate on teachers' professional collaboration through emerging social media and its impact on their professional growth.

Definitions

Collaboration – A network of teachers working together to support each other in instructional practices, provide avenues to new ideas, and offer emotional support in a stressful profession (Bertrand et al., 2006; Broda, Werele, Schmidt, & Shutt, 2010; Coughlin & Kajder, 2009; Dougherty, 2009; Hur & Brush, 2009; Schlechty, 2002, 2011).

Face-to-Face Collaboration – Collaboration that takes place with all parties in the same room. This type of collaboration creates collegial relationships, which contribute to teachers'

instructional planning, classroom management, and professional reflections (Coughlin & Kadjer, 2009; Hew & Hara, 2007; Hur & Brush, 2009).

Collegiality – Professional relationships that create an atmosphere of professional support and leads to designing engaging work for students (Bertrand et al., 2006; Schlechty 2002, 2011).

Technology-based communication or Electronic Communication – Communications that are digital and allow learners to be more self-sufficient in seeking information and to collaborate with peers in a variety of contexts (Archambault, Wetzel, Foulger, & Williams, 2010; Coughlin & Kadjer, 2009; McLoughlin & Lee, 2010).

Connectivism – The theory that learning is found in diversity of opinions, learning is stored in machines, and learning is a process of connections (Siemens, 2005).

Peer Mentoring - A relationship between colleagues, sometimes a preservice teacher and an experienced educator, that creates a community of engagement, collaboration, enterprise, and shared focus (McLoughlin & Lee, 2010).

Collaborative Professional Development - Increasing teachers' content knowledge and improving instructional practices through the establishment of professional networks and peer review (Darling-Hammond, 1998; Stigler & Herbert, 1997).

Professional Reflection – Professional reflection is when teachers engage in a cognitive examination of their own work and pursue learning as a lifelong goal. Teachers engaging in professional reflection have a rich intellectual and academic life of their own (Schelchty, 2002; 2011).

Social Media – A digital medium that provides an avenue for the formation of networks, which effectively allow individuals to absorb information with a personal scope and sequence (Siemens, 2006).

Summary

Collaborative conversations and reflective practices are important to the professional development of teachers (Schlechty, 2002, 2011). Teachers often seek assistance from their peers in the areas of instructional planning, classroom management, and emotional support (McLoughlin & Lee, 2010). The purpose of this hermeneutic phenomenological study was to explore the collaborative practices of rural middle school teachers through their lived experience. There is limited research on the impact developments in technology have made on the day-to-day issues teacher face in seeking to collaborate with peers due to the rapidly changing nature of electronic communication (Coughlin & Kadjer, 2009). Those issues naturally lead teachers to seek the opportunity to collaborate with peers in a way that is effective, but fits their time and budget constraints, especially in rural areas. Therefore, the study sought to describe the collaborative experiences of rural middle school classroom teachers to determine if the development of technology-based communication has made an impact on instructional collaboration and professional reflective practices.

CHAPTER TWO: LITERATURE REVIEW

Overview

One long-standing challenge for educators is providing students with an engaging educational experience. Teachers are a unique set of leaders in encouraging others "to do things they might not otherwise do: to pursue goals they might not otherwise pursue and to accomplish things they might not otherwise accomplish" (Schlechty, 2002, p. xxi). One approach to increasing student engagement in learning as well as improvement in student performance is establishing collegial teacher networks (Ketterlin-Gellar, Baumer, & Lichon, 2015). Teaching in an atmosphere of collegiality is more effective than teaching in isolation because it creates an atmosphere of professional support and leads to designing engaging work for students (Bertrand et al., 2006; Schlechty 2002, 2011). Collaboration among teachers is recognized to support teachers in instructional practices, provide avenues to new ideas, and offer emotional support in a stressful profession (Bertrand et al., 2006; Broda et al., 2010; Greenhow, 2009; Harmon, Gordanier, Henry, & Georger 2007; Hur & Brush, 2009; Ketterlin-Gellar et al., 2015; Schlechty, 2002, 2011).

Recent developments in web-based communication technology allow for alternative routes to professional collaboration. Research indicated positive trends toward web-based technologies as an avenue to create opportunities for collaborative discussions between educators (Broda et. al, 2010; Hew & Hara, 2007; Hur & Brush, 2009; Makinster, Barab, Harwood, & Anderson, 2006; Morris & Easterday, 2008; Newton, Oswald, & Stuart, 2002; Power & Thomas, 2007). Online courses, discussion boards, and developments in Web 2.0 technologies provided teachers with global access to information and professional learning (Coughlin & Kadjer, 2009).

The purpose of this literature review was to explore the area of teacher collaboration and teachers' perceptions of its importance to professional growth and reflection. The literature review was also intended to investigate avenues of technology-based communication tools as a means for teacher collaboration. To address the nature of how developments in technology are impacting teacher collaboration, the first section of this literature review investigated the relationships between sharing knowledge in the digital age and learning theory. Specifically addressed was how knowledge in the digital age is stored in multiple ways and can be accessed through a series of social and workplace connections.

Theoretical Framework

Theoretical frameworks should address questions such as: How do we learn? Why do we learn? How do we store knowledge? How is knowledge transferred? If given a choice, with whom do we learn? Traditional educational theories include behaviorism, cognitivism, constructivism, and social learning theory. Developments in technology created a format for sharing knowledge in new ways. Learning theories provide insight into how knowledge is created, acquired, and shared. Learning theories also explain how behavior is modified to "reflect new knowledge and insights" (Chowdhury, 2006, para. 25). Theoretical knowledge provides the "underlying structures of the learners' way of learning" and identifies "what particular behavior is involved" in the process (Chowdhury, 2006, para. 24). When engaged in professional collaboration, teachers practice professional learning. Therefore, how the knowledge is gained, stored, and shared is significant. Connectivism is a theoretical framework for understanding learning in the digital age of communication (Kop & Hill, 2008), and is the framework that guided this study. Connectivism, which was presented as a new learning theory in 2004, "addresses learning in complex, social networked environments" (Siemens and Conole,

2011).

Connectivism

Siemens (2005) addressed the concept that in the digital age knowledge is stored outside the learner. According to Siemens, traditional learning theories, which focused on the individual's learning process, fall short of depicting the means through which learning currently occurs. The concept of connectivism provides a new framework for learning theory. Siemens outlined the principles of connectivism as: learning is found in diversity of opinions, learning is stored in machines, and learning is a process of connections. The maintenance of connections and the ability to see connections are critical to learning. The ability to make decisions is a learning process, and the ability to continue to learn is important (Siemens, 2005).

Connectivism is a theory relating significantly to web-based teacher collaboration. Siemens and Conole (2011) asserted educators "face a challenge in determining how the existing education system will be influenced and the new roles that will be expected of learners, teachers, and administrators" (p. i) with the emergence of new technologies. Siemens correlated this to challenges already faced in other fields such as journalism, the music industry, and communication businesses such as telephone companies. The implications for education are similarly significant. Teachers who participated in web-based collaboration gained knowledge from connections with networks found inside and outside of their work place (Broda et al., 2010; Cady & Reardon, 2009; Tomita, 2009). Schlechty (2002) stated in his descriptor of roles for teachers and administrators, "Because teachers are leaders, they can learn from other leaders" (p. xxi).

Within the framework of connectivism, understanding increases as learners constantly receive new knowledge (Siemens, 2005). Innovations in technology-based communication tools

allow learners to be more self-sufficient in seeking information and to collaborate with peers in a variety of contexts. Connectivism asserts learning occurs through different types of social connections, and is a form of adaptation allowing one to be successful (Cross, 2007). The learning environment is changing as are the learners in the environment (Downes, 2010). Learners should not only be viewed in this interactive environment as the "subjects of learning," but also the "sources of learning" (Downes, 2010, p. 28). "The things we say, the things we choose to read or view, the things we link to, the people we send messages to - all of these constitute input to the learning network, causing it to reform" (Downes, 2010, p. 28). Downes (2005, 2012) labeled information learned in this manner as a separate category of knowledge, which he identified as distributed knowledge.

Distributed knowledge. In addition to quantitative knowledge and qualitative knowledge, Downes (2005, 2012) recognized learning which results from the connections of individuals and/or networks as distributed knowledge. Distributed knowledge is gained through interactions and through the knowledge the contact took place. Downes (2005) stated, "A property of one entity must lead to or become a property of another entity in order for them to be considered connected; the knowledge that results from such connections is connective knowledge" (para. 4). According to Downes (2012), learning in connecitivism is not like the idea of traditional learning or the acquiring of facts like puzzle pieces, but instead is "by becoming the sort of person we want to be" (page 29). Downes continues that as knowledge is distributed connections valuable and relevant to one person may hold no value for another (2012). After participating in an active learning environment with feedback and reflection, the knowledge and/or the learners' need for the knowledge may also change (Downes, 2010).

Downes (2006) maintained the act of learning occurs with the learners' involvement in communities. When the members of a community exchange ideas in conversation, learning takes place. Downes (2006) described the difference in the practice of learning in communities today with the following statement:

> This conversation, in the web 2.0 era, consists not only of words but of images, video, multimedia and more. This conversation forms a rich tapestry of resources, dynamic and interconnected, created not only by experts but by all members of the community, including learners. (para. 128)

Downes (2006) declared, with regard to learning theory, the time of studying and learning with detachment is past. Because knowledge is gained through networks and connections, learners must "immerse themselves in their field" (Downes, 2006, para. 150). Connective knowledge is characterized by four traits: "diversity, autonomy, interactivity, and openness" (Siemens, 2006, p. 16). Downes' proposal that knowledge is transferred among networks, stored in a variety of ways, and is understandable through the scope in which it is established supported Siemens framework of connectivism (Kop & Hill, 2008; Siemens, 2006).

Connected knowledge and social media. Regarding sharing knowledge, Siemens (2006) stated, "We stand with our feet in two worlds" (p. 5). New tools, such as social media, are being used to meet old needs. Siemens further recognized in the fields of business and education, the current flow of knowledge and emerging technology is often forced into the conforms remaining from the industrial era.

Through advances in social media, a powerful shift has occurred in the availability of information. Information, which was once for private knowledge, is now shared freely, and those things once thought to be unimportant may become significant events (O'Reilly, 2004). As

O'Reilly (2004) noted, even the technology used to communicate now involves software found in other technology. Through Web 2.0 technology, participants are presently able to connect with others in a more meaningful way than before and use these connections to improve the quality of their work (Archambault et al., 2010; Wheeler, 2009).

The developments in social media provide an avenue for the formation of networks, which effectively allow individuals to absorb information with a personal scope and sequence (Siemens, 2006). Individuals can search for information with a wide lens and yet organize the information found in a useful manner. Within the framework of connectivism, learners must constantly evaluate the worth of newly acquired knowledge in order to distinguish useful information from extraneous information (Siemens, 2006). Information distributed through new connections helps improve performance, remove traditional hierarchical barriers, and concentrate on quality performance (Cross, 2007, p. 5). According to Siemens (2005), "the ability to recognize when new information alters the landscape based on decisions made yesterday" (p. 5) is a critical component for learning during the digital age.

Downes (2005, 2012) and Siemens (2005, 2006) did not limit the concept of connectivism to the online environment. The act of learning is the connection between individuals and organizations. A distinguishing characteristic of connectivism is the acceptance of learning as a collaborative act rather than an individual endeavor in society (Siemens, 2005, 2006.). According to Downes (2012), the underlying message of connectivism is knowledge "is not something we can package neatly and pass along" (p. 611). Additionally, the perception of community is changing (Benkler, 2006).

Changes in Perception Related to Connectivism

Communities now resemble "a mesh of loosely knit, overlapping flat connections"

(Benkler, 2006, p. 376). Downes (2012) describes successful networks as ones that can "adapt" and "avoid stagnation or network death" (p. 9). The framework of connectivism suggests both emotion and reason contribute to the learning process. Instead of managing and regulating information, organizations within our society "require a shift in view to foster, nurture, and connect" (Siemens, 2006, p. 5) with consumers. Teacher collaboration, whether it occurred face-to-face or online, created collegial relationships, which contributed to teachers' instructional planning, classroom management, and professional reflections (Coughlin & Kadjer, 2009; Hew & Hara, 2007; Hur & Brush, 2009). Learning, which occured through social interactions and informal networks, encouraged people to produce work of higher quality (Cross, 2007). Learning for the workplace has changed from individuals possessing knowledge, to how connected the worker is to the availability of the knowledge. Cross (2007) asserted the knowledge individuals maintain is information, which is learned from conversations or experiences.

The perception of learning is changing as well. Learning can be viewed as focused activity, which leads to adaptations in behavior (Pontydysgu, 2007). Knowledge is not found in one location, but is the convergence of ideas, which occurs when individuals seek information and those individuals provide feedback to one another due to a common interest (Kop & Hill, 2008; Najafi & Clarke, 2008; Siemens, 2006). According to Siemens (2006), when knowledge is gained, the learner is acting in a reflective manner while thinking about the information at hand. Knowledge changes so rapidly that it is no longer considered a personal possession and instead value is placed on where the knowledge is stored whether it is in an individual, a piece of technology, or a location on the internet (Siemens, 2006). In the connectivist framework, learning is viewed as a continuous, episodic blend of formal and informal training (Siemens,

2005, 2006). The theory of connectivism is significant in the emergence of technology-based teacher professional development, collaboration, and reflective practice (Kop and Hill, 2008).

Related Literature

This review of the literature provides an overview of teachers' perceptions of collaboration as a means of professional development. The benefits and detriments of face-to-face and online collaboration are also examined. The related literature looks at both teacher collaboration and technology-based teacher collaboration, with an emphasis on how technology-based collaboration has impacted professional development and, in the larger context, teacher connectedness. The scholarly books and articles that are discussed in this literature review are varied and included quantitative, qualitative, and mixed methods research related to teacher collaboration. Some of the books and articles are foundational and focus on teacher collaboration while others examine teacher perceptions regarding the implementation of technology-based collaborative experiences. I also included research regarding developments in social media in regards to teacher collaboration, which directly relates to this study.

Definition of Teacher Collaboration

For the purpose of this literature review, teacher collaboration is defined as a network of individuals who share interest in a common area of knowledge and freely exchange information in order to improve professional and/or student performance (Coughlin & Kajder, 2009; Dougherty, 2009). Teacher collaboration is a "hands on, helpers helping one another process" (Dougherty, 2009, p. 10) during which knowledge is shared. Dougherty (2009) extended this definition by describing collaboration in the field of education as "an interactive planning, decision-making, or problem solving process" (p.11).

Historical Perspective of Teacher Collaboration

Within the American educational system, collaboration does not have a long history. Early in the twentieth century, John Dewey regarded the defining element of learning as the transformation of static information to knowledge with personal meaning and application (Dewey, 1938). Dewey's views supported his position that prior experiences provide skills to help one understand new situations. He further described learning as a cooperative endeavor, which not only involved students and teachers, but all of society (Dewey, 1938).

Though Dewey's views on learning have greatly impacted teaching today, early in American education the social efficiency movement overshadowed his positions (Labaree, 2010). Labaree indicated education at this time became focused on creating productive workers and individualism. The social efficiency movement swayed schools and teachers to follow the same goals as industries: improve production and lower costs while stressing individual efficiency (Labaree, 2010). Schools were modeled after factories and administrators supervised teachers to guide the professional development and instructional practice (Lortie, 2002).

Over the last forty years, teacher professional development underwent several changes in model and delivery; however, those models have moved steadily toward teachers working in a collaborative manner (Coughlin & Kajder, 2009). Teacher professional development was often considered to be an isolated, individual task, which might include some limited interaction with other educators (Flinders, 1988; Lortie, 2002). Teachers increased professional knowledge by attending workshops, taking advanced degree classes, or reading journal articles. In the late 1980s, professional development was viewed as a means to advance the education of teachers, improve teacher practices, and support the relationships between teachers and administrators (Abdal-Haqq, 1989). However, teachers were continuing to participate in professional development largely in isolation. The idea that good teachers are born not made continued to

diminish the importance of planning and collaboration in the teaching profession (Stigler & Herbert, 1997). In a study comparing mathematics instruction in the United States, Germany, and Japan, researchers ascertained, "Our biggest long-term problem is not how we teach now but that we have no way of getting better" (Stigler & Herbert, 1997, p. 20).

The move toward more collaborative models of teacher professional development is not unlike the move toward the factory model classrooms of the past. In our current climate, business leaders are still influencing the field of education with praise of using teams and emphasis on learning to increase productivity (Drucker, 1994; Senge, 1990). The word collaboration is currently used in many professions, including education. During the 1990s, researchers in the education field began to call for professional networks and peer review to become methods used to increase teachers' content knowledge and improve instructional practices (Darling-Hammond, 1998; Stigler & Herbert, 1997).

Developments in technology created changes in the educational setting. In 1969, the United States Department of Defense formed a network by becoming connected to computers at several United States colleges (Katz, 2008). By 1973, this network included the University College of London, creating an international set of connections. The growth of the network continued. By 1984, the system integrated 1,000 host computers, and by 1987 more than 10,000, including computers in seven additional countries. More than one million users were connected in the system by 1990, and this year also saw the beginning of the World Wide Web. These developments in the field of technology and computer science broke new ground for our society in the area of business, media, education, and personal communication. Due to developments in wireless technology, Fortune 500 companies were using wireless communication technology in a variety of ways by the year 2000. The use of technology began to spread through the field of

education as well. The growth of the technology industry and the emergence of Wi-Fi signified that "being digital is indeed a lifestyle and that all members of the academic community will engage the networked information economy" (Katz, 2008, p. 34).

Professional development in the field of education is considered most effective when it is timely, data-based, voluntary, continuing, and collaborative (Brancato, 2003; Smith, 2001; Smith, Hofer, Gillespie, Solomon, & Rowe, 2003). Effective professional development for educators has evolved from listening to experts during workshops taking place outside the school to becoming an ongoing part of the workday (Schlechty 2002, 2011). Teaching is most typically collaborative through team teaching and/or discussing relevant topics such as student work, curriculum, or professional reflections (Lundsgaard, 2004; Schlechty 2002, 2011). Professional development, once regarded as a place where teachers had professional wisdom passed on to them by an expert, is now viewed through the relationships established in a community of professionals who collaborate and focus on common goals and outcomes (Lundsgarrd, 2004; Schlechty 2002, 2011). The policy of the National Board of Professional Teaching Standards (NBPTS) asserted teachers should collaborate to improve student learning and recommended teachers work collaboratively with others, including businesses and parents, to build learning communities (NBPTS, 2011). Professional organizations including the National Council of Teachers of Mathematics (NCTM) and the National Council of Teachers of English (NCTE) upheld the importance of teachers working collaboratively by addressing the issue in policy statements (NCTE 2011, NCTM 2011). Researchers Ketterlin-Gellar et al. (2015) asserted, "meaningful collaboration benefits educators and students alike" (p. 57) through its impact on the culture of the school itself.

Research indicated improvement in school and teacher performance when collegiality is increased (Bertrand et al., 2006; Broda et al., 2010; Greenhow, 2009; Harmon et al., 2007; Hur & Brush, 2009; Schlechty, 2002, 2011). Teacher collaboration has been investigated primarily in face-to-face settings; however, with the growth of technology-based communication, some research has been conducted in the area of online collaboration, though more in depth information is needed (Archambault et al., 2010; Coughlin & Kadjer, 2009; McLoughlin & Lee, 2010).

Recent Developments in Teacher Collaboration

School reform movements to improve student performance address the difficult situation of changing the way teachers plan and deliver instruction. Educators want opportunities to interact with their colleagues in professional discussions and development (Erkens, et al., 2008; Joy, 2009; Strahan & Hedt, 2009). Teachers understand addressing the needs of learners and improving student achievement are topics too important to restrict to a single experience. The basis of such collaborations is trust built upon members' mutual respect, professional competence, and personal as well as professional integrity (Erkens et al., 2008).

Building a network based on teacher collaboration is a key element for creating challenging work and improving student learning (Erkens et al., 2008; Schlechty 2002; 2011). According to Schlechty (2002, 2011), the most obvious benefits of increased teacher collegiality were the creation of quality work, the development of highly engaged classrooms, and the improvement of student achievement. Through observation and constructive feedback, teachers are more prepared to effectively implement research based practices and discuss the outcomes for students (Ketterlin-Gellar et al., 2015). Erkens et al. (2008) found positive change in the area

of instructional practice, communication, and relationships when collaboration became part of the school culture.

The establishment of collegial networks in educational settings has other benefits as well. Fullan (2002) and Erkens et al. (2008) indicated a significant change in the improvement in teacher relationships when teachers formed collaborative networks. If teacher relationships improved, the school also demonstrated an improvement in the area of student performance (Erkens et al., 2008; Fullan, 2002; Schlechty 2002, 2011). Another benefit was professional networks provided teachers with increased opportunity for reflective practice and improved communication without fear of penalty (Cain, 2001; Makinster et al., 2006; Schlechty 2002, 2011).

The desire to communicate and seek interaction with other educators in areas of similar interest along with advancements in technology-based communication provides teachers with a new avenue for collaboration. In the past decade, developments in social media have created an integrated experience on personal and professional levels. These developments have changed how society consumes, validates, and shares knowledge (Siemens, 2006). Social media has led to the creation of connections and communities where one feels present, even at a distance (Tomita, 2009). Tomita (2009) stated, "Technology provides a vehicle to foster the development of communities, where learning is infused with social interactions among students, with teachers, and with others who have traditionally been considered outside the traditional structure of the school" (p. 189).

Advantages of Technology-Based Collaboration

Online communities and resources provide teachers with the opportunity to actively expand their own knowledge base and collaborate with others in meaningful ways (Stuckey,

Hebberg, & Lockyer, 2001). Teachers may participate in communities of practice, communities of learning, and communities of purpose within their schools (Speitel, 2003). According to Speitel (2003), online communities, however, are "meeting places for learners on the Internet designed to facilitate interaction and collaboration among people who share common interest and needs" (p. 1) without regard to where they live or work. Online resources provide a forum for exploring educational possibilities for both novice and experienced teachers (Makinster et al., 2006). Successful web-based teacher collaboration addresses current educational issues, is accessible at all times, and has a policy regarding responsibility for all users in place (Reilly, 1999). The success of online collaboration in a format such as a discussion forum is dependent upon the sustainability of the website (Farooq, Schank, Harris, Fusco, & Schlager, 2007; McLoughlin & Lee, 2010). In a study by Farooq et al. (2007) important components for sustainability of an online collaboration website were revealed to include: enhanced user participation, a feeling of community among users, flexible gathering places online, and strong leadership where others were encouraged to become leaders within subgroups. The Horizon Report, an annual report which describes qualitative research on new technologies expected to affect the field of education, proclaimed developments in the area of social media encourage the emergence of communities through access to one's own work and/or communications as well as those of others of similar interest (New Media Consortium & EDUCAUSE, 2008).

A study for the National Staff Development Council (2001) established several benefits of online professional development. According to the study, online staff development allowed for construction of knowledge, expanded access to information, increased flexibility of time and location for instruction, and increased opportunities for reflection and communication (National Staff Development Council, 2001). When online networks were established to support

classroom instruction and the quality of the experiences were high, online learning communities produced satisfactory results with staff development, even with teachers who had little online experience (Newton et al., 2002). According to the Speak Up 2010 survey, conducted by Project Tomorrow (2011), 36% of teachers surveyed use technology regularly for participation in professional collaboration, while approximately 40% of teachers surveyed stated technology should be used to create opportunities for collaboration both inside and outside the school.

Hew and Hara (2007) determined technology is an effective method for promoting teacher collaboration and establishing a community of teachers dedicated to professional development. Access to technology provides opportunities for teacher collaboration and the development of professional learning communities through the use of email, the Internet, video streaming, and instant messaging. Kale (2005) noted web-based technologies allow educators to collaborate with peers on their own time and at a place of their choice rather than at a scheduled meeting at school or other prearranged location.

In addition to allowing teachers to collaborate without restrictions on time and location, online communication provides teachers with an environment conducive to reflective practice (Hur & Brush, 2009). Makinster et al. (2006) examined the use of web-based technologies for reflections of student teachers. The study compared three types of teacher reflection: journal, asynchronous discussion forum, and a web-based community discussion forum. In this study, students who were randomly assigned to write student teaching reflections in a journal did so individually in an electronic journal format and reflected one-on-one with the professor. Students in the study who reflected on the asynchronous discussion forum posted reflections and received feedback only from the professor of the class and peers participating in that specific online forum. The remaining students participated in a web-based community discussion forum,

which consisted of 583 members. The web-based community discussion forum was open to a wider audience, including other students, student teachers, and professors. Although this study did not involve a large population, the results implied web-based discussion forums provide a way for student teachers to reflect meaningfully on their teaching experience and share information with others, including experienced teachers (Makinster et al., 2006). Zhao and Rop (2001) concurred the impact of interaction through technology-based communication positively affects teacher reflection as the process of written discussion provides teachers with the time necessary to consider responses and offer a degree of anonymity not found in face-to-face settings. In a study by McLoughlin and Lee (2010), the research also determined a peer mentoring relationship between pre-service teachers using social-based technology created a community of "mutual engagement, joint enterprise, and shared repertoire" (p. 26).

The ease of appropriating tools, such as smart phones and other handheld technology, has also made an impact on its uses in both professional and personal communications. Handheld technology is an effective tool for teacher professional development and instructional planning due to the convenience of access to information, without regard to time or place. A study on teachers' use of handheld technology in professional settings indicated 85% of teachers would be willing to spend personal money for handheld computers to use in classroom instruction, professional development, and collaboration with peers (Power & Thomas, 2007).

Peer-Mentoring Through Technology-Based Communication

Zhao and Rop (2001) pointed out developments in communication technology afford teachers at all levels, novice and experienced, opportunities for individualized professional development tailored to meet their needs and interests. Research indicated novice teachers need both instructional and psychological support to navigate the intricacies of working in a school

(Hebert &Worthy, 2001; Hew and Hara, 2007). Hebert and Worthy (2001) further noted when novice teachers have no one to turn to "they become frustrated, fatigued, and confused" (p. 908).

In a study of preservice English teachers, Scherff and Paulus (2006) investigated how an online discussion forum could be used to offer support as student teachers completed an internship program. The researchers also conducted a second study further investigating the dialogue used by a larger group of novice teachers in a discussion forum (Paulus & Scherff, 2008). Both studies involved preservice teachers using an "asynchronous discussion forum while they were in field" (Scherff & Paulus, 2006, p. 357). According to Paulus and Scherff (2008), both discussion forums were intended to provide preservice teachers with a safe place to "ask questions, vent frustrations, or make comments" (p. 118) outside of class. Scherff and Paulus (2006) found the preservice teachers utilized the discussion forum largely "to request and provide psychological support to each other" (p. 368). In 2008, the researchers supported this finding, but noted the emergence of "emotional engagement", "responsiveness to each other" and "a particular discourse pattern" (Paulus & Scherff, 2008, p. 128). The researchers concluded the freedom of topic discussion aided the preservice teachers in building relationships for emotional support, and also provided instructional support.

McLoughlin and Lee (2010) conducted a research study through a teacher-training program at Australian Catholic University. In 2007 a new component was added to the teaching partnership between the university and the student teachers allowing them to participate in a peer mentoring relationship. The creation of an online community, which included "Web logging" and "threaded voice discussion tools" was used to "facilitate online peer mentoring among pre-service teachers and provide them with opportunities to reflect on teaching prior to entering full-time employment" (McLoughlin & Lee, 2010, p. 18). This study involved 19 student teachers

who were required to reflect on three significant experiences using both text and voice as well as write a report and share a 90-second recording of a separate incident. In addition to this, student teacher participants were asked to recognize issues for which they needed advice and respond to at least one other student teacher on his/her postings to offer feedback and support. At the end of the term, the student-teacher participants were responsible for creating a two-minute reflective podcast to share highlights of the practicum experience.

According to McLoughlin and Lee (2010), the study, which incorporated the use of questionnaires, focus group interviews, and anecdotal feedback from both students and staff, produced a large amount of data that supported the "relevance and effectiveness of the adopted approach to creating an e-learning community" (p.25). The researchers found the student-teacher participants benefitted from the voice-recordings of significant experiences, but were less enthusiastic about the use of the blog and referenced the immediacy of communication as an issue. The researchers also expressed concern with the student-teacher participants reflecting deeply on their own experiences, but noted the participants had initially been paired and the more productive conversations happened when they responded to others due to a shared concern (McLoughlin & Lee, 2010).

Participation in Online Professional Collaboration

Some online collaborative sites are developed as formal professional development environments. Research indicated a less is more approach encouraged participation in online communities with preservice teachers (McLoughlin & Lee, 2010; Paulus & Scherff, 2008). McLoughlin and Lee (2010) determined the participation of preservice teachers increased in their study when participants responded to discussions based on interest rather than predetermined pairings. Scherff and Paulus (2006) determined when participants know each other personally

highly structured online discussions "may promote more critical thinking and reflection" (p. 369). In their second study in 2008, Paulus and Scherff determined allowing a more natural generation and flow of discussions by students created a "strong sense of support" and "a growing sense of connection" (p. 129) among the participants.

Collaboration begins with the willingness of participants to communicate and network. In a collaborative community the participants "not only share perspectives, but also challenge and refine those perspectives (Murphy, 2004, p. 423). Using both quantitative and qualitative research methods Tamjidyamcholo, Kumar, Sulaiman, and Gholipour (2015) determined the most decisive feature in using professional virtual communities was "ease of use" (p. 2528), which supported conclusions found in the study conducted by Najafi and Clarke (2008). Contributors having a positive attitude toward the professional virtual community and their perception toward the effectiveness of the community were also significant factors in participation (Najafi & Clarke, 2008). Tamjidyamcholo et al. (2015) acknowledged "perceived security, perceived complexity, and Internet self-efficacy proved to be significant drivers of the perceived ease of use" (p. 2531).

Cabrera, E. and Cabrera, A. (2005) concluded knowledge sharing to be an important facet of current management practices. "Social ties or patterns, and frequency of interactions with other employees, a shared language, trust, norms for sharing, group identification, perceived costs, perceived rewards, self-efficacy, and expectations of reciprocity" (Cabrera, E. & Cabrera, A., 2005, p.724) were determined to be important factors to encourage the sharing of information among colleagues. Cabrera, E. and Cabrera, A. found having a "well designed, user-friendly technology tool that simplifies the task and reduces the time necessary for sharing one's ideas

with others" (p. 731) was an effective method to complement existing collegial networks and lessen the expense of sharing knowledge.

In a study involving teachers from online communities, which developed independently of an organization, Hur and Brush (2009) noted the participants wanted to share "knowledge and emotions" (p. 299). Participants claimed they frequently took part in the online communities to experience "a sense of camaraderie" (p. 297) and the anonymity of the community allowed for more freedom of discussion.

The reasons teachers have given for participation in online communities were wide-ranging. Research studies supported teacher participation in online communities for both instructional and psychological support (Hur & Brush, 2009; Scherff & Paulus, 2006). As indicated by the research studies noted in this section, the development of professional communities online, where ideas, issues, and support are shared freely is essential to increase teacher participation in those communities (Hur & Brush, 2009; McLoughlin & Lee, 2010; Scherff & Paulus, 2006; Paulus & Scherff, 2008).

Professional Reflection Through Online Collaboration

According to Schlechty (2002, 2011), teachers who genuinely wish to help students improve their performance must be just as sincere about improving their own professional performance on both technical and intellectual levels. Schelchty (2002) stated teaching "is more than a technical undertaking; it is an intellectual and moral undertaking" and teachers need to have a "rich intellectual life of their own if they are to inspire students to pursue academic matters with any amount of seriousness" (p. 40). Both historical and current research support professional reflection is necessary for teachers to continue to pursue learning as a lifelong goal.

In 1938, Dewey noted about theory and practice, "For any theory and set of practices is dogmatic which is not based upon critical examination of its own underlying principles" (p. 22).

The research by Hur and Brush (2009) indicated a significant attraction to an online professional community was anonymity because teacher participants were worried peers would view them as incompetent if they asked for advice or shared difficulties. In addition, the researchers noted the anonymity of online professional communities helped participants in their study "reflect on situations with objectivity" (Hur & Brush, 2009, p. 298). Carpenter (2016) also pointed out the very nature of online professional development allowed teachers to remove themselves from uncomfortable or unhelpful situations by simply disengaging or unfollowing the source.

Carpenter (2016) acknowledged the emergence of online platforms and social media encouraged teachers to take an active role in their professional development. Dewey (1938) suggested reflection began with a problem and expert teachers adjust their thinking to fit the situation at hand. Carpenter (2016) noted online professional development allowed teachers to "take an active role in their learning" and "develop practice based expertise" (p. 30). Teachers reported applications such as Twitter and Pinterest were sources of professional "invigoration" (Carpenter, 2016, p. 31).

In a study involving student teachers in Taiwan, Yang (2009) investigated the use of a blog as a reflective tool for teacher-education program. The qualitative data included surveys, postings, comments, and dialogue exchange between instructors and student teachers. The instructors posed questions when the student teachers posted to encourage more reflective practice. In this study, the instructors shared their own reflections when they felt like student teachers were not active enough. The instructors then "served as role models" because the

student teachers viewed them as willing to make themselves "vulnerable to share their thoughts" (p. 17). Yang found blogging provided a course more flexible for time constraints while posting messages to each other led to "a kind of inquiry that accentuated critical reflecting" (p. 18). While the participants indicated the "convenience of blogs to reflect and give comments" (p.18) as a benefit to sharing in this manner, the study also revealed the lack of anonymity as an area of concern for the student teachers involved.

Using technology to reflect on professional practices provides teachers the anonymity, a desired component, to participate without fear of hurting the feelings of a peer or incriminating themselves (Hur & Brush 2009; Yang 2009). Additionally, using technology for reflective practice allows time to carefully consider thoughts and ideas before sharing (Carpenter, 2016; Najafi & Clarke, 2008; McLoughlin & Lee, 2010). Online postings also provide time to process information received before responding (Paulus & Scherff, 2008; Zhao & Rop, 2001).

Limitations of Online Professional Collaboration

Kale (2005) documented two major disadvantages for web-based teacher collaboration. According to Kale (2005), these two shortcomings were "low participation and low reflective message content" (p. 1). Kale explained the content of message boards was not meaningful without adequate participation in discussions.

Lack of teacher reflection is another limitation to online collaboration between teachers (Bonk, Ehman, Hixon, & Yamagata-Lynch, 2002; Kale 2005). Researchers discovered not only was a low number of message board discussions indicative of problems in online teacher collaboration, but many of those discussions lack any significant information with regard to teacher professional development or reflection (Bonk et al., 2002; Kale, 2005). McCoughlin and Lee (2010) observed lower productivity and response with assigned pairings of collaborators rather than when participant response was based on interest. Participants in this study noted they

were not always able to provide practical advice although they did offer empathetic responses. Other issues researchers considered as disadvantages in teacher participation with online collaboration include trouble with Internet access, difficulty in use, and time constraints (Hawkes & Goode, 2002; Kale, 2005; Najafi & Clarke, 2008; Tamjidyamcholo et al., 2015).

Many established online communities have failed due to the inability to sustain the infrastructure, funding, users, and/or human resources necessary for the community to continue (Farooq et al., 2007). Other disadvantages to web-based collaboration included the unavailability of technology to all educators, training, and/or frustration with the technology itself (Makinster et al., 2006; Najafi & Clarke, 2008; Romero & Sorden, 2008). Additionally, teachers' unfamiliarity with technology and its capabilities prohibited some from fully utilizing web-based technologies in reflective practice or collaboration (Makinster et al., 2006; Pedersen & Marek, 2007). Teachers believed the limitations in what content can be openly discussed was also a disadvantage to online collaboration. Issues of confidentiality, ethics, and even fear prevented teachers from sharing information on a message boards when the conversations were believed to be too public (Makinster et al., 2006).

Developments in Communication Technology

Developments in social media create opportunities for varied levels of communication and a rapid exchange of ideas. How information, knowledge, and mores are produced and shared impacts the way individuals view the world (Benkler, 2006). Advancements in technological developments provide individuals with greater opportunities to communicate with friends and family, and with "geographically distant or more loosely affiliated others" (Benkler, 2006, p. 382). Communication can now occur through individual broadcasts, through collaborative asynchronous online meetings, or through shared Internet sites. This communication can form connections between individuals of similar interest who may never

have met before (Benkler, 2006; Siemens, 2006). Benkler (2006) asserted through participation in technology-based communication individuals can participate in discussions important to society and can also use the media to become more reflective on personal beliefs and actions.

Developments in communication technology have dramatically increased the numbers of individuals who participate in self-learning (Davidson & Goldberg, 2009). Advancements in communication tools enable the formation of networks where individuals encourage and expand the contributions of others and participate reciprocally. This interconnectedness provides a new meaning for lifelong learning. Learning is now lifelong in the sense one must continually acquire new knowledge in order to grow, but also to sustain in the face of new challenges (Davidson & Goldberg, 2009).

Benefits of Using Social Media for Collaboration

The availability and ease of use of recent technology-based communication tools gives teachers access to information they can obtain outside of the school building and allotted planning times (Carpenter, 2016). The development of social software and emerging technologies has afforded teachers the opportunity to "narrow the divide between producers and consumers" (Pontydysgu, 2007, p. 5) of information. In a study on public school teachers' use of technology, the National Center for Educational Statistics (NCES) reported 94% of teacher respondents indicated they often used the Internet for instructional support and/or administrative purposes (Gray, Thomas, & Lewis, 2010). In the same study, researchers affirmed 16% of teachers surveyed reported using blogs or wikis, while 8% stated they used social networking sites for instructional and/or administrative support (Gray, Thomas, & Lewis, 2010).

Harmon et al. (2007) noted due to the impact of high-stakes testing and the downturn of the economy, many administrators do not want teachers to be out of the classroom during the school day for professional development. Collaboration through technology-based tools

provides opportunities for professional development without requiring teachers to be absent. Using technology such as tablet computers and smart phones with multimedia capabilities provides teachers with a timely avenue for research and communication with other educators through social networking websites, blogs, video conferences, and virtual communities (Carpenter, 2016). Synchronous technology-based communication gives teachers immediate authentic feedback on instructional strategies and practices as questions arise (Coughlin & Kajder, 2009; Watters, 2010).

Coughlin and Kajder (2009) recognized access to an extensive audience, multiple methods for communication, and opportunities for professional recognition from peers as beneficial aspects of collaboration through social media for educators. Teachers used these technologies to create a "personal learning network (PLN)" (Waters, 2011, para. 1) to help resolve issues involving content and pedagogy immediately. The give-and-take nature of communicating through social media increased the sense of belonging to a professional community for teachers (Cady & Rearden, 2009; Carpenter, 2016; Coughlin & Kajder, 2009; Hew & Hara, 2007).

Web 2.0 tools. When using social media tools, the sense of feeling connected to others is important for family groups, professional groups, and social groups (Hanumara & Coyle, 2008; Tomita, 2009). Microblogging tools allow users to mix blogging, text messaging, and networking in short, timely communications ranging from short sentences to video links (Tomita, 2009). Tomita (2009) determined convenience, mobility, and the speed of response to be distinguishing factors of utilizing microblogging tools.

Facebook (http://www.facebook.com), Ning (http://www.ning.com), Classroom 2.0 (http://www.classroom20.com), Twitter (http://twitter.com), and Edmodo

(http://www.edmodo.com) are examples of social networking tools. These tools provide a personal network of individuals for instructional support, research-based best practices, recognition for accomplishments, and reflection for professional development. Social media sites such as Facebook, Twitter, and Edmodo are both web and mobile application based, which increases the convenience of using the sites as communication tools (Nielsen, 2013).

Twitter is noted for providing significant collaborative experiences for educators (Leoni, 2012). Twitter users can search for specific information using hashtags, a type of label allowing users to find specific content, participate in Twitter chats on particular topics, or collaborate through Edcamps, which are "organic participant-driven professional learning experiences" (Edcamp Foundation, n.d.). According to Carpenter (2016), teachers participate in Twitter chats where they "feel like their ideas matter" and "as of January 2016 educators had attended more than 925 Edcamps worldwide" (p. 31).

Teacher usage of Web 2.0 tools. Teachers use the Internet for researching, organizing, and sharing prodigious quantities of information. Social bookmarking "relies on a web-based system of classification known as folksonomy" (Ruffini, 2011, para. 5) or tagging to collect and organize web resources. Social bookmarking websites, such as Delicious (https://del.icio.us/), Diigo (https://www.diigo.com/), and CiteULike (http://www.citeulike.org) also provide teachers with a means to organize and share bookmarked information, such as websites, books, and journal articles. Some social bookmarking websites, such as Diigo, also have capabilities allowing users to save into public or private libraries and highlight specific information, which is beneficial for collaboration. Using technology-based communication as an instrument for collaboration provides educators with tangible instructional support, such as a bookmarked site

with specific information highlighted, and emotional support for scholarly endeavors in a profession where individuals are still largely isolated (Broda et al., 2010).

The more recent emergence of Pinterest (http://www.pinterest.com), Instagram (https://www.instagram.com), and Snapchat (https://www.snapchat.com/) adds a new dimension of sharing materials and ideas for educators. Pinterest is a web and mobile application, which is free to use, but requires registration. Pinterest involves the idea of creating boards and sharing ideas of similar interest. Pinterest allows educators to "exchange lesson plans and ideas", "host pinning parties", "request constructive feedback", "find other teachers within your niche", "contribute to collaborative boards", "participate in professional development", "build projects together", and "stay on top of trends" (Levy, 2016).

Instagram and Snapchat are both also free social media applications. Both social media applications, Instagram and Snapchat, allow users to share photographs and videos (Freberg, 2016). While most of the information provided for these applications involves classroom use, there are some indications the sharing of pictures and video are being used for teacher collaboration. On her Education to the Core website Liscom-Owner (2017) highlighted the usefulness of hashtags, as used in Twitter, in following other educators and for searching for specific content. Snapchat can also be used as a visual collaborative tool. Karen Freberg (2016), an assistant professor at the University of Louisville, affirmed she used Snapchat in collaboration with both her students and peers. Freberg pointed out the public and private features of Snapchat provide an excellent forum for visual feedback and collaboration.

One of the most useful resources on the web is Google (Mendoza, 2009). The Google site is "a virtual one-stop shop of resources" (Mendoza, 2009, p. 3556). Google allows users to share and to collaborate on documents, videos, mail, calendars, and websites. The ability to

work as partners with others on the creation of documents, videos, and websites is one of the components of the Google site, which makes it a critical tool for professional collaboration. Users of the Google site have the ability to integrate different types of media, post it to the web, and make the knowledge accessible to any interested parties (Mendoza, 2009). Google for Educators (http://www.google.com/educators/index.html) is a site specifically for teachers. This site includes tools specifically designed for educators to help organize information, search for classroom activities, and collaborate with others through a teacher community.

Concerns in Using Social Media for Collaboration

Using technology-based communication as a collaborative tool is not without issue. Research in the area of teacher collaboration and technology-based communication, such as social media, is in the early stages (Coughlin & Kajder, 2009; Greenhow, 2009; Hur & Hara, 2007). Technologies, which create opportunities for collaborative practices, are changing rapidly, and as a precautionary measure many public schools use filters to block social networks (Coughlin & Kajder, 2009; Davis 2010). If filters are removed to allow social networking websites, school systems and teachers must be prepared for "privacy issues, proper management, and cyber security" (Davis, 2010, para. 5).

Collaboration through technology removes the ability to establish a visual connection with others (Cady & Rearden, 2009). In a study of rural mathematics teachers, Cady and Rearden (2009) found while teachers value the collaborative nature of an online community they miss face-to-face interactions. The teachers involved in the study acknowledged having difficulty communicating with a lack of visual cues and an inability to read the body language of those with whom they were conversing (Cady & Rearden, 2009). Communicating with limited words and without visual cues are possible factors in preventing some teachers from venturing

into technology-based collaboration opportunities (Adie, 2010). Teachers, who were participating in student internships utilizing technology-based collaborative tools, have expressed concern for hurting the feelings of classmates or jeopardizing their grades if they openly conversed and shared thoughts in a deliberate online community where their identities were known (Yang, 2009).

The limited nature of texting and microblogging jargon is also cause for some educators to express concerns about its impact on literacy (Shaugnessey, 2008). Ream (2008), author and educator, claimed technology-based jargon is destroying the way children read, write, and think. As the popularity of texting increases, teens have adapted this abbreviated way of communicating into both their written and spoken language (Shaugnessey, 2008).

The nature of sharing knowledge through social media is also raising questions concerning authorship, plagiarism, and censorship (Katz, 2008). According to Katz (2008), the ease with which digital information can be manipulated raised questions of ethical practice in scholarly fields in the context of sharing knowledge gained through networks. Katz (2008) asserted colleges and universities will have to make a focused effort in order to change the management of intellectual property, much like the movie and music industry have had to do.

Access to social media is pervasive in our culture today. The ubiquitous nature of online communities encourages people, regardless of qualification, to share ideas. Carpenter (2016) encouraged educators to be thoughtful with whom they engaged as "producers and consumers" (p. 33) of information shared online. According to Carpenter (2016) teachers need to be thoughtful and connect with more individuals than those who share their pre-existing beliefs as well as be wary of those "peddling" (p. 33) for their own benefit.

Social media has created a shift in our society in regards to the nature of public information. Teachers are held to higher standards than individuals in other professions (Baig, 2011). Accounts of teachers losing jobs, being placed on suspension, and having personal information examined by the public are newsworthy events. A recent example involved a teacher who blogged unflattering comments about her students, which sparked debate on national news programs (Canning & Katrandjian, 2011). Educators also have a responsibility to be aware of their district's policies for online communication, as well as to observe federal privacy laws, such as the Family Education Rights and Privacy Act (Davis, 2010).

Summary

Multiple researchers agreed web-supported professional communities offer much to teachers who wish to collaborate with others within grade levels or content areas (Carpenter, 2016; Hew & Hara, 2007; Kale 2005; Makinster et al., 2006; Power & Thomas, 2007; Zhao & Rop 2001). Web-based communication presents multiple opportunities for teachers to self-reflect, seek knowledge from peers, and create their own time for professional collaboration. Using technology-based collaboration can also provide a sense of anonymity, which encourages teachers to share and reflect freely without fear of hurting the feelings of a colleague or damaging their professional standing within a group (Hur & Brush, 2009).

There are some disadvantages, however, to web-based communications. Researchers agreed, such issues, as privacy, time, sustainability, and access are areas of concern (Coughlin & Kajder, 2009; Davis 2010). Lack of personal communication is also noted as a disadvantage (Cady & Rearden, 2009).

The pervasive nature of social media is noted both as an advantage and a disadvantage. Teachers have the freedom of self-directed learning and can collaborate with whomever they choose which can be both a benefit and a detriment (Carpenter, 2016).

The benefits noted support the idea of continued investigation and study of web-based teacher collaboration. Research also indicated a need for both qualitative and quantitative investigations to contribute to the body of knowledge on web-based teacher collaboration (Bertrand et al., 2006; King & Newmann, 2000; Paulus & Scherff, 2008; Zhao & Rop 2001). Current developments in the areas of social media also warrant investigation. Cady and Rearden (2009) noted in their study of rural mathematics teachers that pedagogical changes require study over time and speculated if the information can be studied quantitatively. The large quantity of social media applications allow teachers to investigate specific content, participate in self-motivated professional development, and share information world-wide through the use of a hashtag or video (Leoni, 2012; Liscom-Owner, 2017).

Research on teacher collaboration in technology-based environments is in the early stages, but its use in teacher induction programs is shedding light on the nature of collegial conversations (McLoughlin & Lee, 2010; Paulus & Scherff, 2008). Coughlin and Kadjer (2009) suggested "moving the space of interaction to a virtual environment presents new opportunities that still require our continued attention to lessons learned when working with teachers in face-to-face contexts" (p. 12). Continued attention to the area of teacher collaboration, which is taking place through social media, is warranted in order to investigate the depth of teacher discussions and reflections, as well as the impact this may have, if any, on professional development (Coughlin & Kadjer, 2009; Archambault et al., 2010).

CHAPTER THREE: METHODS

Overview

This chapter describes the research process chosen to examine middle school teachers' perceptions regarding the impact of technology on teacher collaboration. This study was qualitative in nature in order to provide a detailed understanding of the teachers' perspectives and attitudes toward technology-based peer collaboration. The process of a qualitative study helped reveal connections between teacher perceptions of collaboration and the impact, if any, that the utilization of technology for communication purposes had on their collaborative practices. This chapter provides a description of the research design, the research questions, a description of the participants, an explanation of the setting, the researcher's biography, an account of data collection, details of data analysis, and a description of the efforts to establish trustworthiness, which were employed throughout the study.

Design

Qualitative Research

Qualitative research consists of several approaches to advance the knowledge of social phenomena as viewed by the participants (Bloomberg & Volpe, 2008). The type of study conducted for this research was phenomenological in design. One vital characteristic of qualitative research is the assumption the world is ever changing and knowledge gained through research is fluid (Bloomberg & Volpe, 2008). Research conducted through qualitative traditions seeks to present data thorough descriptions and give voice to the participants through a shared lived experience (Bloomberg & Volpe, 2008). In this study, where the shared phenomenon is teacher attitudes and perceptions toward collaboration, the specific phenomenological tradition utilized was hermeneutics.

The intention of a phenomenological study is to expand the "understanding of the nature or meaning of our everyday experiences" (van Manen, 1990, p. 9). Utilization of the phenomenological approach in this study allowed the focus to be on the meanings of the teachers' perspectives and attitudes toward peer collaboration. Using the tradition of phenomenology in the study allowed me to attempt "to describe and interpret these meanings to a certain degree of depth and richness" (van Manen, 1990, p. 11). Phenomenology is a qualitative research tradition where data is obtained from first-person reports of life experiences (Moustakas, 1994). Hermeneutical phenomenology is interpretive in nature and provides the depth necessary to explore the lived experiences of the participants in this study (van Manen, 1990). According to Seamon (2000), a phenomenological study must involve exploration into the purpose of the research through "direct contact with the phenomenon which may be accomplished through participation in the experience, watching and describing the situation and through in depth interviews" (p. 13). The meaning of a phenomenon, such as teacher collaboration, is multifaceted and to provide a narrative description of the findings would best relate the motivation of teachers to seek a connection with others for professional growth.

According to Moustakas (1994) the life experience being studied is the focus of the research. Phenomenology involves a methodology based on reflection and reduction (van Manen, 1990). Moustakas (1994) identified the steps in phenomenological reduction as: bracketing, horizonalizing, clustering the horizons into themes, and organizing the horizons into themes into a coherent textural description. This process involves placing the topic of the research in brackets and setting everything else aside to focus on the topic and questions. Horizonalizing involves giving all statements equal value and later eliminating overlapping or irrelevant statements, leaving only horizons to be clustered and organized thematically

(Moustakas, 1994). According to Moustakas (1994) the next step in the phenomenological research process is imaginative variation, in which the researcher examines how the experience came to be what it is. The final step is using reflective processes to weave together the meanings found in the experiences (Moustakas, 1994; van Manen, 1990).

Research Approach

I first considered using Moustakas' (1994) process to complete the research due to the clearly stated steps and the elimination of presupposition. However, Moustakas' approach stated, "Hermeneutic analysis is required in order to derive a correct understanding of a text" (p. 9). As I read more of van Manen (1990), however, and I began to analyze the data collected from interviews, I discovered the interpretive nature of my research was more suited to his approach. To find meaning in the interviews and participant journals, I needed some awareness of the participants' experience. Van Manen (2011) stated:

> The practice of human science is never simply a matter of procedure. Rather the reduction refers to a certain attentiveness. If we want to come to an understanding of the unique meaning and significance of something we need to reflect on it by practicing a thoughtful attentiveness. (Reductio section, para. 3)

This understanding of being aware of my prior knowledge and possible bias while trying to be as open as possible to the research findings lent itself more to van Manen's approach. This understanding also impacted the interview process because I could not totally remove myself from the situation and encourage participants to reflect on their own experiences. Van Manen's approach lends itself to the researcher being collaborative "in order to determine the deeper meanings or themes" (van Manen, 2011, Hermeneutic Interview Reduction section, para. 1) in interviews. In following van Manen's approach to a hermeneutic phenomenological study,

methods do not employ a series of steps, but rather a variety of activities aimed at interpreting meaning or significance associated with a phenomenon. Van Manen encouraged researchers to establish a strong connection to the phenomenon. He stated the researcher cannot "afford to adopt an attitude of disinterestedness" (van Manen, 1990, p.3). Adopting van Manen's approach also required me to consider the relationship and the significance of the parts of the study to the overall questions I was researching. Van Manen (1990) also suggested "explicating assumptions and pre-understandings" (p. 46), which he likened to bracketing. Instead of placing ourselves outside of what we know, van Manen recommended it was better to make any bias known. This process also involved using multiple sources of data collection such as interviews, observations, and journals and reflecting on the data using a wholistic approach, highlighting approach, and a "line-by-line" (van Manen, 1990, p. 93). Van Manen's processes involved reading and re-reading for reflection as well as reflective writing while reading. He described hermeneutic phenomenology as a means to "become more thoughtfully or attentively aware of aspects of human life which hitherto were merely glossed over" (van Manen, 1990, p. 154).

Zhao and Rop (2001) indicated quantitative studies involving technology-based teacher collaboration have revealed some data, such as frequency of participation in online communities, but have not shown the depth of collaborative discussions or the influence these discussions have had on teachers' professional practices. Coughlin & Kadjer (2009) specified the need for more research on the use of technology for teacher collaborative and reflective practice to help keep pace with the advancements in technology-based tools. A qualitative study in the hermeneutic phenomenological tradition was an appropriate design to provide a rich description of the depth of the teacher collaborative discourse in technology-based communication and face-to-face

settings, which is an identified gap in the research (Hew & Hara, 2007; Hur & Brush, 2009; Schlager et al., 2009).

Research Questions

The following questions served as a guide for this research study:

Research Question 1: What types of collaboration do rural middle school teachers seek to improve instructional practices?

Research Question 2: What factors influence teachers to seek and sustain collaboration with others through technology-based communication?

Research Question 3: How do teachers use technology-based communication tools to improve their professional practices?

Setting

The setting for this study was four middle schools located in rural Northeast Georgia. Information from the Census Bureau classifies the schools as rural (Georgia Department of Education, 2011, 2015). The United States Census Bureau (2011) defines rural areas as those not classified as urban and having a population of less than 2,500. The schools were located in an area accessible to the researcher. The four schools were from two districts in a region identified by the pseudonym River Valley Region Educational Service Agency. Schools from the region shared some training opportunities and experiences, therefore it was possible teachers at these schools interacted previously with one another. The variance in student demographics provided a broader scope through which to view teachers' perceptions. Permission was sought from the principal of each school before beginning the study, and written consent was requested from participants. Email communication was used to acquire permission from both principals and participants. Described below are the most recent demographics for these four public

schools, as provided on the Georgia Department of Education website (2015). Each school was assigned a pseudonym in order to protect their anonymity; those pseudonyms are North Middle School, South Middle School, East Middle School, and West Middle School.

North Middle School

North Middle School employed 43 teachers who had an average of 15 years teaching experience, and 74% had obtained at least a Master of Education degree. The teacher population included 30 female teachers and 13 male teachers. The school has two female administrators. Of the educators in this school, 42 were White and one educator was Asian.

North Middle School had an enrollment of 541 students. The ethnic backgrounds of the students were recorded as: 1.0% Asian, 1.0% Black, 2.0% Multiracial, 9% Hispanic, and 88% White. The general socio-economic status of the school population was revealed by the fact that 50% of the student population received free or reduced lunch. The school was not a Title 1 school, 17.4% of the student population received special education services, and 1% received English Language Learner (ELL) services at this school. The school received a rating of B for the 2015-16 school year (Georgia Department of Education, 2015).

South Middle School

South Middle School employed 38 teachers, of whom 31 were female and 7 were male. These teachers had an average of 13 years teaching experience. The teacher population at South Middle School was predominately White, however, one teacher was of Asian ethnicity, one was of Hispanic ethnicity and another was multi-racial. Of the teachers at South Middle School, 71% have obtained at least a Master of Education degree. The school had a female principal and a male assistant principal.

At South Middle School there was an enrollment of 508 students. The ethnic backgrounds of the students were given as: 2% Asian, 2% Multiracial, 3% Black, 41% Hispanic, and 51% White. The general socio-economic status of the school population was revealed by the fact that 76% of the student population received free or reduced lunch. The school was a Title 1 school. Of the student population, 16.1% received special education services, 12% received ELL services, and 2% were classified as having migrant status. The school received a rating of D for the 2015-2016 school year (Georgia Department of Education, 2015).

East Middle School

East Middle School employed 45 teachers, of whom 30 were female and 15 were male. Teachers at this school had an average of nine years teaching experience and 67% had at least a Master of Education degree. This middle school has one teacher in the population who identified ethnicity as Black, while the others were listed as White. The school had two male administrators.

East Middle School had an enrollment of 656 students. The ethnic backgrounds of the students were listed as: 1% Asian, 3% Black, 2% Multiracial, 8% Hispanic and 87% White. The general socio-economic status of the school population was revealed by the fact that 66% of the student population receives free or reduced lunch. Of the student population, 14.2% received special education services and 3% received ELL services. The school was a Title 1 school and received a rating of C for the 2015-16 school year (Georgia Department of Education, 2015).

West Middle School

West Middle School employed 40 teachers who had an average of 13 years teaching experience. Seventy-three percent had obtained at least a Master of Education degree. The teacher population included 28 female teachers and 12 male teachers. The principal of the school

was female and the assistant principal was male. All of the educators in this school were Caucasian.

West Middle School had an enrollment of 469 students. The ethnic backgrounds of the students were: 7% Asian, 3% Black, 32% Hispanic, 6% Multiracial, and 52% Caucasian. Students who received free or reduced lunch made up 70% of the population of West Middle School. The school was not a Title 1 school, and 18.3% of the student population received special education services. Seven percent of the population was indicated to receive ELL services at this school. The school was given a rating of D for the 2015-16 school year (Georgia Department of Education, 2015).

Participants

All academic middle school teachers from the four schools were asked to participate in the initial survey (Appendix H). The academic coach where I teach examined the survey for face and content validity. She has received training in teacher collaboration and since she works at the same school as me as an academic coach was not a possible participant in the research. The purpose of the survey (Appendix H) was to explore the attitudes of teachers concerning collaboration and technology-based communication for collaboration. The survey results revealed possible participants for the individual interviews, journaling experience, and focus group interviews. Teacher participants were asked to complete a signed consent form (Appendix G) before taking the survey. One hundred forty-two email requests were sent asking for volunteers to participate in the online survey. One hundred four volunteers returned the consent form and took the online survey. The results of the survey provided background information regarding general teacher attitudes and perceptions toward collaboration in both face-to-face

settings and through electronic communication. Table 1 describes the range of teaching experience of the participants in the survey.

Table 1

Years of Teaching Experience for Survey Participants

Teaching Experience	Participant (n = 104)	Percentage
1-5 years	17	16.3
6-10 years	33	31.7
11-15 years	16	15.4
16-20 years	15	14.4
21-25 years	14	13.5
More than 25 years	8	7.7
No response	1	1.0

From common themes identified through the survey, 10 teachers were invited to participate in unstructured, individual interviews and electronic journals. Teachers who participated in the individual interviews were those revealed by the data collected in the surveys as individuals who use technology-based communication in their collaborative process. The specific demographics and experience levels of the 10 teachers invited to be involved in the unstructured, individual interviews, and electronic journaling were revealed as the study progressed. Until participants were selected through the survey responses and information was shared through the individual interviews, little was known about their prior interactions with others, training, backgrounds, or how they use technology-based tools to collaborate.

Criterion sampling, where all participants must meet predetermined criteria, was used in the selection of the participants (Bloomberg & Volpe, 2008). The criteria predetermined for this research was to select participants who had taken part in technology-based teacher collaboration

so they would be able to provide the perspectives of teachers who have experienced collaboration through methods other than face-to-face meetings.

Procedures

In conducting this hermeneutic phenomenological study, I followed van Manen's (1990) approach to seek meaning in the instances of teachers' lived collaborative experience through technology-based communication. Van Manen's approach to phenomenological research involves a system of give and take during which the researcher investigates the experience as it is lived through continuous practices of investigation, description, and reflection. As described in the previous sections, participants possessed knowledge of the phenomenon through collaborative lived experiences. I attempted to describe in rich detail the collaborative experiences of the participants through a variety of data collection and analysis methods explained in greater detail later in this chapter.

After seeking and gaining approval from my committee chair and committee members, I submitted an application to the Institutional Review Board (IRB) to pursue the research detailed throughout this chapter. After receiving approval (Appendix A) from the IRB on April 23, 2012, I began the data collection process. In later sections of Chapter 3, I clarify my efforts to address bias within the study.

The Researcher's Role

My teaching career began in 1991 in a small, rural school. For many years, my colleagues and I not only planned collaboratively by content area on a weekly basis, but also met on a daily basis to reflect on the lessons we taught each day. We also met as a group of interdisciplinary math and science teachers several times per week to search for ways to form connections between content areas and to plan interdisciplinary units for our sixth grade students.

Therefore, the importance of collegial relationships was established for me early in my teaching career. Throughout my first years as a teacher, I relied heavily on my peers for instructional and reflective support. The knowledge of experienced teachers giving credence to my ideas and suggestions built my confidence as a new teacher. The biblical verses studied in church began to have resonance in my professional career. In Ecclesiastes I read,

> Two are better than one; because they have a good reward for their labour. For if they fall, the one will lift up his fellow: but woe to him that is alone when he falleth; for he hath not another to lift him up. (Ecclesiastes 4: 9-12, King James Version)

Early in my teaching career, the idea that effective teachers needed to have collaborative relationships for planning, as well as a time for reflecting on their professional practices, took root.

The teachers with whom I worked at that time encouraged me, as an inexperienced teacher and as I gained experience, professionally as well. Three members of our group completed Master of Education degrees in 1994 together. In 2004, with encouragement and support from this same group of teachers, I completed my Educational Specialist degree in Instructional Design and Technology.

I have nineteen years teaching experience at the middle school level, and have taught in the science, math, and social studies content areas. I have been fortunate to teach in a system where collaboration has been valued as a professional practice among administrators and teachers. Through the school system in which I work, I have received training for collaborative practice from the Center for Leadership in School Reform (CLSR; 2009). I worked with other teachers in our system and representatives from CLSR for four years to use the Working on the Work frameworks for planning instruction and the Working on the Work protocols to guide

teacher collaboration. We began our training during the 1999-2000 school year with funding provided by grants written by county administrators. In 2003, I was a presenter at the Working on the Work conference for the CLSR in Orlando, Florida. Although our county no longer uses the frameworks established by CLSR, the information I gained from the training still impacts my practice as an educator.

Due to the current economic environment, many systems, including the one in which I work, have had to reduce workdays for teachers. Time set aside for collaboration is no longer a priority, as school years have been shortened for economic reasons. The reduced number of workdays has greatly impacted my own collaborative practices. I find myself in communication with other teachers, even those within the same building, more and more through technology-based communication. Due to the necessity of altering schedules to meet the needs of our student population on a much-reduced budget, we have lost some time, which was predetermined for collaboration. Planning collaborative lessons and sharing materials via text message, email, or through an online chat is as commonplace to me now as it once was to sit around a table with books in front of us planning as a group. The lack of resources for implementing new standards has also required me to use online avenues of communication while searching for resources to meet the needs of a diverse population of students. My situation as a rural educator is not unique; therefore, my experiences colored the lens through which I viewed the data collected during this study as I looked for recurrent themes and patterns.

Data Collection

I engaged in this qualitative study with the intent to investigate teachers' perceptions of the impact technology-based communication tools have had on collaborative professional practice. The phenomenological approach of this study loaned itself to a method of data

collection, which allowed participants to share their thoughts and feelings and permitted an examination of documents (van Manen, 1990). To triangulate the data, I used a survey, an analysis of documents through participant journaling, personal unstructured interviews, and focus group interviews. The ability to triangulate the lived experience data strengthened the validity of this qualitative research (Bloomberg & Volpe, 2008; van Manen, 1990). Data triangulation was achieved through utilizing diverse methods of data collection to strengthen the study by using "multiple perceptions to clarify meaning" (Bloomberg & Volpe, 2008, p. 72). The reflective nature of phenomenology lends itself to collecting data from a variety of sources as meaning is drawn from multiple examples of the lived experience (van Manen, 1990). Using multiple approaches to data collection, which were connected throughout the research process, was fundamental to conducting a comprehensive investigation of the phenomenon being studied.

Site Approval

After approval from the IRB was granted (Appendix A), I began the process of data collection. I sought approval from the principal at each school to survey teachers through email. The correspondence to principals was sent via email (Appendix B) and explained the purpose of the study and the voluntary nature of the study. I did not get a response from the fourth principal, which required me to send a second email (Appendix C). The second email requested permission to complete the research again, provided contact information to answer questions by phone or email, and included a copy of the proposed survey, which I hoped to administer to teachers at that school for the principal to consider. All four principals affirmed my request with consent notification through email (Appendix D).

Reduction

In order to suspend any preconceptions I, as the researcher, may hold regarding technology-based teacher collaboration, I explored my own thoughts in the process of reduction. I accomplished this through a self-reflective interview. This was similar to the technique used by Joy (2009), which she described as bracketing. Since she was the only interviewer in her study, she answered the interview questions herself, prior to conducting interviews, and transcribed her own responses. Similar to Joy, I was the only interviewer in this study; therefore, I answered the survey and interview questions (Appendix E) prior to starting the research. Reduction was also used during the interview process when participant answers prompted any preconceived ideas I may hold to the forefront.

Expert Review

I asked the academic coach at the school where I teach to examine the survey questions and interview questionnaire templates to assure face and content validity. Since this person holds the position of academic coach at the school where I teach, she was not considered to be a possible participant in the survey. She was qualified to examine the questions for face and content validity due to training she received from the CLSR in 2009 on teacher collaboration. She also possesses an educational specialist degree in leadership. Using the expertise of one person to examine the questions for the survey, individual interviews, and focus group interviews ensured continuity throughout the study.

Surveys

I contacted teachers by email (Appendix F) to request participation in completing a survey (Appendix G). A second email (Appendix H) was used to contact teachers who did not respond to the survey within a week of receiving the first email. The second email (Appendix H) also contained an explanation of the study and a link to the online survey. The email containing

the link to the electronic survey (Appendix G) explained the purpose of the research. Teacher participants were asked to sign an informed consent (Appendix I) form. Teachers signed and returned a physical copy of this form or signed and returned the form electronically.

The survey (Appendix G), which was created by the researcher, contained questions involving a Likert-type scale. To investigate the attitudes of teachers towards collaboration and technology-based communication, surveys were electronically administered to the academic middle-school teachers. The surveys were not anonymous; therefore, precautions were set in place to protect the identities of the participants. Names were eliminated from the original surveys and substituted with pseudonyms. Survey and coding information was kept in separate locked filing cabinets in my home. Information gained through the surveys was used to select possible participant volunteers for the remainder of the data collection process, and to eliminate teachers who did not meet the criteria for further participation.

The content of the survey was based on the literature reviewed for this study, in which research (Bertrand et al., 2006; King & Newmann, 2000; Schlechty, 2002, 2011) indicated the importance of collegial networks in the professional growth and development of teachers, and identified technology as an effective method for promoting teacher collaboration (Coughlin & Kadjer, 2009; Hew & Hara, 2007, McLoughlin & Lee, 2010; Paulus & Scherff, 2008).

Unstructured Individual Interviews

The unstructured, individual interview is considered to be the distinctive form of data collection in a phenomenological study, and was also used in this qualitative study (Ary, Jacobs, Razavieh, & Sorensen, 2006; Bloomberg & Volpe, 2008). The interviews were guided by using questions from a template (Appendix J), but the conversation was not limited to this protocol. Ten participants were invited to participate in the personal interviews and to keep an electronic

journal of their collaborative activities. The interviews were conducted in person and, with permission, recorded on video. These questions were intended to guide the discussion, not limit discourse, and were grounded in the literature. The literature indicated teacher collaborations are an essential element for improving instruction and improving teacher relationships (Fullan 2002; Makinster et al., 2006; Schlechty, 2002, 2011). The unstructured interview questions were as follows:

1. How important is it to you to connect with other teachers in your discipline or grade level?
2. You responded in survey that you participate in online teacher collaboration. Why did you reach out in this way to seek a connection with other teachers?
3. How often do you communicate with a colleague electronically?
4. What types of resources, for example lesson plans or strategies, have you shared with others electronically?
5. What types of resources have been shared with you?
6. How have you implemented any strategies or suggestions you gained from online discussions? Did you discuss the implementation or results with others?
7. What type of connection do you feel to those with whom you have discussions electronically?
8. What leads you to collaborate with someone you may see everyday via text messages or email?
9. Do you feel this is an effective way to communicate with this person? Why or why not?
10. How have your methods of collaboration/reflection changed? Why do you think this is so?

The first question was designed to put the participant at ease and to open the discussion of teacher collaboration and its importance to the individual as a professional practice. Questions two through six related to the individual's use of technology-based communication in collaboration and the perception the participant holds regarding the connections made in this way (Coughlin & Kadjer, 2009; Hew & Hara, 2007). Hew and Hara (2007) found information most typically shared among teachers was of functional knowledge, and sharing knowledge was an essential practice in teacher professional development. The intent of questions two through six was also to investigate the impact of technology-based collaboration on the participant's professional and reflective practice. Power and Thomas (2007) maintained teachers are eager to take advantage of the ease of using handheld technology to diminish the limitations of planning in face-to-face settings. Questions two through six addressed the nature of the participant's use of technology to collaboratively plan or reflect on instruction. The intent of questions 7 through 10 was to discover if participants recognized a sense of community through this form of collaboration and to what extent the professional practices of participants may have changed with the influx of technology-based communication tools in our society (Benkler, 2006; Cross, 2007; Makinster, et al., 2006; Siemens, 2005, 2006). Hur & Brush (2009) indicated teachers participate in online communities to find ideas concerning a specific situation, but also for emotional support from colleagues. The intent of questions 7 - 10 was to further investigate responses from question two, and to determine if participants utilized technology-based collaboration for making connections with other teachers as a system of support.

After each individual interview, I concluded by asking the participant if there was any additional information regarding technology-based communication tools and/or collaboration,

which they wished to share. I also thanked them for taking the time to be participants in this study. Included in the appendices is an example of the individual interviews (Appendix K)

Electronic Journaling

The 10 participants invited to participate in the unstructured, individual interview were also be asked to maintain an electronic journal (Appendix L) of their professional collaborative experiences and their perceptions of these experiences for six weeks. As a form of documenting, keeping an electronic journal might have helped the participants "to reflect on significant aspects" of their collaborative practices and provide a "record of the insights gained" (van Manen, 1990, p. 73). The participants were given an invitation to join diary.com (diary.com), which can be downloaded as an app to smartphones, linked to Facebook, or accessed through the Internet. Using this diary, participants recorded the times they took part in collaboration, their thoughts concerning the activity, and if they recognized a change in professional practice due to the collaboration, such as attempting to teach a lesson differently or the use of a new approach to classroom management. The participants were asked to use the journal at least twice per week in order to elucidate on the various facets of the collaborative process, or to express any professional reflections. I sent the participants email or text reminders (Appendix M) thanking them for participating in this aspect of my study to prompt them to remember to record their thoughts and collaborative efforts. The electronic journal, along with the individual interview, was designed to try to capture the complexities of teachers' perceptions and reflections. The digital record of events was intended to provide rich documentation that revealed the experiences of the participants. Included in the appendices is an example of the participant journals (Appendix N).

Focus Groups

An additional method used to garner teachers' general perceptions of collaboration and the impact of technology-based communication on their collegiality were focus groups. To investigate commonalities uncovered during individual interviews in more detail, small groups of teachers were invited to participate in focus group interviews. The focus group interviews, based on information determined during individual interviews, were videotaped with permission from participants.

Three focus group interviews were arranged. One group was based on comments made during the individual interviews, which suggested a desire to collaborate, but some dissatisfaction with face-to-face meetings. A second focus group included participants who had fewer years teaching experience and the third focus group included participants who, during individual interviews expressed some form of isolation due to situation or scheduling. Each focus group interview was conducted in a face-to-face setting and met one time. If a face-to-face setting was not possible for all participants in the focus group, iChat, was used to accommodate those who could not attend in person. One of the participants asked to participate in the third focus group interview was unable to do so due to a family emergency and was also unavailable for iChat.

These interviews were unstructured in order to allow for personal reflections and anecdotal information to be shared. A template (Appendix O) was used to guide the discussion, as suggested by Moustakas (1994); however, the discussions were primarily unstructured to allow for personal reflections and to focus on the experiences of the participants. The participants were encouraged to share anecdotes that related specific events and feelings connected with peer collaboration (van Manen, 1990).

Guiding interview questions for focus groups were as follow:

1. What do you think is meant by teacher collaboration?
2. Do you think it is necessary to collaborate routinely with others or on an as needed basis? Ask participants to elaborate on their answers.
3. How does teacher collaboration, if it does, take place within your grade level at this school?
4. How has collaboration with other teachers changed during your career?
5. Do you ever communicate for instructional purposes with teachers at your own school electronically? If so, please explain how you communicate with one another (email, texting, etc) and why you choose to communicate this way.
6. Do you ever communicate for instructional purposes with teachers at other schools electronically? If so, please explain how you communicate with one another (email, texting, etc) and why you choose to communicate this way.
7. Do you participate in any online discussion forums or groups related to planning for instruction, professional development, or professional reflection?
8. What impact do you think participation in an online collaborative setting has for you as a teacher?

These were grounded in the literature and were intended to serve as an outline for the discussion. During the interviews, members of the focus groups were encouraged to expand on answers and share personal reflections on each question. The purpose of the first question was to serve as a starting point for conversation. Participants were selected for focus groups based on commonalities in survey responses, individual interview response, and electronic journals. The first question was intended to allow each participant in the focus group to gather information on others in the group and their perceptions regarding teacher collaboration. The second question

delved into the amount of collaboration participants thought was important in professional development. Questions three and four were meant to establish common practices among individuals in the focus group. Schlechty (2002, 2011) established a protocol for face-to-face collaboration in which teachers connected about the work, but not as a means of emotional support, which other researchers indicated was important (Coughlin & Kadjer, 2009; Hew & Hara, 2007). These questions attempted to determine current practices in teacher collaboration and ways in which collaborative practices have changed through the careers of participants. The remaining questions for the focus group were intended to gather additional details on the practice of collaboration through technology-based tools, either within or outside the school building. I intended to attempt to guide teachers to discuss not only the shared knowledge of the participants, but also what motivates them to share or receive knowledge through technology-based communication tools (Hew & Hara, 2007). I also planned to use these guiding questions to examine the depth of the content of teacher collaborative discussions through technology-based communication. Examination of the content with participants in focus groups was intended to reveal if the collaboration was meaningful to the participants and, if so, how the collaboration impacted them professionally (Coughlin and Kadjer, 2009; Hew & Hara, 2007; Hur & Brush, 2009; Schlager et al., 2009). The final question addressed if there were any comments or additional information participants would like to share with the focus group regarding collaborative practices through the use of technology-based communication. Before leaving the focus group, I made certain each member was properly thanked for taking time to complete this component of the research. Included in the appendices is an example of the focus group interviews (Appendix P).

Data Analysis

In order to ensure the dependability and creditability of the study, I employed a variety of data analysis strategies. According to Bloomberg and Volpe (2008), "data analysis is an interactive and recursive" (p. 120) process. Van Manen (2011) suggested there is no fixed method with which to conduct a phenomenological study, but "empirical and reflective methods" (van Manen, 2011, Methods and Procedures section, para. 2) may help. Van Manen (2011) described the empirical methods as gaining insight through others experiences through a variety of sources and reflecting upon the meanings found in them, while the reflective method was described as to try to "grasp the meaning of something" (van Manen, 2011, Reflective Methods section).

The hermeneutic phenomenological design of this study involved repeating steps several times for information obtained through different types of data collection. I read the transcripts and diaries numerous times, first wholistically, then using a "highlighting approach" and finally incorporating a "line-by-line approach" (van Manen, 1990). As I read and reflected on the data, I summarized data through coding, transcription, member checks, memoing, and feedback, using processes set forth by van Manen (1990; 2011). Research, which is phenomenological in nature, is a lived experience for reasearchers as they adjust, through reduction, to the ontological nature of the phenomenon to see "what it the nature or meaning of something" (van Manen, 1990, p. 184). Applying the hermeneutic circle of reading the data repetitively, writing copious notes through memoing, and interpreting data through coding, allowed me to reflect on the data. Additionally, reliving the interviews through watching and listening to the videos added nuances to the data collected during research. Bloomberg & Volpe (2008) stated, "Each phase in this multistage process leads logically to the next, yet the process is essentially an iterative and somewhat messy one" (p. 9). The recursive framework of the study allowed time for reflection

and for me to use an "immersion approach" (Bloomberg &Volpe, 2008, p. 99) to analyze the data. Research conducted using a phenomenological approach should not deliver a generalization of a topic or population, but should instead provide a deeper understanding of the connections between teachers' perceptions regarding collaboration (van Manen, 1990).

Transcription

Personal interview responses and focus group responses were transcribed verbatim and included notations of nonverbal communication. Focus groups and personal interviews were recorded on video so there was an accurate record of nuances in nonverbal communication as well as verbal. A professional transcriber completed the conversion of individual interview and focus group video data to written form.

Coding

Coding was first used to identify commonalities found in surveys administered to the academic teachers at all three schools. From the literature I read, I developed a framework (Appendix Q) to initially help categorize the data. Significant data was highlighted in different colors to identify themes and commonalities. I used reflective notes as I reviewed the surveys in order to further analyze responses. The labeling of categories was adjustable since coding may change as new information is revealed and examined throughout the study (Bloomberg & Volpe, 2008). Transcriptions of focus group interviews, transcriptions of personal unstructured interviews, and copies of electronic-journal entries were also coded for this study.

Coding surveys. In order to analyze the surveys, the "detailed or line-by-line approach" (van Manen, 1990, p.93) was used to identify commonalities. A framework (Appendix Q) was utilized to analyze the surveys. Each item for each respondent was examined in order to search for common themes revealed by the surveys. Based on survey responses, participants were divided into subgroups. Teachers who answered the first six questions using a rating of four or

five indicated they agreed or strongly agreed with the importance of collaborative communication in the professional practices of teacher. Teachers who answered survey questions 8 through 15 using a rating of four or five indicated they agreed or strongly agreed with the use of technology-based communication tools as a collaborative aid.

Survey responses of those who provided information indicating participation in technology-based collaboration were used to find participants to invite to take part in unstructured, individual interviews and the process of electronic-journaling. Teachers who answered questions 5, 6, 8, 9, 10, 14, and 15 with either a rating of four or five were among those invited to be voluntary participants in additional research, including individual interviews, electronic journaling, and focus groups. Teachers who answered survey questions 16 and 17 with a four or a five indicated they do not use technology-based communication for collaborative purposes and were not invited to participate beyond the survey component of the research.

Survey responses were used to provide a background of teachers' perceptions and attitudes toward collaboration at each of the four schools. Quasistatistics, such as frequencies and percentages, were used along with information gathered from the survey responses to create a background of whole school data in order to complement the information provided by the 10 individuals who participated in the interviews, electronic-journaling, and focus groups.

Coding transcriptions of individual interviews. The transcripts of the unstructured, individual interviews underwent a process of open coding. An electronic copy of each transcript was stored in the original form on my computer and a second copy was used to code by highlighting commonalities using a system of different colors to identify themes. A third copy of the document was used to analyze quotations in greater detail. The quotations were organized using a data summary table, so the information could be easily moved upon review if necessary.

When commonalities were discovered during open coding, data was organized into categories. During the process of reviewing transcripts, I followed the approach suggested by van Manen (1990). The transcripts were reviewed as a whole. Then, the transcripts were each read several times to highlight essential phrases. The transcripts were then examined using a line-by-line approach in order to analyze the information in greater depth (van Manen, 1990). During these examinations of the data, I also made notes as I reviewed transcripts. I asked two colleagues, the academic coach at my school and a former teacher who had worked at the same school as me, to review my work (Bloomberg & Volpe, 2008). Both individuals had received training in teacher collaborative practices from the CLSR (2009) and have advanced degrees in educational leadership. The document files of interview transcripts were backed up on my portable hard drive located in my home and on a jump drive stored in a locked filing cabinet in my home. Both devices are password protected.

Coding of electronic journal entries. Participants were asked to email copies of their electronic journal entries weekly for six weeks. The original entries were stored on my computer as well as a jump drive. Both my computer and the storage device are password protected. Printed copies of the journal entries were used for coding and were stored in a locked filing cabinet in my home. As with the transcriptions of interviews, open coding was used as I read through the entries. I made notes as I read to help form the initial codes. I then used a process of highlighting key terms for individuals. Next, I grouped the clusters of information into categories based on commonalities to attempt to find meaning in the experience. As suggested in the process by van Manen (1990), my notes and information were constantly reviewed and revisited. The two colleagues described in the section above reviewed my work.

Coding transcriptions of focus groups. Transcripts of focus group discussions underwent a similar coding process to the one described for unstructured, individual interviews and electronic-journals. Open coding was used to analyze transcripts of focus group discussions. The original transcript were written as a document and stored on my personal computer. Including the original, I worked using three copies of the transcripts of each focus group discussion. As I read the transcripts, I made notes to develop codes. I then highlighted significant data using a system of different colors to identify themes. The information was then grouped in clusters to attempt to make generalizations from the experiences of the group. I continually reread the transcripts and made notes throughout the process revisiting the data (van Manen, 1990). I asked the same two colleagues, the academic coach and a former teacher from the school where I work, to review my coding of the transcripts (Bloomberg & Volpe, 2008). Backs up documents of the transcripts were kept on my personal hard drive and on a jump drive in my home. Both devices are password protected.

Memoing

I utilized the process of memoing throughout the data analysis in the form of reflective and descriptive notes. During the coding of surveys, I made reflective notes to help identify commonalities among respondents. After I received a transcript of each of the individual interviews, I printed a copy of the transcript and wrote notes on the paper version. After notes were made, I copied them. I kept one copy at home in a locked filing cabinet and the other was given to participants for member checks. A procedure similar to the transcriptions of focus groups interviews and electronic journals was used. The electronic versions were stored on my personal computer and a jump drive located in a locked filing cabinet in my classroom at school. Both my computer and the jump drive are password protected.

Member Checks

To ensure the content of the transcriptions were accurate, transcripts of the personal unstructured interview responses underwent member checks by the 10 participants. Each member reviewed the transcript of his or her interview. The participants were provided a copy of the transcriptions of the personal interview, the electronic-journal, and the focus group discussion in which they participated in order to validate the information used in the data collection process. Each participant was asked to review the key themes revealed through data analysis to ensure the credibility of the study.

Feedback

In order to help objectively identify commonalities and recurrent themes, feedback was used each time data was coded. The academic coach at my school and a retired teacher, who was a former colleague and trained in collaboration by the CLSR, also helped with this portion of the research.

Trustworthiness

In qualitative research, the trustworthiness aspect is designed to address issues of possible bias in the study. Trustworthiness is the extent to which the reader can trust the data presented in a study and I strived to remain truthful in this research. Phenomenology is constantly "open to questioning assumptions and preunderstanding" (van Manen, 2011, The Hermeneutic Reduction: Openness section, para. 4). Establishing credibility, dependability, confirmability, and transferability is important in controlling biases in a qualitative study (Bloomberg & Volpe, 2008). Bogdan and Bilken (2007) stated, "Qualitative researchers try to acknowledge and take into account their own biases as a method of dealing with them" (p. 38). Collecting data from different sources using a variety of methods produces an extensive picture of the phenomenon

studied (Bloomberg & Volpe, 2008). Asking colleagues to contribute peer reviews, participants to provide member checks, and maintaining thorough, accurate notes and transcripts clearly conveyed my efforts to deal with trust related issues.

Credibility

When conducting qualitative research, it is vital to ensure the internal validity of the study (Bloomberg & Volpe, 2008). I utilized multiple data sources to strengthen the credibility of the study and promote confidence in my interpretations of the data as well as acknowledging my own presuppositions on the topic (Bloomberg & Volpe, 2008; van Manen, 1990). Feedback, member checks of transcriptions, and memoing provided a threefold reinforcement of the data collection. These methods triangulated and strengthened the information gained throughout the research process. Member checks provided objectivity, although my reflective voice may have been used in interpreting the data through memoing.

The phenomenological nature of this study lends itself to the use of reflective practices such as memoing, the recording of the researcher's reflective notes, and feedback as a contribution to the credibility of the study. Though the researcher's reflective voice may be used in interpreting the results of a phenomenological approach, such as the one described in this research, data triangulation and method triangulation were in place to give the study credibility and dependability (Ary et al., 2006; Bloomberg & Volpe, 2008). According to van Manen, when reading to discern themes, "no one interpretation is ever necessarily more 'true' than another" (van Manen, 2011, Macro-thematic Reflection section, para. 1); however, I employed the use of clarifying presuppositions and data triangulation to enhance the credibility of my interpretations.

Dependability and Confirmability

The concepts of dependability and confirmability lend themselves to the reliability of the study (Bloomberg & Volpe, 2008). Teachers from four schools were surveyed. From the

surveys collected from these teachers, the use of coding and clustering information helped me select teachers to invite to participate in unstructured, individual interviews and keeping electronic journals. Focus groups were formed from the data collected during individual interviews and from electronic journals. These groups were based on common themes or topics that required additional questioning of teachers. Triangulation of data collection through survey, interview, and journaling, as well as the use of participants from multiple schools, gave strength to my research study and reinforced the credibility of my work. I also used member checks and expert review to provide consistency in coding (Bloomberg& Volpe, 2008). Additionally, I kept accurate and detailed records of survey responses, interviews, focus groups, and electronic journal communications as well as my notes to provide an audit trail for this study (Bloomberg & Volpe, 2008).

Transferability

Transferability refers to the "extent this particular phenomenon in this particular context can transfer to another particular context" (Bloomberg & Volpe, 2008). The study was limited to a group of rural teachers and therefore does not lend itself to generalizations. Bloomberg and Volpe (2008) pointed out "generalizability" (p. 87) is not necessarily an intention of a qualitative study. The question of transferability involves the extent to which the impact of technology-based communication affects teacher collaboration in the rural schools used in the study. I attempted to address transferability through providing a detailed description of the participants, their collaborative dialogue, and their responses. According to van Manen (1990), the essence of phenomenology is the attempt to offer descriptions and interpretations of the meanings of a lived experience to a "certain degree of depth and richness" (p. 11). Using the multiple methods of

data collection and participants with a variety of backgrounds ensured that I addressed the issue of transferability even though I used a limited setting.

Ethical Issues

The intent of the study was to provide insight into rural teachers' perceptions of collaborative discourse and to reveal if technology-based communication impacted teacher collaborative practices. Bloomberg and Volpe (2008) stated, "A social science researcher is responsible for both informing and protecting respondents" (p. 85). Throughout this study, I intended to maintain the ethical standards expected of researchers working with data collected from human subjects. Participants' privacy through the use of pseudonyms, informed consent, full disclosure of the purpose of the study, documentation of analysis procedures, member checks and reviews, bracketing, and voluntary participation were methods I utilized to ensure ethical standards were met (Bloomberg & Volpe, 2008; Bogdan & Biklen, 2007; Moustakas, 1994; van Manen, 1990). At no time during this study were participants exposed to physical harm. I had a responsibility to share my previous training, interest, and experience in teacher collaboration with participants, and I did so (van Manen, 1990). It was my desire to add to the body of research on teacher collaboration and reflection and how the increasing role of technology in our lives may be impacting our professional practices.

Surveys were not anonymous in order to identify individuals to invite to participate in individual interviews, electronic journals, and focus groups based on use of technology in collaborative and reflective practices. In order to protect participants' privacy, participants were assigned a pseudonym and names were removed from surveys. The surveys were kept in a locked filing cabinet in one location while the spreadsheet with names and corresponding pseudonyms were kept in another filing cabinet. Precautions were taken to ensure data collected

throughout this study was secured (Bloomberg & Volpe, 2008). This study was not designed to reflect poorly on any school or individual, but to provide insight into one of the many ways technology may be changing education and what, if any, value teachers find in technology-based collaboration.

Summary

Attempting to discover meaning in the instances of teachers' lived collaborative experience through technology-based communication is a worthwhile investigation. Using a phenomenological approach, I surveyed four rural schools and investigated the lived experience of 10 educators utilizing van Manen's approach of reduction and reflection (1990; 2011). Many positive professional development experiences could result from the procedures that I followed in this study. With this information, administrators and teachers can provide more meaningful online collaborative experiences. The methods presented here convey a logical and sequential plan to uncover that information.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this phenomenological study was to understand if developments in technology-based communication have made an impact on teacher collaboration and practices. This chapter displays the results of the data collection regarding the collaborative practices of 10 educators. Participants for the study were located by surveying the populations of four rural middle schools. Ten participants were selected based on responses to the survey (Appendix G) and a willingness to volunteer. Through individual interviews, individual electronic diaries, and focus group interviews, I attempted to capture the views and experiences of educators on collaborative practice. The following research questions were explored:

Research Question 1: What types of collaboration do rural middle school teachers seek in order to improve instructional practices?

Research Question 2: What factors influence teachers to seek and sustain collaboration with others through technology-based communication?

Research Question 3: How do teachers use technology-based communication tools to improve their professional practices?

Participant Selection

Participants in the survey (Appendix G) were asked to acknowledge willingness to participate in further research, including individual and focus groups, video recorded interviews, and electronic journals. Anyone who was reluctant to participate in all components of the study was eliminated. Teachers who were among those invited to be voluntary participants in the additional research process answered questions one through six and eight through 15 with ratings of either four or five. The response of a four or a five to questions one through six indicated the

importance of collaboration to professional practices, while the response of a four or a five on questions 8 - 15 indicated the importance of technology-based communication tools as a collaborative aid. Of the teachers meeting these requirements, 10 participants from three of the four different schools surveyed agreed to be voluntary participants. The individual interviews, diary entries, and focus group interviews provided statements, which were analyzed during data analysis in order to form generalizations. These generalizations helped me to develop a narrative description of the experiences of the participants regarding technology-based collaboration

Participant Portraits

The study was directed toward the lived experience of rural, middle school teachers. Therefore, the participants all shared the common thread of working in rural middle schools; however their diverse backgrounds and experiences provided opportunities to collect rich, detailed data. The participants, who were identified by pseudonyms during data analysis, included two male teachers and eight female teachers. The individual participant descriptions are included below to provide details concerning the participants' work experience and training in the area of collaboration. In order to present an accurate depiction of participant voices, all quotes are presented verbatim, which includes verbal ticks and grammatical errors both in speech and writing.

Allison

Allison, who has been teaching for over 20 years, taught in the general education classroom setting as well as in a coteaching setting and a resource setting. She has an Educational Specialist degree and has participated in leadership roles in her school. Allison received training in collaborating with peers and said collaboration was professionally important, but indicated collaborative time was not sufficient and protected at school. The participant

further responded she collaborated through electronic communication and stated she received training in using electronic communication for collaborative purposes. According to Allison, scheduling and duties conflicted with face-to-face planning with her colleagues because she works with multiple grade levels. In reference to this she stated, "when we don't have that common planning it's a necessity to still communicate with my coworkers or peers" (Allison, Individual Interview, May 18, 2012). Allison elaborated by explaining her use of technology when she said, "some kind of technology is primarily the way I have to communicate and to connect with them" (Allison, Individual Interview, May 18, 2012).

Lana

Lana has taught in a variety of classroom settings at the middle school level ranging from resource special education to gifted language arts. Lana, who has taught for approximately 20 years, stated she had not obtained training in professional collaboration or in using electronic communication to collaborate with peers. She acknowledged frequent collaboration with peers is important, but indicated collaboration time was neither sufficient nor protected during the school day. Lana first responded she was unsure if she preferred face-to-face or electronic collaboration. In interviews, however, Lana went on to state she frequently used social media outlets to collaborate. When asked why she reached out to collaborate through social media outlets, Lana said, "Because there are a lot of people out there willing to share. And it's just finding the right ones, you know, that you can share resources with" (Lana, Focus Group Interview, June 27, 2012).

Millie

Millie, who has been teaching for approximately 20 years, was the only science teacher of the content at her school. She referenced being the only science teacher several times in both

individual and focus group interviews. Millie had received training in collaborating with peers in face-to-face settings and collaborating with other educators electronically. In the survey, Millie indicated collaboration time at school was sufficient and protected, but later pointed out "when there is only one teacher for my grade level for this curriculum…in order to collaborate I have to reach out through online sources to deal with other teachers" (Millie, Individual Interview, June 1, 2012). Her response in the survey indicated frequent use of electronic communication tools for collaborative purposes. In describing how she used electronic communication with peers she said she found herself, "asking them for maybe some extra ideas, extra help and just to make sure I am on the right track with understanding my standards" (Millie, Individual Interview, June 1, 2012).

Bonnie

At the time of the survey and interview, Bonnie was an English Language Learner teacher working in both self-contained and coteaching settings. She taught in a variety of schools and instructed on several levels for approximately 15 years. When asked about her feelings toward collaboration with peers Bonnie described it as "vitally important" and in reference to teaching multiple grades said, "emails and the electronic collaboration allow me to plan actually with all three" (Bonnie, Individual Interview, June 12, 2012). Bonnie agreed collaboration time was valuable and affirmed training in professional collaboration, though not in the use of electronic communication for the purpose of collaborating with peers. Bonnie mentioned collaborative time was provided at school, but was uncertain if it was sufficient. Bonnie also confirmed a preference for not collaborating with peers in a face-to-face setting. Elaborating on her preference Bonnie said the written aspect of electronic communication allowed her to:

> Communicate it more effectively that way cause if I'm in a meeting I'm, I'm a type of person-I'm more hesitant -to not say anything…I have to think about it first and I have to, the process goes through my mind and to just make sure it is the outcome is what I want it to be. (Bonnie, Individual Interview, June 12, 2012)

Linda

At the time of the interview, Linda was a language arts teacher with 13 years experience. She agreed collaboration time was valuable and elaborated she found collaboration helped "plan and develop more effective lessons" (Linda, Individual Interview, May 23, 2012). Linda indicated training in professional collaboration in face-to-face settings, but was unsure if she had received training using electronic communication for collaboration. Linda agreed her school provided sufficient collaborative time; however, survey responses indicated she was undecided if she preferred face-to-face collaboration. In the individual interview Linda mentioned participating in forced face-to-face collaboration and of that she said, "…I hated those. It was just ugh…" (Linda, Individual Interview, May 23, 2012). In the survey, Linda acknowledged a frequent use of electronic communication tools for collaborative exchanges. She expounded on this by stating, "we as teachers are so busy it's not always easy to meet face-to-face during our planning" (Linda, Individual Interview, May 23, 2012).

Kara

Kara, who relayed she had experience as a language arts teacher in sixth, seventh, and eighth grades, indicated she had worked at the middle school level for more than 20 years. Kara shared she had experience teaching at the elementary level as well in the focus group interview. Kara agreed collaborative time was important professionally, and the time for collaboration was sufficient at school. Kara acknowledged the use of electronic tools for collaboration with

colleagues and stated a preference not to meet with colleagues face-to-face. Kara indicated that her content partner did not want to meet face-to-face and that email or text was preferable for their collaboration. Of online collaboration, she said:

> It gives me a chance to compare results of activities that we do and look at different ways to teach concepts and alternate ways in methods of teaching that I may not get since my teaching partner doesn't like to sit down and discuss those things. (Kara, Individual Interview, May 16, 2012)

Kara also mentioned several collegial relationships she maintained online in interviews and the electronic journal. These relationships ranged from classmates she met in online courses while pursuing an educational specialist degree to former colleagues and student teacher interns with whom she had formed a bond. Kara shared she had received training in collaboration and in using electronic communication tools to work with peers.

Stan

Stan, who stated he was a special education math teacher in both coteaching and resource classroom settings, had six years teaching experience. The participant acknowledged training in both face-to-face and electronic collaboration. Stan said collaborative time during the school day was provided, but indicated uncertainty concerning a preference of collaboration with colleagues in a face-to-face setting or through technology-based tools. In his journal entries, Stan identified electronic communication with the mentor teacher from his student teaching experience as a means of reflecting on his own practice and seeking ideas for new strategies to implement. He shared the communication with his former student teaching mentor was a "positive interaction" and was "reassuring" (Stan, Electronic Journal, May 1, 2012).

Christy

Christy, who has taught less than five years, shared that although she was less experienced as a teacher than others, she had prior experience in the business sector. The participant denoted training in professional collaboration, but not in the use of electronic communication for the purpose of collaborating with peers. Christy strongly indicated collaboration and professional feedback were important issues to her. In her individual interview, she not only described the importance to collaborate with team or grade level teachers, but also teachers of supporting classes. Of her collaborative relationship with the math support teacher at her school, Christy said she "depends on us to share our planning ideas for the week; where we're at so she can front load the information for students in her class" (Christy, Individual Interview, May 22, 2012). She agreed time to collaborate during the school day was provided at her school. She revealed in the survey, however, she preferred to not collaborate in face-to-face settings.

Roberta

Roberta, a middle school language arts teacher, indicated she was an experienced teacher with between 11 - 15 years of service. Roberta stated collaboration time was beneficial and indicated training in professional collaboration had been received, as had training in collaborating electronically. Of collaborating with peers she shared, "I think it's very important for cohesion. I always like to talk to other teachers to make sure that we're all on the same page about things. And to get ideas about how to do lessons or if I'm having you know an issue with a student" (Roberta, Individual Interview, May 31, 2012). Roberta agreed sufficient collaborative time was provided at school, but expressed uncertainty in stating a preference for collaborative settings. Roberta indicated she frequently communicated with peers using electronic communication. She remarked that she found it to be a safe environment in which to

collaborate because "people are able to say what they want to say" and Roberta also acknowledged using online communication "I have time to think about it and I don't just pop off" (Roberta, Individual Interview, May 31, 2012).

James

Although James, who had taught less than five years, did not have many years of teaching experience, he had taught at three schools and at the time of the interview his workday was split between two schools. James had taught both math and social studies at the middle school level. At the time of the study, he was teaching math at one school and was the math support teacher in another. Professional collaboration was important to James and frequent use of communication to collaborate with colleagues was noted. He described professional collaboration as "essential" (James, Individual Interview, May 24, 2012). James indicated uncertainty for a preference of settings for collaboration. James received training in collaborative practices, but not in the practice of using electronic communication to do so. James indicated traveling between schools and acknowledged frequently communicating with colleagues electronically due to time constraints. James also mentioned the efficiency of electronic communication several times. He acknowledge this in his electronic journal when he wrote about one such instance where he noted the efficiency of the communication by stating, "I did not think to tell the teacher until I was driving to the other school so I texted from the parking lot." (James, Electronic Journal, May 24, 2012). James justified his use of texting because he "was afraid it would slip my mind if I did not take care of it immediately" (James, Electronic Journal, May 24, 2012). James also indicated as a new teacher the use of technology for collaboration had always been readily accessible. He stated,

> Using technology is always the easiest because it's at our fingers tips all time and it makes it to where we don't have to continue to use as much one on one time. We can

> just kind of shoot emails or we can sent text messages or talk on the phone and that makes it to where we can work it around our schedule better. And without it we would not have a lot of collaboration. (James, Individual Interview, May 24, 2012)

Results

The selection of participants relied on data collected from surveys. The process of identifying themes followed the data collection and analysis obtained from the 10 participants using the individual interviews, focus group interviews, and electronic journals. From those three sources, data were transcribed, coded, analyzed, and reviewed using the process outlined by van Manen (1990). The following section describes the process of uncovering theme development and details the findings as well as addressing the results of research questions.

Theme Development

The process of identifying themes occurred during the data collection and analysis portion of the study using (a) individual interviews (b) focus group interviews, and (c) electronic journals. Collected data was transcribed and reviewed for accuracy. Van Manen (1990; 2011) describes thematic development as a method for giving meaning to the lived experience being researched. Utilizing the process outlined by van Manen (1990) for thematic development of first employing a wholisitic approach, then a highlighting approach, and finally a line-by-line approach, I uncovered four themes regarding the perceptions of middle school teachers about digital collaboration. Table 2 gives the frequency of open-codes across the data sets as well as their corresponding themes.

Table 2

Frequency of Open Codes and Their Corresponding Themes

Open Codes for Individual Interviews	Enumeration of open-code appearance across data sets	Themes
Technology-based communicationis used for exchanging ideas,lesson plans, instructional resources, strategies	225	Instructional planning/improvement
Technology-based collaboration is efficient (quick, easy, fast,)	204	Expediency
Technology-based collaboration provides written proof (documentation)	41	Documentation
Technology-based collaboration provides reminders	17	
Technology-based collaboration prevents interruptions in conversations (timesaver)	17	Avoidance
Technology-based collaboration avoids situations (“side talk”, “off-task” behaviors, “get away from”)	20	

The four themes that emerged were as follows: (a) teachers perceived technology-based collaboration as an effective method to find resources to improve their instruction and/or seek support from peers; (b) teachers regarded collaboration through technology-based

communication to be expedient; (c) teachers considered using technology-based communications a means to collaborate an effective method to document shared information; and (d) teachers viewed technology-based collaboration as an effective method to avoid unwanted situations. The following section provides a more detailed description of the four themes. Data specific to the research questions is included as well.

Teachers perceived technology-based collaboration as an effective method to find resources to improve their instruction and/or seek support from peers. During the individual interviews, all 10 participants stated that connecting with other teachers is an important part of their professional practice. The information obtained during the individual interviews supported the findings of prior research where participant common interest was an important component of teacher collaboration (McLoughlin & Lee, 2008; Murphy, 2004; Paulus & Scherff, 2008). While all 10 participants described the use of technology to communicate for school-related planning and information, eight of the participants indicated they were collaborating with others outside of school based on a shared interest and four of the participants shared they were maintaining relationships with mentors or previous colleagues.

This peer mentoring and support is a foundation for professional collaboration. James mentioned he uses electronic communication daily to share lesson plans and collaborate on daily activities due to the fact that he works in two separate schools. Allison and Bonnie contributed that they communicate with colleagues multiple times a day due to scheduling because of their cross-curricular teaching assignments. These three participants said they like to check in with colleagues throughout the day to make sure they are involved and informed of the activities of the day.

Additionally, all 10 participants described the use of electronic communication to share lesson plans or instructional materials and resources. The primary focus of their collaboration appeared to revolve around instructional or school/student related issues. Bonnie added the use of communicating electronically allowed for more quality in instructional planning and discussion. Bonnie stated, "…if I was communicating via text and email I can type it up, look at it, evaluate and say yes this is a go or this is not" (Bonnie, Individual Interview, June 12, 2012). When explaining teacher collaboration, Allison stated, "To me collaboration means planning and working together to ensure we are doing the best job possible for our students. It means planning lessons, sharing resources, exchanging ideas, talking about your problems and offering help, too" (Allison, Focus Group Interview, July 3, 2012). In all three focus groups participants declared that experiencing routine collaboration and collaboration on an as needed basis were both important. In the focus groups, the participants reiterated the bulk of collaboration within their schools, in their experiences, involves instructional planning and sharing resources as well as communications involving scheduling, students, and events.

Teachers regarded collaboration through technology-based communication to be expedient. All participants mentioned the efficiency and effectiveness of collaborating electronically during personal interviews. Eight participants specifically cited time and scheduling as a major contributor to using electronic communication, even within their own buildings. Concerning using email as a means of communication within the building Lana stated:

> It's a lot more efficient, I don't know if it is the most effective way, but the way we've all become over the years ... And it's, it's easier, it's quicker for me to get the lesson plan, look over it, email back feedback than to call us all together for a meeting, wait on

> everyone to get in there and you know and then we get off topic, but this way to me it, it's a lot more fast and efficient. (Lana, Individual Interview, May 22, 2012)

Bonnie supports the same view by saying, "…we do have an allotted time for planning and collaboration…I teach three different grade levels…and I can only plan with one. So the emails and the electronic collaboration allow me to plan actually with all three" (Bonnie, Individual Interview, June 12, 2012).

During the focus groups, the participants continued to point out that electronic communication is an easy and effective means of collaboration, as they did in the individual interviews. Communication through technology can be an effective and efficient way to share information, resources, and concerns without time constraints (Yang, 2009). During the focus group interviews, Christy also pointed out that online collaboration can be more efficient as face-to-face meetings in regards to sharing resources, and Stan stated that he preferred online collaboration because "over email or instant message…we get more done in a short period of time" (Stan, Focus Group Interview, June 20, 2012).

In their reflections, some participants used more detailed language to describe the interactions. In reference to the immediacy of using SMS messaging, James said, "I was afraid it would slip my mind if I did not take care of it immediately" (James, Electronic Journal, May 30, 2012). Kara reflected on a situation where she described the communication as quick and easy, but added "I was on Facebook and saw that he was online. I had a few minutes of spare time and decided to use it effectively" (Kara, Electronic Journal, May 15, 2012). The ease of use of social media to allows teachers to converse in the moment when the collaboration is needed and relates directly to the findings of research (Cabrera, E. & Cabrera, A., 2005; McLoughlin & Lee, 2010; Najafi & Clarke, 2008).

Teachers considered using technology-based communication as a means to collaborate as an effective method to document shared information. Four participants shared that the use of electronic communication provided them with needed documentation. However, the necessity for the documentation was varied among those participants. Keeping a record to look back upon for reference, holding others to their word, remembering what was said, and having time to go back and reflect upon what was said before acting or responding were all given as benefits by the interviewees.

In her electronic journal, Kara referenced the importance of documentation when she stated of collaboration with peers via email, "We will have documentation when we need it later. I have found that written proof is very beneficial when it comes to planning in or across grade levels especially when someone tries to take credit for all or does very little of the work" (Kara, Electronic Journal, May 17, 2012). Millie also indicated the importance of documenting communications with peers and pointed out "you also have something that you can refer back to if you need to where sometimes verbally you may forget what they say (laughs) or what you said" (Millie, Individual Interview, June 1, 2012).

Teachers viewed technology-based collaboration as an effective method to avoid unwanted situations. Six out of the 10 participants preferred electronic communication to face-to-face collaboration because of issues such as meetings going off focus, interruptions, and time-constraints. Stan stated he felt "more comfortable asking some questions I have from them," (Stan, Individual Interview, June 6, 2012) referencing colleagues from a previous employment. Lana indicated that she prefers to avoid face-to-face meetings because she stays more directly focused on the work when collaborating online. Kara voiced, "just being in a different

environment helps" (Kara, Individual Interview, May 16, 2012) when describing why she used email and text to collaborate.

Some of the more descriptive language also had to do with staying focused on the task at hand. Stan said of collaboration by email, "Quicker and more effective…Those meetings usually take forever and do not accomplish much. There is a lot of bickering and complaining…Added bonus I don't have to listen to all of the side conversations" (Stan, Electronic Journal, May 15, 2012). Roberta, in a journal entry said, "…the emails were very focused on the details. There was far more focus in the discussion than if they had held a meeting after school" (Roberta, Electronic Journal, May 23, 2012).

Some entries from journals also revealed that when communicating electronically the participants relied on social media or SMS to avoid interacting with undesirable peers. "If we decide to socialize and not everyone is invited, we text the information rather than use email" (Linda, Electronic Journal, June 6, 2012). Conversely, the same methods were employed to keep them informed of school events. In reference to texting with coworkers Allison said, "I still felt connected to those who went on the trip with the students and heard about the good times that they were having" (Allison, Electronic Journal, May 4, 2012). Though a few participant journal entries demonstrated a desire to exclude coworkers most involved sharing information, supporting colleagues, and the majority of the language of the journals also showed a desire for collegial support (Hur and Brush 2009; Paulus & Scherff, 2008).

Roberta noted that online communication provided "a safe environment" and "you're able to say things online that sometimes you wouldn't necessarily say in front of someone" (Roberta, Individual Interview, May 31, 2012) when evaluating how she has used digital communication to avoid publicly offending colleagues. Roberta elaborated when given time to

examine a resource she might "tweak it a little bit" (Roberta, Individual Interview, May 31, 2012), but in face-to-face settings, she would withhold comment in the moment for fear of hurting another's feelings.

Research Question Results

The research questions were answered as the four themes were developed during the course of this study. The four themes that became apparent during the data analysis process were (a) teachers perceived technology-based collaboration as an effective method to find resources to improve their instruction and/or seek support from peers; (b) teachers regarded collaboration through technology-based communication to as expedient; (c) teachers considered using technology-based communication as a means to collaborate an effective method to document shared information; and (d) teachers viewed technology-based collaboration as an effective method to avoid unwanted situations.

Research Question 1: What types of collaboration do rural middle school teachers seek in order to improve instructional practices. All participants indicated that collaboration was an integral part of their work experience. Most of the participants stated that sharing ideas and communicating with their colleagues was an important facet of their work. In their individual interviews, the term "very important" was used by both Lana (Individual Interview, May 22, 2012) and Millie (Individual Interview, June 1, 2012) to describe collaborating with peers to improve their instructional practices while Bonnie described connecting with other teachers as "vitally important" (Bonnie, Individual Interview, June 12, 2012) for planning instruction. James affirmed this by stating,

> Because I can see what other people are doing and then I can kind of gauge if I need to be doing something I'm not or if I'm doing too much (pause). Or it's always good to get, you know, peer feedback. (James, Individual Interview, May 24, 2012)

Data from the participants' interviews and journals described their collaborative experiences that occurred in both face-to-face and electronic settings, though most participants favored electronic communication. Of electronic communication Bonnie said,

> It's, it's easy. I could, (pause) I have access to a computer or my phone immediately so if I had to communicate with a teacher, for instance, down the hall and I couldn't of course leave my classroom, I just (pause) it's immediate. (Bonnie, Individual Interview, June 12, 2012)

The statements of the interviewees towards ease of use indicate the teachers find the use of technology-based communication productive, and they had an overwhelmingly positive attitude toward incorporating it into their professional practices, which corresponds to research (Najafi & Clarke, 2008; Tamjidyamcholo, et al. 2015; Yang 2009). These viewpoints on the value of online collaboration relate directly to connectivism (Siemens, 2006) and distributed knowledge (Downes, 2006). The teachers stated that they are fundamentally seeking ways to make better connections in order to gain knowledge, whether the collaboration happens face-to-face are online, which directly relates to connectivism (Siemens, 2006). The preference for technology-based collaboration led to discussions with participants regarding their methods of face-to-face and online collaboration.

All 10 participants specifically mentioned the use of email as a way of communicating with colleagues, while eight of the participants included the use of SMS messaging as a means of connecting. The use of social media was not mentioned as frequently. The educational website Edmodo was mentioned by two participants, while Twitter was mentioned by two other participants as a tool for collaboration. James alluded to Facebook as a means of collaboration and, conversely, Bonnie used Facebook as an example to describe those with whom she

collaborated electronically as "not Facebook buddies" (Bonnie, Individual Interview, June 12, 2012). The use of social media was revealed in the focus group meetings as well. In the first focus group, James referred to using the instant messenger application of Facebook as well as using the social media website. During the same focus group, Christy and Stan both mentioned using a shared folder on a network in their district and the use of Edmodo. Two participants of the second focus group also mentioned using Twitter and Edmodo for searching out resources and instructional information. Members of the third focus group also mentioned Edmodo, Schoology, and Georgia Virtual. Christy stated key benefits of online collaboration are convenience and the effectiveness due to the fact "because both people can have other things they're working on and still multitask and do the electronic communicating" (Christy, Individual Interview, May 22, 2012). Allison echoed the sentiments of Christy concerning the beneficial aspects of online collaboration by saying,

> Electronic communication has offered me the personal time. I still feel like we talk all the time and has saved the time needed for other preparations. I definitely feel that communicating electronically is and will continue to be an effective method for me because it saves time and provides quick feedback. (Allison, Focus Group Interview, July 3, 2012).

Face-to-face communication. Many participants indicated meeting with teachers who taught the same content as them and teachers who were on the same grade level team as them were requirements of the schools at which they worked. Allison shared that meeting face-to-face was a requirement at her school.

> At my school we're required to meet at least once a week and have a grade subject level collaborative meeting, but because my teachers are located next door to me we meet

> every single day to plan collaboratively. Sometimes I don't always get to meet with them if I'm required to do something else, but I definitely get with them to go over it once we've implemented it. Get with them afterwards to follow up on it to see if it worked the way we thought that it was gonna work, to see if we could have tweaked it to make it better. (Allison, Individual Interview, May 18, 2012)

Most participants suggested face-to-face collaboration was necessary with teachers of the same content in the building to ensure "everyone is on track and doing what they're supposed to and to see how things are going" (Linda, Focus Group Interview, June 27, 2012).

Many of the participants, especially those who taught more than ten years, have gone through several implementations of required face-to-face collaboration. Two participants noted when they began teaching they planned in isolation, and then later planned with teammates to do interdisciplinary units. The forms of collaboration described by these teachers were content collaboration only, scripted collaboration, and finally countywide collaboration, which involved several schools. All participants involved in the study noted a requirement to plan collaboratively on some level. Some participants explained they met routinely with teachers who taught the same content area as them and teachers of the same grade level as required, but these face-to-face meetings were not satisfactory for all of their collaboration needs. Roberta summarized what many of the others indicated when she stated:

> What no one pays attention to, though, is that when it works it is usually about the people involved. Electronic communication has made it possible for me to still collaborate with those I work well with, but am no longer working with in the same building. We still support each other even though our situation has changed. (Roberta, Focus Group Interview, July 3, 2012)

Electronic communication. All of the participants indicated a use of electronic communication in their collaborative practices. The reasons participants gave for using electronic communication varied. Some participants expressed a desire to continue relationships with those with whom they had previously worked and had an established relationship. Stan revealed, "I maintain communication and a working relationship with teachers from the school that I left . . . I feel more comfortable asking some questions I have from them. As a newer teacher, I need help. There is so much…" (Stan, Individual Interview, June 6, 2012). Millie noted, due to budget constraints, she was now the only grade level teacher of her content, and to collaborate meant stepping outside the school walls. She shared:

> My situation may be unique since I am the only person in my school that teaches my particular subject area, but I feel like it [collaboration] has to be done on an as needed basis. I need to get with a colleague to bounce ideas off of for a new unit or a particular situation as they come up. There are other times when I am fine working alone and like to do things my own way. I have to reach out electronically . . . can email colleagues or go to others online when I need to without being tied down to a weekly meeting where not much gets accomplished, now that I look back on how it used to be. (Millie, Focus Group Interview, July 3, 2012)

Kara stated she went from a situation where teachers worked well together face-to-face naturally and authentically to one of required collaboration with other teachers who did not. She indicated at the time of data collection her teaching partner did not want to meet face-to-face, and the two would occasionally email, but the most frequent communication occurred through SMS texting in the evenings. Kara revealed she found through experience the relationship behind the collaboration was largely responsible for its success or failure by stating,

> It could be yes, because once you find someone that you work well with it's easier to share ideas and it's easier to bring your failures as well as your successes to the table and if it's someone that you are forced to collaborate with and you know it's a forced situation a lot of times everyone just sits there very quietly and there's not a whole lot of collaboration that happen. (Kara, Focus Group Interview, June 27, 2012)

Lana, Linda, Kara, Christy, and Roberta all reported electronic communication improved the likelihood of productive collaboration with colleagues. Interruptions during face-to-face planning, decreased time for planning in schedules, and parent and administrative meetings during planning time were mentioned as factors resulting in content planning taking place electronically. The participants indicated the efficiency of electronic communication was an advantage to time management during their days. Lana noted she was unsure of the effectiveness of electronic communication, but agreed it was much more efficient as face-to-face collaboration required her to "wait for everyone to get in there" and then "we get off topic" (Lana, Individual Interview, May 22, 2012). Roberta stated electronic communication allowed for her to "do it on your own time" and provided time for "you to sit and think," and to her this was "more time efficient" (Roberta, Individual Interview, May 31, 2012).

James noted in all three formats of data collection he worked at more than one school and was rarely present at any of them for face-to-face collaboration. He noted, as a new teacher having taught less than five years, his only experience on which to base responses was limited. James indicated he communicates daily with the teachers from both schools where he works through email, text, and messaging through social media. Of communicating with his peers electronically he said,

> Initially I feel kind of distant when I first email someone or get in a conversation with them through a, through email or texting or whatever, but I feel like over time as you continue the process of emailing them and getting to know them that you, you build a stronger connection verses where sometimes they are in the school building that pass and you say like a word or two on occasion that really you don't know them as well as the people you're emailing. (James, Individual Interview, May 24, 2012)

Allison, Linda, Stan, and Christy indicated a need to plan collaboratively with others in the same building, but differing schedules did not allow for face-to-face collaboration unless it was before or after school hours. These participants also noted some of the colleagues with whom they needed to meet were not available during those times to meet in person because of other jobs and responsibilities. According to Allison, " . . . when we don't have that common planning it's a necessity to still communicate with my coworkers or peers and, thus, technology is . . . is primarily the way I have to communicate" (Allison, Individual Interview, May 18, 2012).

Stan stated when he experienced a change in schools; he elected to remain in contact with former colleagues. In his electronic journal, Stan noted several contacts with a mentor teacher to ask advice, and with former colleagues to seek reassurance and ideas for instructional strategies. Stan described his feelings in an electronic journal entry:

> I feel more comfortable asking certain questions of this person rather than those I work with [now]. They gossip and I don't want to give them anything to talk about. I am not the most comfortable in this content area and I respect the opinion of this person [former colleague]. (Stan, Electronic Journal, May 11, 2012)

Through personal interviews and journal entries, the participants shared the methods of collaboration they employed and some insight into how electronic communication changed their collaborative efforts. The participants reinforced the importance of collaboration by describing the movement from face-to-face meetings to electronic communication. According to Christy, electronic communication also created professional and personal bonds between teachers. She stated:

> Some of the teachers I communicate with electronically, I feel like I know better than some of the teachers in my own building. I think this is because of the communication exchange that we have throughout the school year, so I communicate with them electronically more than I talk with some of the people that I see in my own building every day. (Christy, Individual Interview, May 22, 2012)

Allison also described relationships she established with other teachers online. She echoed the sentiments above by stating, " . . . many of those people I have never met personally, but I feel closer to them than some of people that work in the same building" (Allison, Individual Interview, May 18, 2012).

All participants indicated some form of electronic communication took place with workplace colleagues or peers outside the building on a daily basis. The forms of electronic communication included email, SMS, social media sites, web-based discussion boards, state department of education discussion groups, instant messaging, video chat, and applications. The three types of electronic communication most commonly utilized by participants were email, SMS, and social media.

Email. The electronic communication used by participants most prevalently was email. Email was described most frequently as the method used to share lesson plans, instructional

resources, and daily communications. Allison stated, "Within my school, I communicate with my colleagues electronically on a daily basis, multiple times throughout the day" (Allison, Individual Interview, May 18, 2012). In analyzing the electronic journals, electronic communication was noted on 164 occasions by participants. Of the electronic communications noted by participants, 53.05% involved the use of email.

Christy indicated email allowed teachers who work within the same building and share students with particular needs to meet, but do not see each other throughout the day. She stated, " . . . the ELL [English Language Learner] and the remediation teacher do not share any kind of common planning time with us, so any communication that we have has to be through email" (Christy, Individual Interview, May 22, 2012).

Kara indicated through online courses she became acquainted with other educators who taught similar content, and frequently emailed or messaged them to collaborate. Of those relationships, Kara stated during the course work "we communicated through email" and, though no longer in class together, "something comes up and we might share an idea for a book or a lesson plan" (Kara, Individual Interview, May 16, 2012). Kara indicated this continued collaboration arose from shared interests and was not scheduled, but she found "it's interesting that sometimes we are doing the same concepts, and so we can share ideas" (Kara, Individual Interview, May 16, 2012). James also implied connections can built through email and stated, " A lot of it has to do with that [common interest] because when you have a common interest with somebody you tend to create a better bond with them" (James, Individual Interview, May 24, 2012).

The participants who used email all noted communications in this manner were uncomplicated and efficient. Allison stated, "I think it [email] is very effective . . . I don't have

to leave my class" (Allison, Individual Interview, May 18, 2012). Stan shared, "I actually feel like I communicate more often with my colleagues through email . . . more than I do face-to-face conversations . . . to me it's easier to send an email" (Stan, Individual Interview, June 6, 2012). Bonnie also stated, in addition to being timely and effective, the use of email "provides documentation" (Bonnie, Individual Interview, June 12, 2012) necessary for her job, and since she worked across multiple grade levels, provided written proof she can double-check to ensure she has completed everything required of her.

SMS. Communicating through text messages was also a noted form of electronic communication. Most of texting communications occurred with teachers who worked in the same building, or teachers with whom participants worked closely within their district. Of the 164 electronic communications cited in participants' journals, 15.24% were determined to be text messages.

Sending text messages seemed to be used most often when time was predominately a factor in receiving a response, or the communication occurred after school hours. Allison stated in her journal, "I am a very in the moment person and, if I wait, I may forget" (Allison, Electronic Journal, May 11, 2012). James indicated the immediacy of texting was a factor for him in communicating with his mentor teacher. He stated,

> I like that I can text her and can receive immediate feedback on my ideas. It also gives me time to think about my questions or responses to her before replying . . . It's a little more like having a conversation than email. (James, Electronic Journal, May 17, 2012)

Kara said she and her content partner use texting frequently, but indicated the communication occurred after school hours. Kara revealed texting was successful communication for her and her content partner. According to Kara, the time away from school

was beneficial to planning and she and her content partner seemed to "have more ideas" (Kara, Individual Interview, May 16, 2012) to share through texting back and forth once they were at home. Kara stated, "She [her content partner] does not want to sit down and collaborate, but she does text me when she gets home" (Kara, Individual Interview, May 16, 2012). She went on to reveal the majority of their collaborative planning took place through texts and emails in the evenings. Kara indicated this was a spontaneous form of collaboration with her content partner and they communicated electronically as the ideas developed.

Participants James, Allison, Linda, Kara, and Stan all indicated texting was used as a convenient tool to quickly share information in the moment. James indicated in his electronic journal he often had thoughts to share traveling between schools, and a text message could be accomplished from his car. He stated, "This was much easier through text than email; mainly because I was on the road when I realized…and could respond between stops" (James, Electronic Journal, May 21, 2012).

Allison shared when she was away from her coworkers for off-campus meetings; she used SMS messaging as a means to stay connected to what was happening in the building with her colleagues and students. Allison also noted using texts instead of school email ensured privacy and she and her coworkers may "text comments that we would not necessarily put in a school email" (Allison, Electronic Journal, May 4, 2012).

Social Media. Social media sites utilized by the participants included Facebook, Twitter, Edmodo, and discussion forums. 21.95% of the types of collaboration found in participants' electronic journal entries included some form of social media. Most of the participants who used social media to collaborate were looking outside of their school for some type of professional relationship in addition to those within the same building.

Two of the participants, Kara and Stan, indicated they were new users of Twitter, but in the electronic journals noted frequent checks of their accounts. Based on the electronic journals, Stan frequently joined in Twitter discussions and said, "I am addicted to it. I could use Twitter for every diary entry. I check my timeline throughout the day just to see what is new" (Stan, Electronic Journal, May 25, 2012). Kara said, while she enjoyed the connection to others Twitter provided, "I do not tweet often myself, although I do like to express myself occasionally" (Kara, Electronic Journal, May 13, 2012). Both participants indicated Twitter had an abundance of educational resources they were using to research strategies for implementing new standards for the upcoming school year and to search for innovative strategies for struggling students. Stan also shared he was using Twitter to communicate with others who held a position similar to a job opening for which he was to interview, and he was seeking advice on how to answer possible interview questions.

Another social media site mentioned in participants' electronic journals and in interviews was Facebook. James, Allison, Millie, and Kara all indicated in their interviews and journals they utilized Facebook as a method of collaboration, particularly with teachers in other facilities. Participants noted they used Facebook to remain in contact with former colleagues, mentor teachers, student teachers, and graduate course classmates. Sharing ideas, frustrations, results, and concerns were common topics for participants to discuss through Facebook. Allison pointed out teachers were criticized if school laptops were used for non school work and, when discussing graduate work or other topics with colleagues, Facebook was a tool accessible on smart phones. Allison also described Facebook and Facebook messenger as a "quick/easy way to collaborate" (Allison, Electronic Journal, May 1, 2012). James noted reaching out to a

colleague through Facebook to discuss and gain ideas regarding disciplinary strategies. Of this interaction he reflected:

> He had some ideas I think will be helpful to me as a new teacher. The FB chat was with a teacher from another school who I met during student teaching. I admired how he managed his classes and he said I could ask him for help anytime. I did not get anywhere talking to my coworkers, so I'm glad I could ask someone else for a fresh perspective. (James, Electronic Journal, May 15, 2012)

Two participants, Lana and Bonnie, indicated using Edmodo in their electronic journals. In interviews, Allison, Bonnie, Christy, Millie, and Roberta also mentioned using this form of social media to collaborate. In her journal on May 9, 2012, Millie noted she was a first-time Edmodo user and had created an account after talking to another teacher in the same school. Of Edmodo, Millie said, "I created an account and, before I knew it, over two hours had gone by, and I was having a blast chatting back and forth with other middle school teachers from all over the world" (Millie, Electronic Journal, May 9, 2012). Millie noted this was an important discovery for her as the only teacher of her content within the building, and one of three within the district. Lana indicated she has used Edmodo for a couple of years, and her electronic journal frequently reflected her passion for the connections this social media allowed for her and her students. In her electronic journal Lana reflected, " I LOVE Edmodo! I have gotten several ideas to take back to our meetings that will hopefully move things along" (Lana, Electronic Journal, May 23, 2012).

Several participants mentioned participation in discussion forums as a collaborative method they utilized. This type of collaboration appeared to take place as the participants needed interaction or sought a particular strategy or intervention. Three teachers, Allison,

Roberta, and Linda, indicated participating in a discussion forum established to help teachers implement new teaching standards. Allison and Roberta were utilizing a forum designed for teachers by the state, and Linda was using a forum set up within her grade level throughout the district in which she taught. Christy indicated in her electronic journal the use of a discussion forum assisted her in finding ways to remediate students who had not been successful on state-mandated testing and were going to be retested to fulfill promotion criteria. Christy stated, "I love the ability to have access to groups outside of my county and state who could be using a successful strategy that neither my coworkers nor I have thought of trying" (Christy, Electronic Journal, May 22, 2012).

Research Question 2: What factors influence teachers to seek and sustain collaboration with others through technology-based communication. The factors that caused the participants to seek technology-based communication align with the four themes that emerged throughout this study. The four themes included: (a) technology-based collaboration as an effective method to improve instruction or seek support from peers; (b) technology-based collaboration as an expedient way to communicate with peers; (c) technology-based communications as a method to document shared information; and (d) technology-based collaboration as a convenient method to avoid unwelcome situations. Below are descriptions of the factors, which were influential for causing participating teachers to seek and sustain technology-based communication with colleagues.

Resources. All participants noted sharing resources through technology-based communication. The majority of the resources specified by participants were instructional in nature. Lesson plans, SmartNotebooks (software), links to websites or videos, and specific learning strategies were among the resources noted by participants both in interviews and

journals. Allison stated, " . . . I share tons and tons of links to various websites" (Allison, Individual Interview, May 18, 2012). Roberta stated, "each individual teacher goes out and finds resources and we share them electronically" (Roberta, Indivdiual Interview, May 31, 2012). Lana, Linda, Bonnie, Stand and Christy all affirmed sharing resources and strategies with coteachers for meeting the needs of students who struggled with regular course content. In her electronic journal Christy reflected on one such interaction by stating, "Without this ability, there would be little communication with teachers outside of my building. I shared what I knew in the email with her as well" (Christy, Electronic Journal, June 1, 2012).

Roberta indicated she communicated with a former coworker through email as a means of assistance and support for each other through curriculum changes in the state standards. Other teachers voiced in interviews and noted in journals similar relationships of support through times of change or stress in work-related situations. Some teachers, such as Christy feel pressure to look for other avenues for struggling students. Christy stated,

> I feel like there is a huge, especially placed on math and reading, that there is like a huge expectation for those students to achieve and when you can't, and when they continue to struggle you continue to search for resources online. (Christy, Individual Interview, May 22, 2012).

Allison, Millie, and Kara revealed they used technology-based communication while working on or helping others in the pursuit of advanced degrees. Millie also stated most of her in-school collaboration was about team concerns such as scheduling, interventions, and behavior, while most of her content collaboration was with teachers at other schools. One participant, Stan, noted he was looking for resources to help in the search for another job. Stan shared that a friend introduced him to Twitter and through the social media source he "found some pretty cool

resources to help me with some classes and for interviews and stuff" (Stan, Individual Interview, June 6, 2012).

The reciprocity of sharing resources and information was also mentioned in focus group discussions. Interaction, trust, and expectations of a give-and-take of information are an important component of collegial networks (Cabrera, E. & Cabrera, A., 2005). The importance of this was emphasized through focus group interviews. The group of less experienced teachers referred to contacting mentors or trusted colleagues for professional sharing. James, a member of the second focus group, confirmed this in his electronic journal by writing of his mentor teacher, "I like that I can text her and get immediate feedback on my ideas" (James, Electronic Journal, May 17, 2012). In the third focus group, members referred to cooperative collaboration. The idea of reciprocity was important. Roberta said, "It may not be polite … I can plan wherever, whenever, and with whomever I choose" (Roberta, Focus Group Interview, July 3, 2012) in reference to collaborating online.

Expediency. The statements of the interviewees towards ease of use indicated that teachers found the use of technology-based communication to be productive. Participants' responses denoted a positive attitude toward incorporating electronic communication into their professional practices, which corresponded with prior research (Najafi & Clarke, 2008; Tamjidyamcholo, et al. 2015; Yang 2009).

The data collected suggested that technology-based communication provided convenient, immediate, and useful opportunities to collaborate. All 10 participants reported positive experiences with technology-based collaborations tools. Seven participants also noted changes in the amount of time they had for professional collaboration made the use of technology-based communication more predominate than in the past. Roberta stated, "Well, it's not always

feasible to sit down and meet with somebody . . . and so doing it online sometimes is much easier" (Roberta, Individual Interview, May 22, 2012). Allison, Millie, Bonnie, Kara, Stan, and Christy noted the ease of use and immediacy of responses was important to their collaborative experiences. Stan stated the following about emailing or texting someone he sees every day:

> I've found that it's easier to send ideas through text message or email and wait on a response and to reply back and forth. To me that's easier than having to go across the building to find someone who may not be there or may be in a meeting. So to me, it's more time effective. (Stan, Individual Interview, June 6, 2012)

Lana also shared not only did she find technology-based communication to be easier and more time efficient, but collaboration was also more focused on work. Lana reported she felt teachers "can get off topic easily and socialize" (Lana, Individual Interview, May 22, 2012), but when the collaboration was electronic the teachers stayed on topic, which saved time.

Kara and Roberta also noted technology-based collaboration provided no time constraints. Both found value in having time to consider responses and to think without interruption before replying. Kara indicated there were a lot of interruptions during planning time and "just being in a different environment helps a lot so you are not so distracted" (Kara, Individual Interview, May 16, 2012). Roberta echoed these same thoughts by comparing responding to an issue mentioned through email with answering a question posed in passing in the hallway. Roberta revealed if asked in person she felt pressed to "answer automatically," but when she answered through email " . . . you don't have to respond immediately. You can go back and respond at any time" (Roberta, Individual Interview, May 31, 2012).

Documentation. Some participants indicated a benefit of electronic collaboration was documentation. In a journal entry, Lana recorded a parental contact through email and stated the

communication was easily shared with the student's other teachers and administration for record-keeping purposes. Linda relayed in a journal entry on May 11, 2012 using email and asking colleagues to read the communication, as well as copying others on the email, helped avoid long parental phone calls and prevented words from being misconstrued.

Several participants noted communicating through email or text made others, as well as themselves, aware of their duties and responsibilities. Linda stated, "If it is in writing, people cannot deny they have agreed to take care of something, and I can email reminders" (Linda, Electronic Journal, May 15, 2012). Lana also commented in her electronic journal that email allowed her "to send reminders" and to "help me remember" (Lana, Electronic Journal, May 2, 2012). Bonnie noted the end of the year schedule was often chaotic, and in her journal she documented the use of an email as evidence when questioned as to why she had not attended to a task. She stated the electronic communication provided "proof that I was where I was told to be" (Bonnie, Electronic Journal, May 16, 2012).

Bonnie stated throughout her journal entries she utilized email to send and collect information on ELL students. She stated the use of email ensured she had proof accommodations were sent, and it was easier to collect as well as track teacher feedback concerning ELL students. Bonnie indicated, since she taught all grade levels, and electronic communication allowed her to stay up-to-date with information regarding those different grade levels. She stated, "I have access to a computer or my phone immediately, so if I had to communicate with a teacher, for instance, down the hall, and I couldn't of course leave my classroom, I just, it's immediate" (Bonnie, Individual Interview, June 12, 2012)

Avoidance. Some of the participants indicated a desire to escape face-to-face meetings. The majority of the participants stated meetings conducted in face-to-face settings were often

unproductive. Kara noted the hallway had heavy student traffic during planning time and "people stick their heads in to say hello," making it "hard to think clearly" (Kara, Individual Interview, May 16, 2012). Lana indicated significant work did not get accomplished when meeting in one room during planning. Lana noted, "side conversations and interruptions can be avoided through email" (Lana, Electronic Journal, May 7, 2012). In a journal entry, Linda shared a collaborative experience through email was positive because teachers "did not get sidetracked and we were able to divide up work tasks quickly" (Linda, Electronic Journal, May 23, 2012). Stan indicated he preferred electronic communication and found it to be more beneficial to accomplishing tasks:

> I feel when we meet as a group, especially when we get more than two or three together, people start side talking and bringing up things that have nothing to do with what we've been supposed to be collaborating about, which takes more time out of our day . . . when we do it over email or instant message, I feel like we get more done in a short period of time. (Stan, Focus Group Interview, June 20, 2012)

Bonnie preferred to avoid face-to-face collaboration because she found technology-based communication more productive, and she did not have time to plan in person with three separate grade levels. Bonnie was emphatic in her individual interview that time management was a major reason to circumvent face-to-face meetings if possible. She also noted she was reticent when meeting with colleagues in face-to-face settings about offering her thoughts to others, "I have to think about it first" (Bonnie, Individual Interview, June 12, 2012). She indicated a preference for the time allowed through technology-based communication to process what was being said during collaborative meetings. Bonnie noted sometimes comments were made during face-to-face collaboration that proved to be detrimental to the relationship or the work. She

stated, “Once you say something, you really can’t take that back, or you can’t modify it to a satisfaction that I feel is necessary sometimes” (Bonnie, Individual Interview, June 12, 2012).

Roberta acknowledged routine content collaborations often felt forced and those meetings were not productive. She stated, “I feel like I end up doing the work for other people. I prefer to collaborate online when I need to, not when I am told to” (Roberta, Focus Group Interview, July 3, 2012)

Two participants noted a distinct exclusionary use of electronic communication. Linda and Stan indicated some electronic communication was used when other teachers in the building were excluded or they wanted to avoid contact with them. Linda said, “We use texting for the obvious reasons – not everyone is invited, and our plans outside of school are personal business” (Linda, Electronic Journal, June 6, 2012). Stan stated his Twitter account was private and he did not want anyone from school to request to follow his account. He said, “I need something separate from here [school] because these people are usually the source of my frustrations” (Stan, Electronic Journal, May 25, 2012).

Another situation that participants were clearly trying to avoid was forced and artificial collaboration. In two of the focus groups, participants stated at times they were forced to collaborate with peers in their school and district. In the second focus group, Lana stated of the forced collaboration, “It doesn’t work” and Linda agreed “you have a sense of negativity . . . it’s another thing on our plate to do,” and “…why am I being forced to give all the work away to those who aren’t doing anything” (Linda, Focus Group Interview, June 27, 2012). In the third focus group, this attitude was supported. Roberta said, “…I have seen so many changes” (Roberta, Focus Group Interview, July 3, 2012) in reference to planning first in isolation, then in interdisciplinary units, then content collaboration, and finally scripted district collaboration

movements. In this same focus group, Millie pointed out collaboration "really changed" (Millie, Focus Group Interview, July 3, 2012) for her when she became the only person to teach a subject in the building. In the first focus group of less experienced teachers, James describes the changes as relating to the school itself:

> Basically when I started, I thought it was best to do face-to-face interaction, but as I have been at different schools it's changed because of the culture of the school. I've been in a school where the culture was more of meeting face-to-face, talking things out together as a group at a table. And I've been at a place where everybody emailed all the time. I find it easier to do the emails and I find it easier to do the collaboration through email just because it's more convenient, it saves time. But really it's according to the culture of the school what I would use most. (James, Focus Group Interview, June 20, 2012)

Concerning the use of electronic communication, the focus group interview supported the assertions from research that collaborating out of need yields more effective results than being required to participate (McLoughlin & Lee, 2010). The words of Kara supported this idea when she elaborated:

> It's easier to share ideas and it's easier to bring your failures as well as your successes to the table and if it's someone you are forced to collaborate with and you know it's a forced situation a lot of times everyone just sits there very quietly and there's not a whole of collaboration that happens. (Kara, Focus Group Interview, June 27, 2012)

Research Question 3: How do teachers use technology-based communication tools to improve their professional practices. Participants revealed electronic communication promoted collegial relationships. All participants described collaboration as an important component of

teaching. Most participants described a need for some routine collaboration among teammates, but felt the most important collaboration happened as the need or desire to communicate with others arose. Flinders (1988) referred to teacher isolations as a "paradox" (p.18) because of number of "interpersonal interactions" (p.18) teacher experience each day. The degree and relevance of those interactions are important, and McLoughlin and Lee (2010) found the interactions to be much more beneficial when they arose from need. Millie stated she liked having someone to "bounce ideas off of" (Millie, Focus Group Interview, July 3, 2012) as the need surfaced. Roberta reported the use of electronic communication to "support each other" (Roberta, Focus Group Interview, July 3, 2012) through state curriculum changes when describing a collaborative experience with someone who worked in another school.

James, Kara, Stan, and Roberta acknowledged they used electronic communication to maintain relationships with people with whom they had worked in the past and with whom they felt a strong collaborative relationship. Kara indicated emailing, from her personal account, not a school account, a former coworker with concerns about changes for the upcoming school year. Her journal documented the emails were exchanged over three days. She stated, "It is nice to be able to vent to someone without being made to feel as if it is all me and my attitude toward the changes" (Kara, Electronic Journal, May 23-25, 2012). Roberta shared in her journal entries she also communicated through email and text with a former colleague due to concerns over planning for the next school year. She indicated the need for support as a result of a change in state curriculum. Roberta said, in reference to those changes, email was an "effective way to communicate with a larger group this late in the school year. People responded at their convenience, but quickly. Easy way to reach a decision in a large group" (Roberta, Electronic Journal, May 15, 2012).

James and Stan both stated they used email and text communication with former mentor teachers. In journal entries, both participants reached out to former mentors through technology-based tools for support and reassurance in instructional planning. According to Stan, texting allowed him to gain quick insight from someone he trusted and James said of texting "It's quick and it's a little more like having a conversation than email" (James, Electronic Journal, May 17, 2012).

Several participants noted the use of technology-based communication increased opportunities for improvement in teaching performance and created an awareness of their own practices. Allison pointed out when she realized a lesson was not working in her classroom, she sent an email or instant chat message to ask for suggestions immediately, and the communication made her "not feel quite so alone" (Allison, Individual Interview, May 18, 2012). Linda shared, when a lesson did not go well for her, she searched online and tried to find discussions to read through to see if anyone had written about a similar struggle.

Roberta indicated that online communication had changed her fundamentally as a teacher and made her reflective of the teaching process. Roberta conveyed her feelings about the change in her teaching practice by stating:

> Because I can see what other people are doing and then I can kind of gauge if I need to be doing something I'm not, or if I'm doing too much . . . [in a meeting] you're doing it all right there and things are happening so fast, but when it's online, a lot of times, even after I have answered a question, I go back into that and think when I have time, on a weekend or something. Well, how can I do this differently? So I have it there as a reference point. Where in a meeting, I mean, even if you take minutes you may not necessarily go back and think about that conversation you had or read notes or . . . with online I think I have

done that a whole lot more than I would just being in a meeting. (Roberta, Individual Interview, May 31, 2012)

Summary

Most of the participants in this study utilized a combination of both face-to-face and technology-based collaboration. Due to the nature of the schools, some teachers collaborated in face-to-face settings to meet a requirement. These teachers voiced a dislike of meeting out of obligation rather than need, and the use of technology to communicate appeared to be more authentic to the collaborative practice.

Some participants, due to the nature of their teaching position, collaborated through technology-based communication more than others. These participants often did not share planning with teachers of the same content, were teachers who taught multiple grades, or were the only teacher of the particular academic content in their school.

Of the technology-based collaboration tools available, email was the most widely used. Through the electronic journals all participants indicated a reliance on email for both communications within their school and with teachers outside of their school. Participants named communication through email the most often as an effective method of collaborating with peers.

The greatest factor that seemed to influence teacher collaboration was the desire to seek out instructional strategies to help their students be successful learners. The participants all indicated a desire to make sure they were doing what they were supposed to be doing. Additionally, the participants indicated a desire to communicate with their peers to develop a shared understanding of roles and responsibilities in their jobs. Most participants noted

technology-based communication had several benefits, including ease of sharing resources, lack of response time constraints, and efficiency in time management.

Some participants indicated collaboration with peers made them more effective teachers by keeping them on track instructionally. Some indicated it made them more reflective and it was important to have collegial relationships. Most participants indicated collaboration through technology-based communication had changed the way lessons were planned and had increased communication with colleagues. Participants also noted the usefulness of technology-based communication in securing support from colleagues. The majority of participants indicated the primary advantage to the utilization of technology-based communication was the lack of constraint on time and location for collaboration with peers.

CHAPTER FIVE: DISCUSSION

Overview

Chapter Five begins with a brief discussion of the relevant research and a summary of the finding of Chapter Four. Next is the discussion of the implications of those findings followed by study delimitations and limitations and recommendations for future research. This phenomenological study surveyed middle grades teachers in four rural schools to investigate their collaborative practices. Ten teachers from three of the four schools agreed to participate in further data collection to explore if the development of technology-based communication has made an impact on professional collaborative and reflective practices.

Teaching can often be a lonely and polarizing profession. According to research, teaching in an environment of collegiality provides support, encouragement, and options to better professional practices for educators (Bertrand et al., 2006; Schlechty 2002, 2011). Research indicates the use of online collaboration garnered positive results from student teachers in the areas of instructional and psychological support (McLoughlin & Lee, 2010; Paulus & Scherff; 2008). The findings of the this phenomenological study supported the assertion that teachers need collaboration for support in their jobs and are willing to communicate in both face-to-face and online communities.

Summary of Findings

Teacher perceptions and attitudes were examined regarding three research questions through individual interviews, focus group interviews, and a review of electronic journals that participants were asked to keep for data collection. The research questions this study were: Research Question 1: What types of collaboration do rural middle school teachers seek in order to improve instructional practices?

Research Question 2: What factors influence teachers to seek and sustain collaboration with others through technology-based communication?

Research Question 3: How do teachers use technology-based communication tools to improve their professional practices?

Types of Collaboration

In the interviews and electronic journals, participants expressed a desire to connect with other teachers in any way to ensure they were following established protocols and providing the best opportunities for their students. Participants identified collaboration as an important part of their professional lives and sought relationships with colleagues in either face-to-face or online settings. The participants seemed motivated to meet their professional needs as they arose.

To determine the types of collaboration used by the participants in the study I reviewed the transcripts of the individual interviews, transcripts of the focus group interviews, and electronic journals. The review of the documents revealed participants collaborated with their peers through face-to-face meetings as well as through email, SMS, and social media. Of the online methods, email was the most prevalent. The lack of time constraints in using email and SMS allows for more thoughtful response, but also provides an immediate avenue for communication. Teachers become frustrated when they have no avenue for sharing information, asking questions, or receiving support (Hebert &Worthy, 2001; Scherff & Paulus, 2006). The ease of use of technology relieves the frustration of time constraints in peer mentoring situations (McLaughlin & Lee, 2010; Yang 2009).

Factors Contributing to Electronic Collaboration

There were several factors noted by participants that made them seek collaboration through technology-based communication tools. Among those factors, participants identified

time constraints as one of the leading causes for using technology-based tools for collaboration. Teachers want the time to build professional relationships built on reciprocity and mutual respect and teachers need these relationships to grow professionally (Erkens, et al., 2008; Schlechty, 2002, 2011; Yang, 2009).

Participants also found online communication to be beneficial for sharing resources especially as they were discovered. My analysis of electronic journal responses revealed the most noted resources shared by and with the participants were lesson plans, instructional tools, and teaching team documents. Teachers indicate a strong desire to share knowledge and experiences with colleagues (Cabrera, E. & Cabrera, A., 2005; Hur & Brush, 2009).

Other contributing factors included documentation of shared communication. This was mentioned by nine participants, but in different ways. Some participants mentioned the documentation as a means to help them remember what was shared or expected. Other participants viewed the ability to document collaborative conversations as a means for protecting themselves to show they were doing what they were supposed to do. Yang (2009) noted in participation through collaboration using blogs, teachers writing about what they wished could generate critical thinking and discussion to later reflect upon and expand their knowledge or ideas.

Somewhat ironically four participants noted, either in interviews or journals, using technology to collaborate helped them avoid unwanted face-to-face situations. Participants pointed out in face-to-face meetings the conversations can go astray and little may be accomplished while technology-based conversations are more easily controlled. The lack of face-to-face conversation seemed to create a shield of anonymity and protection for some of the participants to feel more secure in expressing their opinions and ideas (Hur & Brush, 2009).

Technology-Based Tools and Teacher Professional Practice

Among the participants the greatest consideration for collaborating with other teachers was the desire to find instructional strategies to help their students be successful learners (Schlechty, 2002, 2011). In document analysis, the appearance of sharing resources was evident among all participants. The shared online resources seemed to provide them with a sense of security in ensuring their work was documented and they were doing what they were supposed to do for students.

In the document analysis, I also came to understand the online communication provided participants with time to professionally reflect. This time to reflect professionally relates back to the learning theory of connectivism (Siemens, 2005). The teacher participants were able to receive and review knowledge in the time frame they chose. The time to adapt thinking to a new concept or reject an idea is critical for professional growth (Cross, 2007). The participants also noted they could gather support from colleagues as needed and the immediacy of communication combated feelings of isolation.

One benefit of technology that transcends the boundaries of face-to-face collaboration is the ease with which teachers can access each other for support (McLoughlin & Lee, 2010; Yang, 2009). All 10 participants in this study noted in all three data collection methods the convenience of technology-based communication for their collaboration. This ease of use also relates directly to connectivism as a learning theory (Siemens, 2006, 2011).

Discussion

The focus of this hermeneutic phenomenological study was to describe rural middle school teachers' perceptions toward collaboration and determine if technology-based communication tools have made any impact on their professional collaboration practices. Using van Manen's process for reduction and reflection, four themes emerged from the research.

These themes were: (a) teachers perceived technology-based collaboration as an effective method to find resources to improve their instruction and/or seek support from peers; (b) teachers regarded collaboration through technology-based communication to be expedient; (c) teachers considered using technology-based communication as a means to collaborate an effective method to document shared information; and (d) teachers viewed technology-based collaboration as an effective method to avoid unwanted situations. The following discussion of the literature in this study has been structured into two sections: (a) empirical literature, and (b) theoretical literature.

Empirical Literature

Research indicates collaboration is important to the professional development and practice of educators (Bertrand, et al., 2006; McLoughlin & Lee 2010; Schelchty 2002, 2011). Although most teachers in this study indicated the school where they worked provided a time for planning, several indicated the time was often used for meetings and other school duties. Through electronic communication, in this study largely email, teachers were provided with a means to collaborate without constraints of time and place. Providing teachers with access to collaborative experiences with those who share a common interest without regard for time and place is beneficially to professional development and growth (Speitel, 2003; McLoughlin & Lee, 2010). Data and themes from this study confirmed teachers value collaboration with peers and will attempt to make those connections in face-to-face or online settings to improve performance and instructional practices.

Additionally, the forming or maintenance of relationships was an often-mentioned benefit of using technology-based communication for collaboration in this study. Teachers not having common planning times with whom they work or being the only teacher of a subject or group of

students led to feelings of isolation, but because they felt connected through email or texting those feelings did not seem to be insurmountable to the participants in this study. Participants with fewer years of teaching experience noted they could maintain relationships with mentor teachers with whom they had an established relationship and this seemed to create a collaborative experience for them. Teachers often become overwhelmed with the requirements and duties of the job. This study confirmed discussing issues with peers, whether it is in a face-to-face setting or electronic format, can dispel some of the feelings of isolation (Hur & Brush; 2009; McLoughlin & Lee, 2010; Waters, 2011).

The use of technology-based tools for teacher collaboration, as described in this study, emerged due to feasibility and sustainability of communication rather than creativity. As the surveys revealed, very few participants said they received training in the use of technology-based communication tools for collaboration, yet all ten participants who continued past the survey component in the study collaborated through the use of electronic resources. This corresponds to the study by McLoughlin and Lee (2010) where participants contributed in a more meaningful way when they responded to each other electronically when the need to respond arose rather than through a mandated collaboration**.** In this study several participants corroborated the research from McLoughlin and Lee (2010), by relating that their experiences with forced collaboration were rarely positive.

Technology-based communication also expedited participants' communication with others and allowed them to hold conversations without time constraints. The importance of having the ability to share thoughts and ideas with colleagues quickly and without having to be in the same room indicated support for the research that states teacher collaboration positively impacts teacher professional performance and reflection (Cabrera, E. & Cabrera, A., 2005;

Coughlin & Kadjer, 2009; Paulus & Scherff, 2008). All 10 participants repeatedly noted the efficiency and ease of use of using tools such as email and SMS to collaborate. Language continually used to describe technology-based collaboration included words such as easy, fast, quick, effective, and efficient. Therefore, this study supported finding support previous research, which indicated the most decisive feature for teachers when participating in an online collaboration was ease of use (Najafi & Clarke, 2008; Tamjidyamcholo et al., 2015).

Theoretical Literature

The theoretical framework guiding this study was connectivism as it provides a theory for understanding learning in the digital age (Siemens, 2006). When teachers engage with each other in professional collaboration face-to-face or online, they are practicing professional development. By connecting with their peers online, whether for convenience or seeking additional resources as teachers demonstrated in this study, they are establishing and gaining knowledge from networks as Siemens described in his theory of connectivism (2006).

Among the themes that emerged from the research through my interpretation of the data, were the rural middle school teachers sought ways to improve professionally through whatever avenue was most readily available to them and provided the most effective, expedient results. The teachers looked to colleagues to ensure they were doing what they were supposed to be doing to meet the needs of students, and tried to do so in the most effective manner, whether those connections were made face-to-face or online participants regarded them as important. This correlates to a significant point by Siemens (2005) in connectivism as he established the importance of continuing to seek and gain new knowledge through connections with multiple sources.

By searching out new information from colleagues or web-based sources, teachers expanded their knowledge base. The participants shared collaboration with peers was important for instructional planning, and they were often distracted by interruptions or pulled away from face-to-face collaboration/or simply did not share a planning time with those with whom they needed to collaborate. Some participants noted the use of technology-based communication made them more thoughtful and understanding, not only toward their own work, but also toward their responses to others. This correlates to Downes theory of distributed knowledge, which also supports connectivism (2006)

The framework of connectivism suggests that both reason and emotion contribute to the learning processes (Siemens, 2006). This supports the findings of Scherff and Paulus (2006) who determined when participants know each other outside of the online collaboration the discussions may become more critical and reflective in nature. In this study, Allison acknowledged being able to reach out made her feel less alone and Bonnie echoed this by indicating that a collaborative partner was as close as her phone instead of located in another room in the building. Roberta gave insight into the importance of electronic collaboration on her reflective practice through sharing that it gave her something to look back at when she had time to revisit the conversation. These concepts address the important component of connectivism in that knowledge sharing can occur with being locked in to a concrete time and place.

The research supported the fact that teachers are now part of a growing, changing community (Benkler, 2006). James, Stan, Roberta, Kara, Allison, Bonnie and Millie all acknowledge reaching out through technology-based collaboration tools to build or maintain relationships with colleagues outside their schools. James and Stan both specifically mentioned trusted mentors with whom they shared a collaborative dialogue while Mille and Bonnie were

seeking assistance from peers in their fields who worked in another location. These connections showed knowledge sharing is continuous and episodic and works best when the desire to collaborate arises from a need. This concept, which emerged from this hermeneutic phenomenological study, supported previous research (Benkler, 2006; McLoughlin & Lee, 2010; Paulus & Scherff, 2008) on collaborative connections and Siemens (2005, 2006) theory of connectivism.

The findings of this study have the potential to impact the area of teacher collaboration in a variety of ways. Existing theories of teacher collaboration could be affected, as could the development of new theories of teacher collaboration. There are also empirical and practical implications that have arisen from the findings.

Implications

The implications presented in the following section are based on the findings of this phenomenological study. The implications in this study have been categorized into three sections: (a) theoretical implications, (b) empirical implications, and (c) practical implications.

Theoretical Implications

In this study, I found all teachers were willing to collaborate with peers to improve their professional practice through any means they found to be efficient and effective. Teachers with less experience were willing to text or email trusted mentor teachers for advice and consultation when issues arose. Millie, who felt isolated because she was the only teacher of her subject left in her school after budget reducing cuts, could find online resources or collaborate with other teachers in her system through email. All 10 teachers shared experiences of both face-to-face and online collaboration and how these experiences were part of their professional practices. Siemens (2005) established the importance of continuing to seek and gain new knowledge in his

theory of connectivism. By searching out new information from colleagues or web-based sources, teachers expanded their knowledge base and continued to maintain and form connections through their collaborative experiences. Theoretical implications involve the significance of connections teachers make through collaborating and improving opportunities for professional development with regard for time and place constraints. Connectivism provides a framework through which knowledge is stored, shared, and gained in many ways (Siemens, 2006; Downes, 2006). The use of Web 2.0 tools and social media could be a larger component of teacher professional practice and the connections could be more widely developed if the benefits were shared with a wider audience and the usefulness of such tools promoted throughout the educational community.

Empirical Implications

All 10 participants in this study valued collaborative experiences with their peers. The hermeneutic phenomenological approach I used allowed the experiences of the participants to be shared as they were lived. This study showed how the teachers participating valued the knowledge exchange with their peers as well as the professional and emotional support provided through collaborative exchanges. This is significant in supporting claims that collaboration is an important component of teachers' professional growth and development (Schlechty, 2002; 2011).

All 10 participants indicated collaborating through technology-based tools was an effective and efficient means to share and receive information. The prevalent use of email and the reliance on their phones to communicate electronically demonstrated the ease of use of technology-based tools is important, which supported earlier research (Najafi & Clarke, 2008; McLoughlin & Lee, 2010; Tamjidyamcholo et al., 2015). Due to the widespread availability of

Web 2.0 tools and the ease with which they can be used indicates teachers need to be made aware of the possibilities for such avenues for collaboration.

Stigler and Herbert (1997) declared the problem with teaching in the United States as opposed to other countries was that teachers had no way to improve. This study, by investigating the lived experiences of the teacher participants, demonstrated that teachers are not waiting for someone to help them get better, but are seeking knowledge on their own time and terms. Roberta indicated that technology-based collaboration made her more reflective in both how she responded to peers and in revisiting shared ideas and knowledge after a collaborative experience because the discourse was available to her for reading time and again. The teachers with less experience relied on technology-based communication to allow them to stay in contact with trusted mentors, which served to reduce some new teacher questions and anxieties. Other participants noted exchanges where they were attempting to investigate and ensure they were using the best practices for their students. The resulting data and themes from this study indicated teachers were sincere about improving performance (Schlechty, 2002, 2011). This phenomenological study contributed additional information to the body of literature showing how teachers cope with loss of time for face-to-face collaboration and the innovativeness of rural middle school teachers in finding ways to overcome isolation due to setting. In the future, I plan to publish an article describing the use of text, email, and social media as collaborative tools for teachers.

Practical Implications

The use of technology-based tools for teacher collaboration as described in this study emerged due to teachers' sense of practicality and problem solving. Few teachers indicated in surveys any training in the use of technology-based communication tools for collaboration, but

all 10 participants who continued past the survey component in the study did collaborate through the use of electronic resources. Prior research from multiple sources pointed to the benefits of technology-based communication for teacher collaboration (Hur & Brush, 2009; Coughlin & Kadjer, 2009). Social media sites offer a vast array of possibilities for collaborative practice as well (Freberg, 2016; Liscom-Owner, 2017).

School administrators should ensure training for all teachers who are interested in using Web 2.0 tools to collaborate with peers. Many teachers already use social media in their private lives and may not be aware of the large quantities of professional tools available to them through such sites. Because teacher participants related such positive experiences with online collaboration, enlisting personnel who already participate in technology-based collaboration could foster a positive attitude toward the training among others and provide leadership opportunities for those providing the training. Access to an extensive audience, multiple methods for communication, and opportunities for professional recognition were noted benefits of collaboration by Coughlin and Kadjer (2009). I intend to seek permission from administration at my school to conduct a professional development training for using technology-based communication tools for peer collaboration and, with permission, other schools as well.

Limitations and Delimitations

In research limitations are conditions, which cannot be controlled and may weaken the study (Bloomberg & Volpe, 2008). Delimitations are those conditions, which occur due to choices made by the researcher to "clarify the boundaries" (Bloomberg & Volpe, 2008, p. 76) of the study. The following section describes the limitations and delimitations of this phenomenological study.

Limitations

Limitations apply to every qualitative research study due to the nature of gathering data in a non-quantitative manner. There are limitations that apply directly to this study, but may not apply to others. Specific weaknesses in the design and sample in this study are explained in this section. Limitations occur from areas in the design such as "limited sample size, sample selections, reliance on certain techniques for gathering data, and issues of researcher bias" (Bloomberg & Volpe, 2008, p. 79). Regardless of the study design, limitations need to be addressed "explicitly" (Bloomberg & Volpe, 2008, p. 79). The limitations of this phenomenological study are described in the following sections.

Limitations due to study design. Qualitative research studies are important for the information they provide into perceptions and attitudes, but they are not without intrinsic weaknesses. For example, the insight gained from qualitative research may not be transferrable to other populations and may be specific to the group studied. This research was conducted in a small, rural setting and may not be replicated in a larger urban area.

Personal biases, while I tried to remove myself from the data analysis by bracketing, may have shown in my inexperience interviewing participants. My personal experiences as a teacher and my inexperience as an interviewer may have influenced my behavior during the individual interviews and focus-group interviews. Even if I attempted to replicate this study the interview process would be different, but as the researcher I attempted to control this in the analysis portion through coding and asking an unbiased person trained in collaborative practice to evaluate the questions and coding.

The findings in the data from the electronic journals were also my interpretation of what the participants had written. Some of the participants did not provide a lot of detail in their

reflections, so the interpretations were restricted to what was written in the diary entries.

Limitations due to study sample. There are a number of limitations due to the small sample size present in this study. The participants were all volunteers from four different schools, but located in the same rural region. Four schools were initially surveyed, but I could get no participants from one of the schools. The teachers in the schools also are located within the same region and experienced many of the same training experiences. This limits the information gathered to a specific area and may not lead to broader generalizations.

The participants were also all volunteers and though given assurances of anonymity may have been reluctant to express their true opinions. This reluctance, specifically in focus groups, may have led them to give expected, socially acceptable answers rather than honest answers.

Delimitations

The intent of the study is to provide insight into rural middle school teachers' perceptions of collaborative discourse, the depth of the discussions and reflections, and if technology-based communication tools have an impact on teacher collaborative practices. The scope of the study was delimited by the use of four rural middle schools from Northeastern Georgia with a total of ten individuals. The sample was intended to be small in order to allow for in-depth analysis of the conversations of the participants and to allow time to study the data for rich detail.

Recommendations for Future Research

The findings of this research study support previous research that teacher collaboration is an important aspect of effective professional practice for educators as well as provide a foundation for future studies. Future studies could build on this body of research and investigate other grade levels not covered in this study or schools located in non-rural areas. Collecting data from other geographic areas or other grade levels in the future could also strengthen the study.

Another possible research opportunity could be a case study that extended for a longer period of time. A case study could allow for a more in depth look at the collaboration practices of individuals. Additionally, analyzing the collaboration practices of a smaller group for an extended period of time could lead to facilitate ideas for a quantitative study.

Summary

This study has presented qualitative evidence suggesting teachers utilized a combination of face-to-face and technology based collaboration methods, and they valued the collegial conversations for professional growth. This supports the research completed with pre-service teachers in Paulus & Scherff (2008) and the work of Schlechty (2002, 2011) who maintained collaboration was a vital part of teacher development. The rural middle school teachers in this study indicated a preference for collaborating as a need arose rather than routine collaboration and a preference for technology-based forms of communication facilitating a lack of time constraints. This concept supports the same finding by McLoughlin and Lee (2010) when they discovered pre-service teachers engaged in more meaningful dialogue when the development of the conversation was natural rather than forced. The teachers in this study provided insight into the importance collaboration plays in their professional lives. Insight was also gained relating how technology made sharing ideas, resources, and strategies more efficient and the lack of time constraints made the collaboration more effective and beneficial. This hermeneutic phenomenological study also supports the work of Siemens (2005) in his theory of connectivism. The teacher participants actively sought new knowledge and connections outside, as well as within their schools, through their own personal scope and sequence.

REFERENCES

Abdal-Haqq, I. (1989). The nature of professional development in schools. ERIC Clearinghouse on Teacher Education. Washington, D.C. (ED316548). Retrieved from http://www.ericdigests.org/pre-9214/nature.htm

Adie, L. (2010). Developing consistency in teacher judgement formation through online meeting centres. *Journal of Learning Design, 3*(2), 14 -26.

Archambault, L., Wetzel, K., Foulger, T. S., &Williams, M. K. (2010). Professional development 2.0: Transforming teacher education pedagogy with 21st century tools. *Journal of Digital Learning in Teacher Education, 27*(1), 4-11. Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ898518

Ary, D., Jacobs, L. C., Razavieh, A., & Sorensen, C. (2006). *Introduction to research in education*, 7th ed. Belmont, CA: Thomson & Wadsworth.

Baig, K. (February 15, 2011). Online freedom of speech goes both ways: PA teacher is right to return to blogging. [Online Social Savvy]. Retrieved from http://onlinesocialsavvy.com/?p=861

Benkler, Y. (2006). *The wealth of networks: How social production transforms markets and freedom.* New Haven, CT: Yale University Press.

Bertrand, L., Roberts, R. A., & Buchanan, R. (2006). Striving for success: Teacher perspectives of a vertical team initiative. *National Forum of Teacher Education Journal -Electronic, 16*(3), 1-10. Retrieved from http://www.nationalforum.com/

Bloomberg, L.D., & Volpe, M. (2008). *Completing your qualitative dissertation: A roadmap from beginning to end*. Thousand Oaks, CA: Sage Publications.

Bogdan, R.C., & Biklen, S.K. (2007). *Qualitative research for education: An introduction to theories and methods*, 5th ed. Boston, MA: Pearson Education, Inc.

Bonk, C., Ehman, L., Hixon, E., & Yamagata-Lynch, L. (2002). The pedagogical TICKIT: Web conferencing to promote communication and support during teacher professional development. *Journal of Technology and Teacher Education, 10*(2), 205-233.

Brancato, V. (2003). Professional development in higher education. *New Directions for Adult and Continuing Education, 98,* 59-65.

Broda, M., Wereley, M., Schmidt, A., & Shutt, J. (2010). To tweet or not to tweet:Using socially mediated technologies to promote 21st century pedagogy. In D. Gibson & B. Dodge (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2010* (pp. 3215-3219). Chesapeake, VA: AACE. Retrieved from http://www.editlib.org/p/33869

Cabrera, E.F., & Cabrera, A. (2005). Fostering knowledge sharing through people management practices. *International Journal of Human Resource Management 16(*5), 720-735.

Cady, J., & Rearden, K. (2009). Delivering online professional development in mathematics to rural educators. *Journal of Technology and Teacher Education, 17*(3), 281-298.

Cain, M.S. (2001). Ten qualities of the renewed teacher. *Phi Delta Kappan, 82* (9), 702-705.

Canning, A., & Katrandjian, O. (February 17, 2011). Teacher defends insulting blog

posts about her students: “I hear the trash company is hiring.” ABC News. Retrieved from http://abcnews.go.com/US/pennsylvania-teacher-wrote-insulting-blog-posts-students-suspended/story?id=12929001

Carpenter, J.P. (May, 2016). Teachers at the wheel. *Educational Leadership, 73*(8), 30-35.

Center for Leadership in School Reform, The Schlechty Group. (2009). http://www.schlechtycenter.org/

Chowdhury, M.S. (2006, June). Human behavior in the context of training: An overview of the role of learning theories as applied to training and development. *Journal of Knowledge Management Practice*, *7*(2). Retrieved, from http://www.tlainc.com/articl112.htm

CiteULike. (2011). Retrieved from http://www.citeulike.org

Classroom 2.0. (2011). Retrieved from http://www.classroom20.com

Coughlin, E. & Kajder, S. (2009). The impact of online collaborative learning on educators and classroom practices. Retrieved from *www.cisco.com/web/.../Metiri_Teacher_Collaboration_Research.pdf*

Creswell, J.W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed). Thousand Oaks, CA: SAGE Publications, Inc.

Cross, J. (2007). *Informal learning: Rediscovering the natural pathways that inspire innovation and performance*. San Francisco, CA: Pfeiffer.

Diary.com. (2011). Retrieved from http://diary.com/

Darling-Hammod, L. (1998). Teacher learning that supports student learning. *Educational Leadership (55)*5, 6-11. Retrieved from

http://www.ascd.org/publications/educational-leadership/feb98/vol55/num05/Teacher-Learning-That-Supports-Student-Learning.aspx

Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009, February). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad*. Palo-Alto, California: Stanford University, National Staff Development Council and the School Redesign Network. Retrieved from http://www.ecs.org/00CN4246

Davidson, C. N., & Goldberg, D. T. (2009). *The future of learning institutions in the digital age* [Kindle edition]. Massachusetts Institute of Technology Press. Retrieved from http://www.amazon.com/

Davis, M. R. (June 14, 2010). Social networking goes to school. *Education Week, 3*(3), 16-23.

Delicious. (2011). Retrieved from https://del.icio.us/

Dewey, J. (1938). *Experience and education*. New York, NY: Simon & Schuster.

Diigo. (2017). Retrieved from https://www.diigo.com/

Dougherty, M. (2009). Psychological consultation and collaboration in school and community settings, 5th ed. Belmont, CA: Brooks/Cole.

Downes, S. (2005). An introduction to connective knowledge. Retrieved from www.downes.ca/cgi-bin/page.cgi?post=33034

Downes, S. (2006). Learning networks and connective knowledge. Retrieved from http://www.downes.ca/post/36031

Downes, S. (February, 2010). New technology supporting informal learning. *Journal of Emerging Technologies in Web Intelligence 2*(1), 27-34.

Downes, S. (2012). *Connectivism and Connective Knowledge: Essays on meaning and learning networks*. Ottawa, ON: National Research Council Canada. Retrieved from http://www.downes.ca/files/books/Connective_Knowledge-19May2012.pdf

Drucker, P. F. (1994). The age of social transformation. *The Atlantic monthly, 274*(5), 53-80. Retrieved from http://www.theatlantic.com/past/docs/issues/95dec/chilearn/drucker.htm

Edcamp Foundation. (n.d.). Retrieved from http://www.edcamp.org/

Edmodo. (2011). Retrieved from http://www.edmodo.com

Erkens, C., Jakicic, C., Lillie, J., King, D., Kramer, S.V., Many, T. W., Twadell, E. (2008). *The collaborative teacher.* Bloomington, IN: Solution-tree Press.

Facebook. (2011). Retrieved from http://www.facebook.com

Farooq, U., Schank, P., Harris, A., Fusco, J., & Schlager, M. (2007). Sustaining a community computing infrastructure for online teacher professional development: A case study of designing Tapped In. *The Journal of Collaborative Computing*, *16*(4/5), 397-429. Retrieved from http://www.editlib.org/search/

Feger, S., & Arruda, E. (2008). Professional learning communities: Key themes from the literature. *The Education Alliance, Brown University*. Retrieved https://www.brown.edu/academics/education-alliance/publications /professional-*learning-communities-key-themes-literature*

Flinders, D.J. (1988). Teacher isolation and the new reform. *Journal of Curriculum and Supervison (4)*1, 17-29. Retrieved from www.ascd.org/ASCD/pdf/journals/jcs/jcs_1988fall_flinders.pdf

Freberg, K. (2016, February, 24). Snapchat: An emerging platform for teamwork and collaboration. Retrieved from https://shonaliburke.com/snapchat-emerging -platform-teamwork-collaboration/

Fullan, M. (2002). The change leader. *Educational Leadership*, *59*(8), 16-20

Georgia Department of Education. (2011). School Reports. Retrieved from http://www.doe.k12.ga.us.

Georgia Department of Education. (2015). Georgia Department of Education Website (2015) http://www.gadoe.org/CCRPI/Pages/default.aspx

Google for Educators. (2011). Retrieved from http://www.google.com/edu

Gray, L., Thomas, N., & Westat, L. L. (2010). *Teachers' use of educational technology in U.S. public schools* 2009. (NCES 2010-040). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, D.C. Retrieved from http://nces.ed.gov/

Greenhow, C. (2009). Tapping the wealth of social networks for professional development. *Learning and Leading with Technology, 36*(8), 10-11.

Hanumara, P. & Coyle, L. (August, 2008). *Connecting families by sharing the minutiae of their lives*. (Technical Report UCD-CSI-2008-05). Retrieved from UCD School of Computer and Science Informatics: http://lorcancoyle.org/pdf/2008/Hanumara2008Connecting.pdf

Harmon, H. L., Gordanier, J., Henry, L., & George, A. (Winter, 2007). Changing teaching practices in rural schools. *Rural Educator, 28*(2), 8-12.

Hawkes, M., & Good, K. (2000). Evaluating Professional Development Outcomes of a Telecollaborative Technology Curriculum. *Rural Educator, 21*(3), 5-11.

Hebert, E. & Worthy, T. (2001). Does the first year of teaching have to be a bad one? A case study of success. *Teaching and Teacher Education 17*(8), 897-911.

Hew, K. F., & Hara, N. (2007). Empirical study of motivators and barriers of teacher online knowledge sharing. *Educational Technology Research and Development*, *55*(6), 573-595.

Hu, W. C. (2005). The challenges of promoting teacher collaboration: A Tiawanese context. *Educate: The Journal of Doctoral Research in Education*, *5*(2), 31- 41. Retrieved from http://www.educatejournal.org/index.php?journal=educate&page=index.

Hur, J. W., & Brush, T. A. (2009). Teacher participation in online communities: Why do teachers want to participate in self-generated online communities of K-12 teachers? *Journal of Research and Technology in Education, 41*(3), 279-303.

Hur, J. W., & Hara, N. H. (2007). Factors cultivating sustainable online communities for K-12 Teacher Professional Development. *Journal of Educational Computing Research, 36*(3), 245-268. doi:10.2190/37H8-7GU7-5704-K470

Instagram. (2017). Retrieved from https://www.instagram.com/

Joy, D. (2009). *The emerging culture of online education: A new instructional paradigm*. Saarbrucken, Germany: Verlag.

Kale, U. (2005). Participation and knowledge creation in online teacher collaboration. In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2005* (pp. 885-891). Chesapeake, VA: AACE. Retrieved, from http://www.editlib.org/p/19129

Katz, R. N. (2008). The towering cloud: Is this the end of the middle? In R.N. Katz (Ed.), *The tower and the cloud* (pp.2-42). Berkley, CA: EDUCAUSE.

Ketterlin-Gellar,L.R., Baumer, P. & Lichon, K. (2015). Administrators as advocates for teacher collaboration. *Intervention in School and Clinic, 51*(1), 51-57.

King, M. B., & Newmann, F. M. (2000). Will teacher learning advance school goals? *Phi Delta Kappan*, *81*(8), 576-580.

Kop, R., & Hill, A. (2008). Connectivism: Learning theory of the future or vestige of the past. *International Review of Research in Open and Distance Learning*, *9*(3), 1-13.

Labaree, D.F. (2010). How Dewey lost: The victory of David Snedden and social efficiency in the reform of American education. Retrieved from www.stanford.edu/~dlabaree/publications/How_Dewey_Lost.pdf

Leoni, E. (2012, September 28). How Twitter is reinventing collaboration among Educators [Blog post]. Retrieved from http://mediashift.org/2012/09 /how-twitter-is-reinventing-collaboration-among-educatorLinda2/

Levy, L. A. (2016). 8 strategies for educators to spark collaboration on Pinterest [Blog post]. Retrieved from https://rossieronline.usc.edu/blog /pinterest-collaborative-tool/

Liscom-Owner, E. (2016, February 16). 8 Instagram hacks for teachers [Blog post]. Retrieved from http://educationtothecore.com/

Lortie, D. C. (2002). *Schoolteacher: A sociological study*, 2nd ed, Chicago, IL. The University of Chicago Press.

Lundsgaard, N. (Ed.). (2004, May). News from your schools: Teachers collaborate to improve student learning. *Teacher Collaboration, 3*(10). Retrieved from *www.smallschoolsproject.org/PDFS/focus/focus_vol3-10.pdf*

Makinster, J. G., Barab, S. A., Harwood, W., & Anderson, H. O. (2006). The effect of social context on the reflective practice of preservice science teachers: Incorporating a web-supported community of teachers. *Journal of Technology and Teacher Education, 14*(3), 543-579.

McLoughlin, C, & Lee, M. J. W. (2010). Developing an online communinity to promote engagement and professional learning for pre-service teachers using social software tools. *Journal of Cases on Information Technology, 12*(1), 17-30.

Mendoza, S. (2009). The trinity of community: Google, Facebook, and Twitter. In T. Bastiaens et al. (Eds.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2009* (pp. 3555-3562). Chesapeake, VA: AACE. Available from http://www.editlib.org/p/32998.

Morris, K. A., & Easterday, J. (2008, Fall). Amplifying autonomy and collective conversation: Using video iPods™ to support mathematics teacher learning. *Issues in Teacher Education, 17*(2), 47-62.

Moustakas, C. (1994). *Phenomenological research methods*. Thousand Oaks, CA: SAGE Publications, Inc.

Murphy, E. (2004). Recognizing and promoting collaboration in an online asynchronous discussion. *British Journal of Educational Technology*, *35*(4), 421-431.

Murray, S., Ma, X., & Mazur, J. (2009). Effects of peer coaching on teachers' collaborative interactions and students' mathematics achievement. *Journal of Educational Research, 102*(3), 203–212.

Najafi, H., & Clarke, A. (2008). Web-supported communities for professional development: Five cautions. *Contemporary Issues in Technology and Teacher*

Education, 8(3), 244-263.

The National Board of Professional Teaching Standards. (2011). The five core propositions. Retrieved from http://www.nbpts.org/five-core-propositions

The National Council of Teachers of English. (2011). Position statement. Retrieved from http://www.ncte.org/

The National Council of Teachers of Mathematics. (2011). Position statement. Retrieved from http://www.nctm.org/

The National Staff Development Council. (2001). Standards for staff development (Rev edition). Retrieved from http://www.gtlcenter.org/sites/default/files/docs/pa/3_PDPartnershipsandStandards/NSDCStandards_No.pdf

The New Media Consortium & The EDUCAUSE Learning Initiative. (2008). *The Horizon Report.* Retrieved from www.nmc.org/pdf/2008-Horizon-Report.pdf -

Newton, E., Oswald, R., & Stuart, D. (2002). Delivering standards based staff development online. *Mid-Western Educational Researcher*, *15*(4), 16-21. Retrieved October 6, 2009 from the ERIC database (EJ655823)

Nielsen, L. (2013). Facebook, Edmodo, Schoology. Oh my! Choosing a social network platform for learning [Blog post]. Retrieved from https://theinnovativeeducator.blogspot.com/2013/03/facebook-edmodo-schoology-oh-my.html

Ning. (2011). Retrieved from http://www.ning.com

O'Reilly, T. (June, 2004). Open source paradigm shift. Retrieved from http://tim.oreilly.com/articles/paradigmshift_0504.html

Paulus, T. & Scherff, L. (2008). "Can anyone offer words of encouragement?" Online

dialogue as a support mechanism for preservice teachers. *Journal of Technology and Teacher Education, 16*(1), 113-136.

Pedersen, J. E., & Marek, E. A. (2007). Technology integration: PDAs as an instructional and reflective tool in the science classroom. *Contemporary Issues in Technology and Teacher Education, 7*(1), 521-528.

Pew Research Center. (January, 17, 2017). Internet/Broadband Fact Sheet. Retrieved from http://www.pewinternet.org/fact-sheet/internet-broadband/

Pinterest. (2016). Retrieved from https://www.pinterest.com/

Pontydysgu, G. A. (2007). The personal learning environments – the future of eLearning?*eLearning Papers, 2*(1), ISSN 1887-1542. Retrieved from http://www.elearningpapers.eu/index.php?page=doc&doc_id=8553&doclng=6

Power, T., & Thomas, R. (2007). The classroom in your pocket? *The Curriculum Journal*, *18*(3), 373-388.

Project Tomorrow. (2011). Retrieved from http://www.tomorrow.org/

Ream, J. (2008, October). TBONTB. To be or not to be. Shakespeare didn't blog. *Education Matters,* 6. Retrieved from https://www.aaeteachers.org/newsletters/octnews08.pdf

Reilly, R. A. (1999). EdNet@Umass: Providing quality professional development via the Internet. *T.H.E. Journal*, *26*(8), 60-64.

Romero, J. L., & Sorden, S. D. (2008, January.). Implementing an online learning management system: An experience of international collaboration. Retrieved from https://www.researchgate.net/publication/238690265_Implementing_an_Online_Learning_Management_System_An_Experience_of_International_Collaboration

Ruffini, M. (2011, September, 27). Classroom collaboration using social bookmarking service Diigo. Retrieved from https://er.educause.edu/

Scherff, L., & Paulus, T. (2006). Encouraging ownership of online spaces: Support for preservice English teachers through computer-mediated communication. *Contemporary Issues in Technology and Teacher Education, 6*(4), 354-373.

Schlager, M. S., Farooq, U., Fusco, J., Schank, P., & Dwyer, N. (2009). Analyzing online teacher networks: Cyber-networks require cyber-research tools. *Journal of Teacher Education*, *60*(1), 86-100. Retrieved from http://www.tappedin.org/publications/2008/SchlagerEtAl-JTE.pdf

Schlechty, P. C. (2002). *Working on the work: An action plan for teachers, principals, and superintendents*. San Francisco, CA: Jossey-Bass.

Schlechty, P. C. (2011). *Engaging students*: *The next level of working on the work*. San Francisco, CA: Jossey-Bass

Schmitt, V. L. (2004). The relationship between middle level grade span configuration, professional development, and student achievement. *Research in Middle Level Education Online*, *27*(2). Retrieved, from http://www.nmsa.org/Publications/RMLEOnline/Articles/Vol27No2Article1/tabid/451/Default.aspx

Seamon, D. (2000). Phenomenology, place environment and architecture: A review of the literature. Retrieved from http://www.arch.ksu.edu/seamon/index.htm

Senge, P. (1990). *The fifth discipline: The art and practice of learning organization*. New York: Doubleday.

Shaughnessy, M. (2008). An interview with Jacquie Ream: What's happening with

writing? Retrieved from http://www.educationnews.org/

Siemens, G. (2005). Connectivism: A learning theory for a digital age. *International Journal of Instructional Technology and Distance Learning, 2*(1). Retrieved from http://www.itdl.org/Journal/Jan_05/article01.htm

Siemens, G. (2006). *Knowing knowledge* [Electronic book]. Retrieved from www.elearnspace.org/KnowingKnowledge_LowRes.pdf

Siemens, G. & Conole, G. (2011). Special issue- connectivism: Design and delivery of social networked learning. *International Review of Research in Open and Distance Learning, 12.3,* i-iv.

Smith, L. (2001). Life history as a key factor in understanding teacher collaboration and classroom practice. *Teacher Education Quarterly, 28*(309), 111-125. Retrieved from *www.teqjournal.org/backvols/2001/28_3/v28n309.pdf*

Smith, C., Hofer, J., Gillespie, M., Solomon, M., & Rowe, K. (2003). How teachers change: A study of professional development in adult education. (Report #25a). National Center for the Study of Adult Learning and Literacy. Cambridge, MA. Retrieved from www.ncsall.net/fileadmin/resources/research/report25a.pdf

Snapchat. (n.d.). Retrieved from https://www.snapchat.com/

Speitel, T. (2003). An online community: Department of Defense Education Activity and the University of Hawaii. *Educational Perspectives, 35*(2), 9-12.

Stigler, J. W., & Herbert, J. (1997). Understanding and Improving Classroom Mathematics Instruction. *Phi Delta Kappan*, *79*(1), 14-21.

Strahan, D., & Hedt, M. (2009). Teaching and teaming more responsively: Case studies in professional growth at the middle level. *Research in Middle Level Education,*

32(8), 1-14. Retrieved from http://www.nmsa.org/Publications/RMLEOnline/Articles/Vol32No8/tabid/1894/Default.aspx

Stuckey, B., Hedberg, J., & Lockyer, L. (2001). *Building on-Line community for professional development*. (Clearinghouse No. IR021291). Charlottesville, VA: Association for the Advancement of Computing in Education. (ERIC Document Reproduction Service No. ED466220)

Tamjidyamcholo, A., Kumar, S., Sulaiman, A., & Gholipour, R., (Oct., 2015). Willingness of members to participate in professional virtual communities. *Quality and Quantity*, *50*(6), 2515-2534. Retrieved from https://www.researchgate.net/publication/284096448_Willingness_of_members_to_participate_in_professional_virtual_communities

Tomita, D.K. (2009). *Text messaging and implications for its use in education*. Proceedings of The Colleges and Community Conference. University of Hawaii at Manoa. Retrieved from http://56wrtg1150.wikidot.com/negative-effects-of-texting-in-the-classroom

Twitter. (2011). Retrieved from http://twitter.com

United States Census Bureau. (2011). Retrieved from http://www.census.gov/geo/www/ua/ua_2k.html

van Manen, M. (1990). Researching lived experience: Human science for an action sensitive pedagogy. Albany, NY: State University of New York Press.

van Manen, M. (2011). *Reductio*. Retrieved from http://www.phenomenologyonline.com/

Waters, S. (2011). PLN yourself [Blog post]. Retrieved from http://suewaters.com/

Watters, A. (May 28, 2010). The real time web & K-12 education – in and out of the classroom. [Web log post]. Retrieved from http://www.readwriteweb.com/archives/the_real_time_web_k-12_education_-_in_and_out_of_the_classroom.php

Wheeler, S. (2009). Learning space mashups: Combining Web 2.0 tools to create collaborative and reflective learning spaces. *Future Internet, (1),* 3-13. doi 10.3390/fi1010003

Yang, S.H. (2009). Using blogs to enhance critical reflection and community of practice. *Educational Technology and Society, 12*(2), 11-21.

Zhao, Y., & Rop. S. (2001, August). *A Critical Review of the Literature on Electronic Networks as Reflective Discourse Communities for In-service Teachers* (Report No. CIERA-3-014). Ann Arbor, MI: University of Michigan, Office of Educational Research and Improvement.

APPENDICES

APPENDIX A: IRB Approval Letter

LIBERTY
UNIVERSITY

The Graduate School at Liberty University

April 23, 2012

Kimberli Dailey
IRB Approval 1327.042312: A Phenomenological Exploration of the Impact of Technology on the Collaborative Practices of Rural Middle School Teachers

Dear Kimberli,

We are pleased to inform you that your above study has been approved by the Liberty IRB. This approval is extended to you for one year. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Thank you for your cooperation with the IRB and we wish you well with your research project.

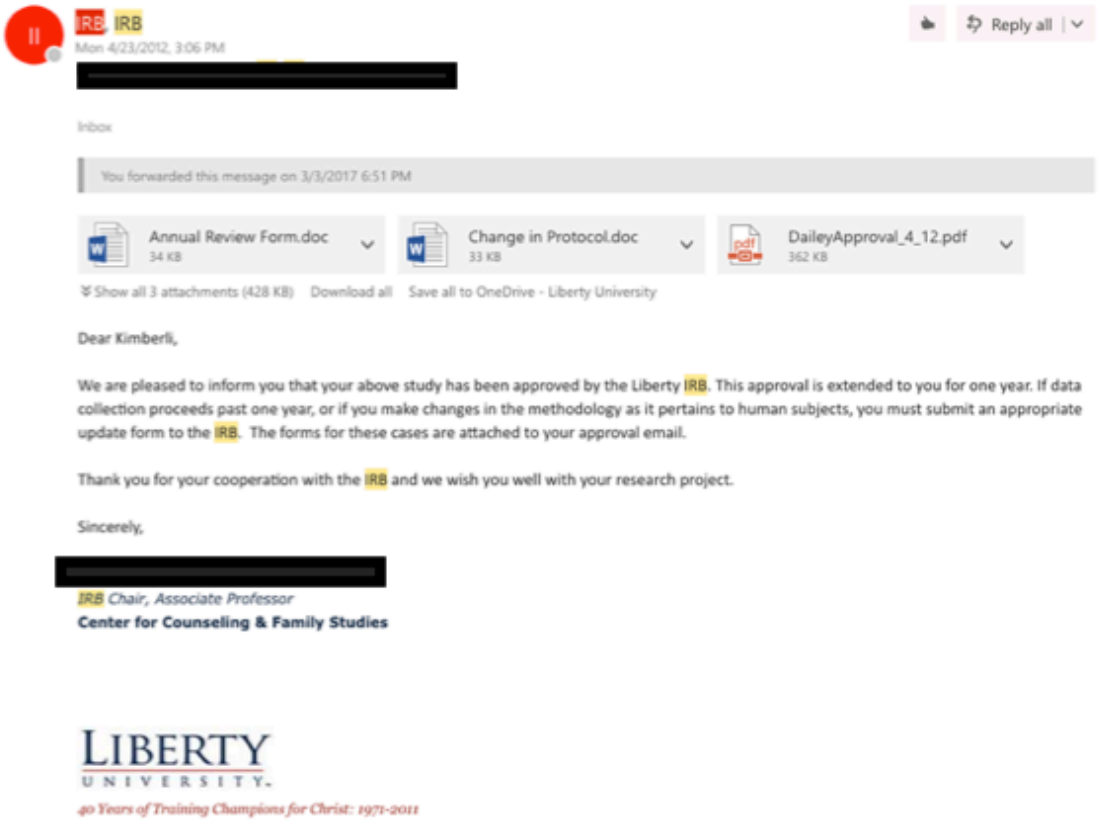
Sincerely,

[redacted]

[redacted]
IRB Chair, Associate Professor
Center for Counseling & Family Studies

[redacted]

LIBERTY
UNIVERSITY
40 Years of Training Champions for Christ: 1971-2011



IRB IRB
Mon 4/23/2012, 3:06 PM
[redacted]

Reply all

Inbox

You forwarded this message on 3/3/2017 6:51 PM

Annual Review Form.doc 34 KB
Change in Protocol.doc 33 KB
DaileyApproval_4_12.pdf 362 KB

Show all 3 attachments (428 KB) Download all Save all to OneDrive - Liberty University

Dear Kimberli,

We are pleased to inform you that your above study has been approved by the Liberty IRB. This approval is extended to you for one year. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases are attached to your approval email.

Thank you for your cooperation with the IRB and we wish you well with your research project.

Sincerely,

[redacted]
IRB Chair, Associate Professor
Center for Counseling & Family Studies

LIBERTY
UNIVERSITY.
40 Years of Training Champions for Christ: 1971-2011

APPENDIX B: Email to Site Principals

Dear

My name is Kimberli Dailey, and I am a doctoral student of Liberty University pursuing a degree in Teaching and Learning. As a requirement for completion of my EdD degree, I am working on a dissertation entitled " A Phenomenological Exploration of the Impact of Technology on the Collaborative Practices of Rural Middle School Teachers." The focus of my study is to describe rural middle school teachers' perceptions and attitudes toward the impact of technology-based communication tools, such as email, texting, and web-based discussion forums on professional collaborative practices.

In order to complete my study, I am seeking input from teachers at rural middle school on their use of technology for collaborative and/or reflective teacher practice. Additionally, I am seeking teachers who indicate the use of technology-based communication tools in their collaborative practice to request voluntary participation in interviews and maintaining an electronic journal of their technology-based collaborative experiences. Due to the nature of my research, the surveys would include teacher names in order for me to contact those who might be interested in participating in the additional research activities. However, measures to protect school and personal identities will be taken throughout the research process. I will be the only individual with access to actual school and teacher identities. Pseudonyms will be used in place of school and teacher names at all times to maintain confidentiality.

I would be very grateful if you would allow me to contact teachers at your school through email to seek voluntary participants for the study. Thank you for your time and consideration in this matter.

Kimberli Dailey

APPENDIX C: Second Email to Site Principals

Dear _____,

I emailed earlier in the week to request permission to conduct research in order to complete work on my dissertation. I wanted to check to make sure you had received the email and/or if you have any questions that I could answer. I attached the survey questions to this email if you would like to look over them as you consider my request.

Thank you for taking the time to consider my request.

Kimberli Dailey
[redacted]

APPENDIX D: Research Site Approval Contacts

Printed by: Kimberli S Dailey
Title:

March 12, 2012 3:54:56 PM
Page 1 of 1

From: [redacted] March 12, 2012 1:41:00 PM

Subject: Re: Request for permission to conduc research

To: Kimberli S. Dailey

Hello,
Thank you for including the survey.
You have my permission to conduct the research.
Best of luck.

[redacted]

Principal

[redacted]

Printed by: Kimberli S Dailey
Title:

March 9, 2012 4:23:24 PM
Page 1 of 2

From: [redacted] Mar 9, 2012 4:12:23 PM

Subject: Re: Request for permission to conduct research

To: Kimberli S. Dailey

Attachments: Attach0.html 2K

Kimberli,

I will give approval for the survey.
I hope things go well.
Best regards.

[redacted] Middle School

From: [redacted] March 5, 2012 7:48:22 AM

Subject: Re: Request for permission to conduct research

To: Kimberli S. Dailey

Sounds like a great study. You have my total support!

[redacted]

[redacted]

Kimberli S. Dailey writes:

Dear [redacted]

My name is Kimberli Dailey, and I am a doctoral student of Liberty University pursuing a degree in Teaching and Learning. As a requirement for completion of my EdD degree, I am working on a dissertation entitled "A Phenomenological Exploration of the Impact of Technology on the Collaborative Practices of Rural Middle School Teachers". The focus of my study is to describe rural middle school teachers' perceptions and attitudes toward the impact of technology-based communication tools, such as email, texting, and web-based discussion forums on professional collaborative practices.

In order to complete my study, I am seeking input from teachers at rural middle schools on their use of technology for collaborative and/or reflective teacher practice through a survey. Additionally, I am seeking teachers who indicate the use of technology-based communication tools in their collaborative practice to request their voluntary participation in interviews and maintaining an electronic journal of their technology-based collaborative experiences. Due to the nature of my research, the surveys would include teacher names in order for me to contact those who might be interested in voluntarily participating in the additional research activities. However, appropriate measures to protect school and personal identities will be taken throughout the research process. I will be the only individual with access to actual school and teacher identities. Pseudonyms and numeric codes will be used in place of school and teacher names at all times to maintain confidentiality.

I would be very grateful if you would allow me to contact teachers at your school through email to seek voluntary participants for the study. Thank you for your time and consideration in this matter.

Printed by: Kimberli S Dailey
Title:

March 5, 2012 5:11:56 PM
Page 1 of 2

From: [redacted] March 5, 2012 12:33:21 PM

Subject: Re: Request for permission to conduct research

To: Kimberli S. Dailey

Cc: [redacted]

Kimberli S. Dailey writes:

[redacted] This would be fine with us.

My name is Kimberli Dailey, and I am a doctoral student of Liberty University pursuing a degree in Teaching and Learning. As a requirement for completion of my EdD degree, I am working on a dissertation entitled "A Phenomenological Exploration of the Impact of Technology on the Collaborative Practices of Rural Middle School Teachers". The focus of my study is to describe rural middle school teachers' perceptions and attitudes toward the impact of technology-based communication tools, such as email, texting, and web-based discussion forums on professional collaborative practices.

In order to complete my study, I am seeking input from teachers at rural middle schools on their use of technology for collaborative and/or reflective teacher practice through a survey. Additionally, I am seeking teachers who indicate the use of technology-based communication tools in their collaborative practice to request their voluntary participation in interviews and maintaining an electronic journal of their technology-based collaborative experiences. Due to the nature of my research, the surveys would include teacher names in order for me to contact those who might be interested in voluntarily participating in the additional research activities. However, appropriate measures to protect school and personal identities will be taken throughout the research process. I will be the only individual with access to actual school and teacher identities. Pseudonyms and numeric codes will be used in place of school and teacher names at all times to maintain confidentiality.

I would be very grateful if you would allow me to contact teachers at your school through email to seek voluntary participants for the study. Thank you for your time and consideration in this matter.

Kimberli Dailey

[redacted]

[redacted]

[redacted]

[redacted]

APPENDIX E: Reduction

Teacher Survey On Collaborative Practice and Technology

This survey will be used to collect information on the practices and perceptions toward teacher collaboration and technology. Please answer each question honestly. This survey will be used to form focus groups and interview individuals at a later time. All information provided on the surveys will be kept confidential by the researcher.

Name Kimberly Dailey School SelP - researcher

Please circle the appropriate category for your years of teaching experience

1-5 6-10 11-15 16-20 21-25 25 +

1. Time for planning collaboratively is important to me professionally.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
(5)	4	3	2	1

2. My school provides time for teachers to collaborate.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	(3)	2	1

3. I have received training in professional collaboration.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
(5)	4	3	2	1

4. The time provided for teachers to collaborate is sufficient and protected.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	(2)	1

5. Feedback from colleagues benefits me in planning instructional units.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	(4)	3	2	1

6. Feedback from colleagues benefits me in reflecting on my instructional strategies.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

7. I prefer to collaborate with colleagues in face-to-face settings.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

8. I communicate with colleagues with whom I work frequently through electronic communication (email, text messages, discussion boards).

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

9. I communicate with teachers from other schools frequently through electronic communication (email, text messages, discussion boards).

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

10. I gain ideas from online discussion boards, online forums for teachers, or other web-based resources to incorporate into my instructional strategies.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

11. I use online discussion boards, teacher forums, or other web-based resources to improve my instructional practices for struggling students.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

12. I have received training in using electronic communication to collaborate with other teachers.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

13. I have received training in using electronic communication to collaborate with other teachers within the last five years within the [redacted].

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	(1)

14. I have collaborated with another educator through a social networking site (Twitter, Facebook, EdModo, etc.) in dialogue related to improving my teaching strategies.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	(4)	3	2	1

15. I have collaborated with another educator through e-mail, instant chat, or SMS text in dialogue related to improving my teaching strategies.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	(4)	3	2	1

16. I have not collaborated with another educator through e-mail, instant chat, or SMS text in dialogue related to improving my teaching strategies but am interested in this form of collaboration if I had contacts to do so.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	(1)

17. I have not collaborated with another educator through e-mail, instant chat, or SMS text in dialogue related to improving my teaching strategies and do not wish to participate in technology-based communication.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	(1)

The questions provided below are to be used as a guide in the conversation, but not all questions may be used for all participants.

1. How important is it to you to connect with other teachers in your discipline or grade level? It is very important to talk with teachers that teach the same content, not only grade level, but vertically as well. The communication with others helps me know that I am interpreting the standards correctly and helps with my expectations for students entering the 8th grade.

2. You responded in survey that you participate in online teacher collaboration. Why did you reach out in this way to seek a connection with other teachers?

   I first started to use online communication for collaboration when our common planning time was reduced due to scheduling/staff issues resulting from budget cuts. I have discovered, though, that I like the freedom of communicating online. If I have an idea, I can share it immediately and in some situations it seems more productive. There are not as many interruptions or we do not get side-tracked talking about our day/student issues/venting.

3. How often do you communicate with a colleague electronically? Daily

4. What types of resources, for example lesson plans or strategies, have you shared with others electronically? I have shared lesson plans (weekly), assessments (both formative and summative), tasks, games, etc. Generally anything that I use in my instructional strategies.

5. What types of resources have been shared with you? Assessments, lesson plans, modifications for IEP, 504, RTI students.

6. How have you implemented any strategies or suggestions you gained from online discussions? I have implemented a review game strategy that was shared with me from someone that went to the state math conference. I have changed it up a bit to meet the needs of my students. I have also implemented IXL which was a resource shared with me by a teacher in another county that I have met at trainings and through my use of it we have acquired a school-wide license.

7. Did you discuss the implementation or results with others? Yes (IXL)

8. What type of connection do you feel to those with whom you have discussions electronically? I feel a professional/acquaintance type of connection. The same

as I do with teachers with whom I meet within the system where I teach. We share a professional interest.

9. What leads you to collaborate with someone you may see everyday via text messages or email? I may not see them in person. We are often pulled in many directions during our planning time and sometimes we do not share a common planning.

10. Do you feel this is an effective way to communicate with this person? Why or why not? Yes. It is very effective. I think we know each other well enough it is almost like shorthand speak for us and we seem to divide up the tasks of planning and implementing evenly.

11. How have your methods of collaboration/reflection changed? Why do you think this is so? Yes. When I started teaching, I was very fortunate to work with a group of teachers that planned collaboratively face-to-face and they really nurtured me as a beginning teacher. The situations in which I have worked have changed throughout the years and I realize those first few years of face-to-face collaboration was a bit of a luxury. Now, face-to-face planning seems to have to happen before or after school or on weekends, which is fine, but not always feasible. That is why I think we have started texting and emailing our ideas. It is fast and effective for us and does not really take up our personal time outside of school like a face-to-face meeting would.

The questions provided below are to be used as a guide in the conversation, but dependent upon focus group members' responses the conversation may deviate somewhat.

1. What do you think is meant by teacher collaboration? Teacher collaboration means working together to lessons and strategies to address our given standards and meet the needs of our students.

2. Do you think it is necessary to collaborate routinely with others or on an as needed basis? Ask participants to elaborate on their answers.

   I think routine collaboration is necessary if you teach the same grade/subject just to help everyone feel comfortable with the standards and to ensure that the expected standards are being taught. When collaboration happens on an as needed bases, I think that is really more about addressing the needs of the teachers. We all struggle with something. For me differentiation is a struggle. I constantly feel like I could do more, and when I question what I am doing, the feedback helps me feel as though I am meeting the needs of my students or gives me ideas to improve.

3. How does teacher collaboration, if it does, take place within your grade level at this school? We are required to meet once a week for common grade level/subject planning and once a week as a grade level for student concerns/team meetings.

4. How has collaboration with other teachers changed during your career? When I first started teaching, we planned collaboratively as a grade level, but it was our choice to do so. After I was moved from 6th grade to 8th grade, planning with the person who taught the same content was mandatory once a week. We did not have to do the same thing, but we had to know what the other person was doing in class. More recently, we are expected to basically be doing the same thing every day and give the same assessments.

5. Do you ever communicate for instructional purposes with teachers at your own school electronically? If so, please explain how you communicate with one another (email, texting, etc) and why you choose to communicate this way.

   Yes, all the time since we lost common planning, but were still required to meet. Emailing and texting are faster. We do not spend so much time talking about other school related things (students, concerns, etc) and it is much more focused on the work of planning instruction. We have seemed to find a way to divide out the tasks to share the workload, and communicate via email and text.

6. Do you ever communicate for instructional purposes with teachers at other schools electronically? If so, please explain how you communicate with one another (email, texting, etc) and why you choose to communicate this way.

I do. Periodically, I check with other teachers of the same grade and subject to make sure we are progressing like them on the curriculum map. We share assessments and if someone tries a new activity/task that goes well we usually share that with each other as well. We used to have days each nine weeks to plan together, but no longer have those so we try to maintain the relationship and work we had accomplished via email.

7. Do you participate in any online discussion forums or groups related to planning for instruction, professional development, or professional reflection? No. Not really. I have found some groups on Twitter that may be helpful, but I have not really had time to investigate.

8. What impact do you think participation in an online collaborative setting has for you as a teacher? I think it could be really helpful. It is always helpful to learn of new ideas, strategies, technologies that can help our students.

APPENDIX F: Email to Teacher Participants

My name is Kimberli Dailey, and I am a doctoral student of Liberty University pursuing a degree in Teaching and Learning. As a requirement for completion of my EdD degree, I am working on a dissertation entitled " A Phenomenological Exploration of the Impact of Technology on the Collaborative Practices of Rural Middle School Teachers." The focus of my study is to describe rural middle school teachers' perceptions and attitudes toward the impact of technology-based communication tools, such as email, texting, and web-based discussion forums on professional collaborative practices.

In order to complete my study, I am seeking input from teachers at rural middle school on their use of technology for collaborative and/or reflective teacher practice. Participation in this survey is voluntary, but I would value your input. The survey is not anonymous. I am also looking for voluntary participant among teachers who use technology-based communication tools for collaboration to take part in an interview, a focus group interview, and maintaining an electronic journal of technology-based communication for a period of six weeks. Although, the survey is not anonymous in order to help me locate participants for the rest of the study, identities will be protected at all times. I will be the only person with access to participant names and schools. Throughout the study participants will be given pseudonyms to maintain and protect confidentiality.

Thank you for your time and consideration in answering the survey. Please follow the link below.

Kimberli Dailey
[redacted]

APPENDIX G: Survey

Teacher Survey On Collaborative Practice and Technology

This survey will be used to collect information on the practices and perceptions toward teacher collaboration and technology. Please answer each question honestly. This survey will be used to form focus groups and interview individuals at a later time. All information provided on the surveys will be kept confidential by the researcher.

Name_____ School_____

Please circle the appropriate category for your years of teaching experience

1-5 6-10 11-15 16-20 21-25 25 +

1. Time for planning collaboratively is important to me professionally.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

2. My school provides time for teachers to collaborate.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

3. I have received training in professional collaboration.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

4. The time provided for teachers to collaborate is sufficient and protected.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

5. Feedback from colleagues benefits me in planning instructional units.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

6. Feedback from colleagues benefits me in reflecting on my instructional strategies.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

7. I prefer to collaborate with colleagues in face-to-face settings.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

8. I communicate with colleagues with whom I work frequently through electronic communication (email, text messages, discussion boards).

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

9. I communicate with teachers from other schools frequently through electronic communication (email, text messages, discussion boards).

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

10. I gain ideas from online discussion boards, online forums for teachers, or other web-based resources to incorporate into my instructional strategies.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

11. I use online discussion boards, teacher forums, or other web-based resources to improve my instructional practices for struggling students.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

12. I have received training in using electronic communication to collaborate with other teachers.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

13. I have received training in using electronic communication to collaborate with other teachers within the last five years within the Pioneer RESA region.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

14. I have collaborated with another educator through a social networking site (Twitter, Facebook, EdModo, etc.) in dialogue related to improving my teaching strategies.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

15. I have collaborated with another educator through e-mail, instant chat, or SMS text in dialogue related to improving my teaching strategies.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

16. I have not collaborated with another educator through e-mail, instant chat, or SMS text in dialogue related to improving my teaching strategies but am interested in this form of collaboration if I had contacts to do so.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

17. I have not collaborated with another educator through e-mail, instant chat, or SMS text in dialogue related to improving my teaching strategies and do not wish to participate in technology-based communication.

Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
5	4	3	2	1

APPENDIX H: Second Email To Teacher Participants

Dear _____,

I recently asked you to participate in a survey for work I am completing on my doctoral dissertation entitled " A Phenomenological Exploration of the Impact of Technology on the Collaborative Practices of Rural Middle School Teachers."
Based on the information provided in your survey, I found that you use technology-based communication as a means to collaborate with peers.

I am seeking people to participate in one individual interview, documenting their technology-based communication through an electronic journal for six weeks, and participating in a focus group interview. If you would be interested in participating in my research, please contact me through email for more details or call me at 706-499-5189 to speak in person. Thank you for your time and consideration in this matter.

Sincerely,

Kimberli Dailey


APPENDIX I: Informed Consent Letter

INFORMED CONSENT LETTER

CONSENT FORM

A PHENOMENOLOGICAL EXPLORATION OF THE IMPACT OF TECHNOLOGY ON THE COLLABORATIVE PRACTICES OF RURAL MIDDLE SCHOOL TEACHERS

Kimberli Dailey
Liberty University
Education Department

You are invited to be in a research study of technology's impact on teacher collaborative practice. You were selected as a rural middle school academic teacher. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by: Kimberli Dailey, A Dissertation in Partial Fulfillment Of The Requirements Of A Doctoral Degree in Teaching and Learning, Education Department, Liberty University.

Background Information

The purpose of this study is to determine if and how technology-based communication, such as message boards, texting, and email, has impacted the way teachers communicate with each other. The research will examine if teachers use technology-based communication to collaborate with peers and/or in their professional reflective practices.

Procedures:

If you agree to be in this study, you would be asked to do the following things:
answer questions on a survey. The survey involves seventeen questions and should take only a few minutes to complete. Based on your responses to the survey, you may be asked to participate in individual interviews that could last for one to two hours and keep an electronic journal for six weeks to describe time spent communicating with other teachers electronically for instructional/reflective purposes. Individuals who take part in individual surveys and electronic journals will also be asked to take part in focus group discussions which could last for one to two hours.

Risks and Benefits of being in the Study

The study has minimal risks. The survey will not be anonymous in order to invite teachers, who collaborate through electronic communication tools, to voluntarily participate in the individual

interviews, electronic-journaling, and focus group portions of the study. However, the names will be coded after the survey is collected. The codes and surveys will be kept in secure locations. Only the researcher will have access to the codes for the survey. A professional transcriptionist will transcribe individual interviews and focus group interviews. The professional transcriptionist will sign a confidentiality agreement to protect participant identities. Participants will be provided a copy of transcripts of interviews, individual or focus group, for which they are involved to strengthen the dependability and creditability of the study. The information in electronic journals will not need to be transcribed as it is in written form and will be shared between the participants and myself electronically.

The benefits to participation: There are no individual benefits. We will be adding to the body of research on teacher professional practices and technology-based communication, which may benefit some teachers and administrators.

Compensation:

You will receive no payment for participation.

Confidentiality:

The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records.

Names on surveys will be coded with numbers. A key to the names and numbers will be kept in a separate locked filing cabinet from the surveys for the duration of the study. When the data is no longer needed, the surveys and coded keys will be shredded. Interviews and focus groups will be recorded by the researcher. The recordings will be kept in a secure filing cabinet drawer separate from other related materials. The voices on transcriptions will be identified through a number (Teacher 1, Teacher 2, etc) and names will not be used. For the individual interviews and electronic-journaling teachers will be identified using a pseudonym.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the Liberty University. Participation in this study will not affect your current or future relations with the schools or districts involved. If you decide to participate, you are free to not answer any question or withdraw at any time with out affecting those relationships.

Freedom to Withdraw

Participants are free to withdraw from the study with no penalty at any time. Subjects are free not to answer any question or respond to any situation that they choose with no penalty.

Contacts and Questions:

The researchers conducting this study are: Kimberli Dailey (researcher) and Dr. Donna Joy (faculty advisor/committee chair). You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Kimberli Dailey at [redacted] or [redacted] or [redacted]. Dr. Joy can be contacted at [redacted] or [redacted]. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, [redacted], Chair, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [redacted].

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

☐ If asked to participate in an individual interview and/or focus group interview, I agree to be video-recorded as part of this portion of the research.

Signature:_____ Date: _____

Signature of Investigator:_____ Date: _____

Participants are free to withdraw from the study with no penalty at any time. Subjects are free not to answer any question or respond to any situation that they choose with no penalty.

Contacts and Questions:

The researchers conducting this study are: Kimberli Dailey (researcher) and Dr. Donna Joy (faculty advisor/committee chair). You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Kimberli Dailey at [redacted] or [redacted] or [redacted]. Dr. Joy can be contacted [redacted] or [redacted] If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, [redacted], Chair, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [redacted].

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

☐ If asked to participate in an individual interview and/or focus group interview, I agree to be video-recorded as part of this portion of the research.

Signature: [redacted] Date: 4/27/12

Signature of Investigator: [redacted] Date: 4-27-12

Participants are free to withdraw from the study with no penalty at any time. Subjects are free not to answer any question or respond to any situation that they choose with no penalty.

Contacts and Questions:

The researchers conducting this study are: Kimberli Dailey (researcher) and Dr. Donna Joy (faculty advisor/committee chair). You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Kimberli Dailey at [redacted] or [redacted] or [redacted]. Dr. Joy can be contacted at [redacted] or [redacted]. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, [redacted], Chair, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [redacted].

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

☑ If asked to participate in an individual interview and/or focus group interview, I agree to be video-recorded as part of this portion of the research.

Signature: [redacted] Date: 4/24/12

Signature of Investigator: [redacted] Date: 4-25-12

Participants are free to withdraw from the study with no penalty at any time. Subjects are free not to answer any question or respond to any situation that they choose with no penalty.

Contacts and Questions:

The researchers conducting this study are: Kimberli Dailey (researcher) and Dr. Donna Joy (faculty advisor/committee chair). You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Kimberli Dailey at [redacted] or [redacted]. Dr. Joy can be contacted at [redacted]. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, [redacted], Chair, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [redacted].

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

☑ If asked to participate in an individual interview and/or focus group interview, I agree to be video-recorded as part of this portion of the research.

Signature: [redacted] Date: 4/27/12

Signature of Investigator: [redacted] Date: 4-28-12

Participants are free to withdraw from the study with no penalty at any time. Subjects are free not to answer any question or respond to any situation that they choose with no penalty.

Contacts and Questions:

The researchers conducting this study are: Kimberli Dailey (researcher) and Dr. Donna Joy (faculty advisor/committee chair). You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Kimberli Dailey at [redacted] or [redacted]. Dr. Joy can be contacted at [redacted] or [redacted]. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, [redacted], Chair, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [redacted].

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

☑ If asked to participate in an individual interview and/or focus group interview, I agree to be video-recorded as part of this portion of the research.

Signature: [redacted] Date: 4/25/12

Signature of Investigator: [redacted] Date: 4/25/12

Participants are free to withdraw from the study with no penalty at any time. Subjects are free not to answer any question or respond to any situation that they choose with no penalty.

Contacts and Questions:

The researchers conducting this study are: Kimberli Dailey (researcher) and Dr. Donna Joy (faculty advisor/committee chair). You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Kimberli Dailey at [redacted] or [redacted]. Dr. Joy can be contacted at [redacted] or [redacted] If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, [redacted], Chair, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [redacted].

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

☑ If asked to participate in an individual interview and/or focus group interview, I agree to be video-recorded as part of this portion of the research.

Signature: [redacted] Date: 4-20-12

Signature of Investigator: [redacted] Date: 4-27-12

Participants are free to withdraw from the study with no penalty at any time. Subjects are free not to answer any question or respond to any situation that they choose with no penalty.

Contacts and Questions:

The researchers conducting this study are: Kimberli Dailey (researcher) and Dr. Donna Joy (faculty advisor/committee chair). You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Kimberli Dailey at [redacted]. Dr. Joy can be contacted at [redacted]. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, [redacted], Chair, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [redacted]

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

☑ If asked to participate in an individual interview and/or focus group interview, I agree to be [redacted] portion of the research.

Signature: [redacted] Date: April 25, 2012

Signature of Investigator: [redacted] Date: 4-26-12

Participants are free to withdraw from the study with no penalty at any time. Subjects are free not to answer any question or respond to any situation that they choose with no penalty.

Contacts and Questions:

The researchers conducting this study are: Kimberli Dailey (researcher) and Dr. Donna Joy (faculty advisor/committee chair). You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Kimberli Dailey at [redacted]. Dr. Joy can be contacted at [redacted]. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, [redacted], Chair, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [redacted].

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

☑ If asked to participate in an individual interview and/or focus group interview, I agree to be video-recorded as part of this portion of the research.

Signature: [redacted] Date: 4-27-12

Signature of Investigator: [redacted] Date: 4-27-12

Participants are free to withdraw from the study with no penalty at any time. Subjects are free not to answer any question or respond to any situation that they choose with no penalty.

Contacts and Questions:

The researchers conducting this study are: Kimberli Dailey (researcher) and Dr. Donna Joy (faculty advisor/committee chair). You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Kimberli Dailey at [redacted] or [redacted] Dr. Joy can be contacted at [redacted]. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, [redacted], Chair, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [redacted].

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

☑ If asked to participate in an individual interview and/or focus group interview, I agree to be video-recorded as part of this portion of the research.

Signature: [redacted] Date: 4/27/12

Signature of Investigator: [redacted] Date: 4/27/12

Participants are free to withdraw from the study with no penalty at any time. Subjects are free not to answer any question or respond to any situation that they choose with no penalty.

Contacts and Questions:

The researchers conducting this study are: Kimberli Dailey (researcher) and Dr. Donna Joy (faculty advisor/committee chair). You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Kimberli Dailey at [redacted] or [redacted] or [redacted]. Dr. Joy can be contacted at [redacted] or [redacted]. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, [redacted], Chair, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [redacted]u.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

☐ If asked to participate in an individual interview and/or focus group interview, I agree to be video-recorded as part of this portion of the research.

Signature [redacted] Date: 4-26-12

Signature of Investigator [redacted] Date: 4-26-12

Participants are free to withdraw from the study with no penalty at any time. Subjects are free not to answer any question or respond to any situation that they choose with no penalty.

Contacts and Questions:

The researchers conducting this study are: Kimberli Dailey (researcher) and Dr. Donna Joy (faculty advisor/committee chair). You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Kimberli Dailey at [redacted] or [redacted] or [redacted]. Dr. Joy can be contacted at [redacted] or [redacted]. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Institutional Review Board, [redacted]ir, 1971 University Blvd, Suite 2400, Lynchburg, VA 24502 or email at [redacted]

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

☑ If asked to participate in an individual interview and/or focus group interview, I agree to be video-recorded as part of this portion of the research.

Signature: [redacted] Date: 4/24/12

Signature of Investigator: [redacted] Date: 4/24/12

APPENDIX J: Template for Individual Interviews

The questions provided below are to be used as a guide in the conversation, but not all questions may be used for all participants.

1. How important is it to you to connect with other teachers in your discipline or grade level?

2. You responded in survey that you participate in online teacher collaboration. Why did you reach out in this way to seek a connection with other teachers?

3. How often do you communicate with a colleague electronically?

4. What types of resources, for example lesson plans or strategies, have you shared with others electronically?

5. What types of resources have been shared with you?

6. How have you implemented any strategies or suggestions you gained from online discussions?

7. Did you discuss the implementation or results with others?

8. What type of connection do you feel to those with whom you have discussions electronically?

9. What leads you to collaborate with someone you may see everyday via text messages or email?

10. Do you feel this is an effective way to communicate with this person? Why or why not?

11. How have your methods of collaboration/reflection changed? Why do you think this is so?

APPENDIX K: Example of Transcription of Individual Interview

Example of Individual Interview Transcripts

Participant Roberta
5/31/12

Q: Hi! Thank you for agreeing to be part of my research. Are you ready to begin the interview?

Participant Roberta: Yes. Let's get started.

Q: How important is it to you to connect with other teachers in your discipline or grade level?

Participant Roberta: I think it's very important for cohesion. I always like to talk to other teachers to make sure that we're all on the same page about things. And to get ideas about how to do lessons or if I'm having you know an issue with a student or they're having an issue then we can kind of come together and collaborate and decide you know collectively what should be done. So it is very important.

Q: Do you think it's more important for your content or the grade level or is the importance shared equally?

Participant Roberta: I think it's shared equally depending on what's going on. Sometimes it's more important to talk to your grade level. That's more of a like on a daily issue with things you know going on housekeeping kind of things on a daily basis, but with lessons definitely with your content areas.

Q: You responded in survey that you participate in online teacher collaboration. Why did you reach out in this way to seek a connection with other teachers?

Participant Roberta: Well, it's not always feasible to sit down and meet with somebody (pause). A lot of times you don't have the same planning as they do or there's meetings that are going on and so doing it online sometimes is much easier. You can get a lot of things done. You can do it on your own time especially when you're at home and you have time to kind of just sit and think. Or you can do it during your planning or if there's some down time during class. So, to me, it's just more time efficient.

Q: How often do you communicate with a colleague or colleagues electronically?

Participant Roberta: Probably one to two times per week (pause). You know if there's a unit that we're finishing or a big project that's coming up – maybe daily or maybe more than one or two times a week.

Q: So is this within the building or?

Participant Roberta: Usually within the building. I do participate in online discussion with other teachers at other buildings, other middle schools, but that's usually end of the year (pause) that we're planning for the next year or again when we're going from one unit to the next. Or if there is something I need input on and no one else seems to know or care (laughs).

Q: What types of resources, for example lesson plans or classroom management strategies have you shared with others electronically?

Participant Roberta: Once a meeting has taken place with, like, other (content) teachers, what usually happens is each individual teacher goes out and finds resources and then we share them electronically. That could be a [website] video or it could be a notebook that somebody has had time to develop and share. It could be a website that's useful. Or if we do our own personal sample then we'll share that with other people. So it's, it's pretty much from school to school, and any resource that we come up with we'll share with everyone.

Q: Do you do this primarily through email or do you post it to a discussion board?

Participant Roberta: Primarily email.

Q: What types of resources have been shared with you?

Participant Roberta: Same type of things. It could be a notebook, a PowerPoint, a video that's been found, examples or sample of exemplar works.

Q: How have you implemented any strategies or suggestions you gained from online discussions? Did you discuss the implementation or results with others?

Participant Roberta: I've implemented it by using it with students or it has kind of spearheaded me to go and look at other resources or think about things from a different perspective. And then, usually, if I receive a resource or there's a good piece of information then a colleague or another teacher up here will kind of talk about it (pause). What we liked, what we didn't like, but all of it's beneficial.

Q: What type of connection do you feel to those with whom you have discussions electronically?

Participant Roberta: I think it's a safe environment and I don't really know if it's because some of the people that I have online discussions with we are (pause) we've been colleagues for a while or if it's because it, you're able to say things online that sometimes you necessarily wouldn't say in front of someone. But, I feel like it's a really safe environment. People are able to say what they want to say. Maybe because I have time to think about it and I don't just pop off.

Q: Can you give me an example of something you would say online that you wouldn't say face-to-face?

Participant Roberta: Well, if somebody has given me a suggestion, I might say to them that I'm going to use what they did, but I'm going to tweak it a little bit. When I'm face-to-face with someone I might not necessarily say that because I haven't had time to think about it or I don't want to hurt their feelings.

Q: So you think the electronic communication gives you a little bit more of a chance to step back and really examine the resource before you decide what you want to do with it?

Participant Roberta: I do. Because you're able to think about it and then you don't have to respond immediately. You can go back respond at any time. Sometimes when you, like, if you're in the hallway and somebody asks you a question you have to answer automatically. When, if you would have had the opportunity to think about it, you may have responded differently or had a different opinion.

Q: What leads you to collaborate with someone you may see every day via text messages or email?

Participant Roberta: If we don't have the same planning period or if it's something that you don't necessarily need to bother that person with during their planning period, but you can just send them a quick text or email. Or if it's after hours you can always get a quick response from that person.

Q: So do you have a protected planning period?

Participant Roberta: Yes

Q: And it never gets interrupted?

Participant Roberta: Very rarely. We have certain days that we do grade level meetings and certain days that we have subject area meetings and those are told at the beginning of the year, and so, those are pretty much protected and, and any parent conferences have to fall on different days. We try to protect it anyway.

Q: Do you feel this is an effective way to communicate with this person?

Participant Roberta: I do

Q: Can you expand on that?

Participant Roberta: Well I think if you didn't communicate this way there would be a lot of things that people make assumptions about or a lot of missed opportunities for you to be able to talk to someone and so to open those lines of communication just makes it better for everybody. Everybody knows what your stance is on something and you're able to talk through things and once everybody comes to the table and talks about it I think things just run smoother, either with procedures through the day or lesson planning or unit planning or even assessments.

Q: So, do you think using electronic communication also provides you some form documentation of what's been said?

Participant Roberta: Definitely. And you can, you know, keep those and file them. Even, especially with parents, if you're communicating with parents about something, just having a copy of that can help you with what's been said, or what hasn't been said. So, definitely.

Q: How have your methods of collaboration and or professional reflection changed? And why do you think this is so?

Participant Roberta: Well, I think that I graduated and all this was new. And so I think that it's, online communication things, have changed me because it (pause). It's made me reflect and I didn't really think about that's what I was doing until it was brought to my attention. So, I think it probably has changed me and it's, it's made me be more reflective. It's, it's helped me to be, to be a better teacher and to do more collaboration through online discussions, which in turn helps me to be a better teacher.

Q: So, you think actually communicating with others electronically makes you look back on your own professional practices more than you would have before?

Participant Roberta: Definitely, oh definitely. Because I can see what other people are doing and then I can kind of gauge if I need to be doing something I'm not or if I'm doing too much (pause). Or it's always good to get, you know, peer feedback and you know, talk with other teachers and other educators. I think sharing resources and plans online with everyone else looking at it makes me look at it differently. I am a lot more cautious online. I think more about it.

Q: That's interesting. Nobody's ever (pause). No one else that I've interviewed has brought out the point that they feel like it's made them more reflective.

Participant Roberta: I definitely think it has because if I'm reading an email, it may just be because you know my background, that I'm thinking about how to incorporate those things, or whether I should or I shouldn't or if I'm doing it this way and should I be doing it a different way, and I may not necessarily do that in a meeting (pause). Because, again, you're doing it all right there and things are happening so fast, but when it's online a lot of times even after I've answered a question or I've done something, I go back into that and think (pause). When I have time, on a weekend or something, well how can I do this differently? So, I have it there as a reference point. Where in a meeting, I mean, even if you take minutes you may not necessarily go back and think about that conversation you had or read notes or… with online I, I think I have done that a whole lot more than I would then just being in a meeting.

Q: Thank you, [Participant Roberta]. You've brought out some interesting points. Is there anything else you would like to add?

Participant Roberta: I can't think of anything else and you are welcome. Let me know if you need anything else.

APPENDIX L: Template for Electronic Journals

Date:

Type of Collaboration:

Why did you use technology to collaborate?

Reflections on the collaboration:

APPENDIX M: Template for Electronic Journal Reminders

(Name),

I appreciate your participation in this research study. Please remember to document your technology-based collaborations and reflective thoughts on any impact these communications may have on your professional practices in your electronic journal at least twice this week.

Thank you,

Kimberli Dailey

APPENDIX N: Example of Individual Electronic Journals

Stan- Journal

Date: May 1, 2012

Type of Collaboration: Email

Why did you use technology to collaborate? Searching for ways to remediate content for my student to prepare if they have to retake CRCT

Reflections on collaboration: I emailed a former mentor teacher to ask advice for helping students prepare to retake the CRCT. We will not get scores back in time to remediate only those who fail, so I must prepare everyone. This was positive interaction for me. She confirmed that I was smart to prepare just in case they failed and gave me ideas how to make the review seem fresh. She shared some online materials/resources that were helpful. It is helpful to email her and it is reassuring to hear that I am taking the right approach.

Date: May 4, 2012

Type of Collaboration: Twitter

Why did you use technology to collaborate? I recently got turned on to Twitter by a friend and honestly it was because of sports, but I decided to see what was out there for school. I started following other teachers (not in my district, though) and education accounts. We chatted about upcoming common core implementation.

Reflections on collaboration: It was comforting to see that the switch to common core is affecting more than just us. This was a positive interaction for me. I also learned a little about how common core is being implemented in other places and it gave me some ideas to share at our next meeting.

Date: May 8, 2012

Type of Collaboration: Twitter
Why did you use technology to collaborate? Searching for ways to be innovative to meet the needs of my students. Found links to several helpful articles including one on a paperless classroom.

Reflections on collaboration: I think I am twitter addicted. There was so much information available I am slightly overwhelmed. It was a quick way to find some good resources.

Date: May 11, 2012

Type of Collaboration: Text

Why did you use technology to collaborate? Quick content question(s) to a former colleague. I needed reassurance that I was solving the problems correctly. The answer key to the test prep said something different than what I thought.

Reflections on collaboration: Since I am in a new school and am relatively a new teacher, I feel more comfortable asking certain questions of this person rather than those I work with. They gossip and I don't want to give them anything to talk about. I know I am the new person, but I don't want to be the new person that they think should not be here. I am not the most comfortable in this content area and I respect the opinion of this person. Texting is a quick way for me to gain valuable information without wasting time.

Date: May 15, 2012

Type of Collaboration: Email

Why did you use technology to collaborate? To confer with colleagues on end of the year schedule changes/plans

Reflections on collaboration: Quicker and more effective than meeting face to face. Those meeting usually take forever and do not accomplish much. There is a lot of bickering and complaining and it seems like the same people end up doing everything anyway, so meeting in person takes twice as long. I like that we have everything in writing and I can double check something if I need to. Plus no one has the excuse of not knowing what is going on with our team on a particular day. Added bonus I don't have to listen to all the side conversations. The adults sometimes seem worse than the kids as far as not paying attention.

Date: May 18, 2012

Type of Collaboration: Twitter

Why did you use technology to collaborate? Looking for a new job/position.

Reflections on collaboration: I found lots of resources to help with my interview. I also made some contacts of people already in the field I am attempting to enter that may be helpful if I get the job. Some of them offered advice when I mentioned that I had an interview. I found this to be helpful. I also have a private twitter account and no one from the school where I teach follows me on twitter so I felt relatively safe researching a new position through this media. I need a change, but I also need a job. I had hoped this job would be the change I needed, but it is not.

Date: May 21, 2012

Type of Collaboration: Email

Why did you use technology to collaborate? Received an email regarding the end of the year benchmark and I also had questions/concerns.

Reflections on collaboration: Email was a quick and effective way to discuss our common assessment. I got my questions answered quickly.

Date: May 25, 2012

Type of Collaboration: Twitter

Why did you use technology to collaborate? I am addicted to it. I could use twitter for every diary entry. I check my timeline throughout the day just to see what is new.

Reflections on collaboration: On the advice of another teacher on twitter I am now using Google drive to share materials/resources with other teachers in my school. I had to introduce them to the idea as well, so I was glad this person could answer questions quickly. If I didn't know something I could send a quick tweet and he usually replied right away. I do NOT mention that I get information using Twitter because I do not want anyone at this school to request to follow my account. I need something separate from this school because these people are usually the source of my frustrations.

Date: May 29, 2012

Type of Collaboration: Email

Why did you use technology to collaborate? I wanted to invite other teachers to look at something I uploaded to Google.

Reflections on collaboration: Quick and effective communication. I got some feedback from some and ignored by others as expected.

Date: June 1, 2012

Type of Collaboration: Twitter

Why did you use technology to collaborate? Because it is there and convenient

Reflections on collaboration: I looked up some great resources and found some links to read articles to prepare for my interview next week. Quick and easy way to find information on what you need.

Date: June 4, 2012

Type of Collaboration: Text/Email

Why did you use technology to collaborate? To share results of CRCT retake for my students with my coteacher and other teammates.

Reflections on collaboration: Quick and effective way to share end of the year information.

Date: June 6, 2012

Type of Collaboration: Twitter

Why did you use technology to collaborate? Continue to research counseling articles/information.

Reflections on collaboration: Positive experience again. I found specifically what I was looking for in a short amount of time. I think the information will be helpful in the interview. It was also the one outlet I had to share how excited I was that the interview went well and I am hopeful for a new position.

APPENDIX O: Template for Focus Group Interviews

The questions provided below are to be used as a guide in the conversation, but dependent upon focus group members' responses the conversation may deviate somewhat.

1. What do you think is meant by teacher collaboration?

2. Do you think it is necessary to collaborate routinely with others or on an as needed basis? Ask participants to elaborate on their answers.

3. How does teacher collaboration, if it does, take place within your grade level at this school?

4. How has collaboration with other teachers changed during your career?

5. Do you ever communicate for instructional purposes with teachers at your own school electronically? If so, please explain how you communicate with one another (email, texting, etc) and why you choose to communicate this way.

6. Do you ever communicate for instructional purposes with teachers at other schools electronically? If so, please explain how you communicate with one another (email, texting, etc) and why you choose to communicate this way.

7. Do you participate in any online discussion forums or groups related to planning for instruction, professional development, or professional reflection?

8. What impact do you think participation in an online collaborative setting has for you as a teacher?

APPENDIX P: Example of Transcription of Focus Group Interviews

Focus Group 1 June 20, 2012

Q: What do you think is meant by teacher collaboration?

Participant Christy: To me teacher collaboration is a time for teachers to be able to communicate with one another about lessons, plans, ideas, strategies for teaching.

Participant Stan: I think it's very important for the collaboration especially when it comes to new ideas of this was working for me, this is not working for me, so no reason to recreate the wheel whenever you have somebody doing something the right way or the wrong way.

Participant James: I agree collaboration is something that is key as teachers that we communicate with each other and share new ideas and I think it's very important especially being a young teacher that we always communicate and share things.

Q: Do you think it's necessary to collaborate routinely with others or on an as needed bases?

Participant Christy: I feel like it's necessary to collaborate routinely with others because sometimes you get ideas from others that you wouldn't have thought of and if you were doing it on an as needed bases you would have not thought you needed that idea. So, I'm saying routinely.

Participant Stan: I think it's very important to meet routinely because different lessons and different units as you go through the year it's very important to collaborate your ideas per lesson or per week because it's going to make a bigger difference in your overall teaching experience.

Participant James: I agree. I think it's important to meet routinely just because it has a set schedule. Working at different schools I need a schedule. So, you know, that you're going to meet on this day and this time and you can always have a spread out schedule that you're going to meet to discuss different ideas. But I also think it's important to meet as needed too because you may need to meet between routine so I think it's kind of a mixture of both.

Q: Does more of your routine collaboration take place face to face?

Participant Stan: Mine does. Especially with the school that I teach at it's very planned out where departments, as my example: would be (content), meet together on a set day every week and it's just planned out in the schedule, like JAMES said, it's very, makes things a whole lot easier. As you go along, just be part of your routine – you know when you're meeting, the time frame you're going to meet at, and you already have everything planned out for your meeting.

Participant Christy: I think the routine collaboration would probably be with your grade level content teacher, your as needed collaboration may be with your ELL or teachers that you wouldn't necessarily be able to see and plan a routine collaboration with every week.

Q: So more of your "as needed" takes place electronically?

Participant Christy: Yes

Participant James: For me it takes place electronically more than face-to-face anyway because I teach at different schools so I don't have time to meet when everybody's meeting so a lot of times I'm sending emails and talking through emails or text or even phone calls.

Q: How does teacher collaboration, if it does, take place within your grade level at this school?

Participant Christy: We have a routine collaboration that we plan once a week, so we have a set time during our planning that we use one day out of the week. And then, usually if things happen or we give test or quiz we'll communicate with each other electronically to try to compare results or "what are you going to do from here" or should we retest or should we move on.

Participant Stan: We have a set day every week. One day a week that we meet in the morning time that the entire group comes together and talks about what we covered the week before and what we plan covering that week. As the week goes by, the same way, if we have quizzes or we have kids struggling and trying to find out new ideas we will collaborate electronically as a group to try to figure out what's the best to build on what we're already working on.

Participant James: Our (content) department meets once a week and they have a face-to-face collaboration, but because of my position I'm not able to be there most of the time so what I do is I email and they email me back and most, most of my collaboration is done either on the phone, through email, and I rarely see them face-to-face for collaboration.

Q: How has teacher collaboration changed during your teaching career?

Participant Christy: It really hasn't changed. I depend more and more on electronic collaboration. At first I didn't, I'd rather met face-to-face, but now I depend more on electronic collaboration. So that would be the only way that it's changed.

Q: Why do you think you depend more on electronic communication?

Participant Christy: I guess coming from the business world it was more sought after to talk to somebody face-to-face or over the phone and email was not considered personal, so now I'm finding email can be personal. That just because you're communicating someone with a text or with email it doesn't necessarily mean that you're trying to take the personal out of the communication.

Participant Stan: It's been the same for me. During my short career, I would prefer honestly the electronic collaboration because I feel when we meet as a group, especially when we get than two or three together, people start side-talking and bringing up things that have nothing to do with what we've supposed to be collaborating about, which takes more time out of our day. When with email, especially when we do it over email or instant message, I feel like we get more

done in a short period of time, because we can, while students are working on practice problems or doing worksheets, I can collaborate with them so it's really killing two birds with one stone.

Participant James: During my career as a teacher I think my collaboration methods have changed some. Basically when I started, I thought it was best to do face-to-face interaction, but as I have been at different schools it's changed because of the culture of the school. I've been in a school where the culture was more of meeting face-to-face, talking things out together as a group at a table. And I've been at a place where everybody emailed all the time. I find it easier to do the emails and I find it easier to do the collaboration through email just because it's more convenient, it saves time. But really it's according to the culture of the school what I would use the most.

Q: Do you ever communicate for instructional purposes with teachers at your own school electronically? If so, please explain how you communicate with one another (like email or texting) and why you choose to communicate this way.

Participant Chirsty: I do communicate electronically usually through email because I share notebooks that I've created or things that, worksheets that we can use for units that are coming up or calendars that we can use. And for me it's just easier to be able to email it than to actually print out the document and take to them face-to-face.

Q: Do you check your email frequently?

Participant Christy: I do.
(other responses to previous question)

Participant Stan: I agree. I collaborate electronically pretty much through email, every once in a while through text messages. Within my school, teaching (content), I have coteachers that I teach with who I will collaborate with both of them on what we're covering, what we need to be working on. And then within the (content) department I will talk to the other (content) teachers to find out what's working well for them and what I need to use in my classroom.

Participant James: Typically I use email the most to communicate with teachers as far as instructional purposes. Usually I will use email more than ten times a day for instructional purposes. A lot of times I use text messaging or phone calls because it's more convenient for me, me being between schools. I've even used Facebook just be on there and we'll be talking about something instructionally about our classes and also I have used blogs. We've, you know, put things on blogs and shared things on the Internet.

Q: Same question but to other schools – do you communicate with people electronically?

Participant Christy: Yes, and it's basically for the same reason. It's just to share resources that we've all accumulated or found that, it's just easier to share electronically through email.

Q: And again for you is it strictly email or do you use other things?

Participant Christy: Sometimes I will use discussion groups just to see strategies or techniques that other people have used that are successful. Or maybe I've found a strategy that I really like and it's not been very successful in my classroom and I want to see what I can do to make it successful or if it has been successful for anyone else.
(other response to the previous question)

Participant Stan: I do. I especially communicate with my host teacher that I had during my student teaching with any ideas that she has and with the coteacher that was in that same classroom I give her some of examples of what I am going through or having to deal with in the classroom and they throw out ideas back to me on how to handle it or how to do better, basically do a better teaching certain topics in (content).

Participant James: When it comes to talking with teachers outside of our school email's always the best, it's what I use most frequently just because I know they have an email account and I can email them really quickly. I also communicate on Facebook if I'm friends with them on Facebook. I can shoot them an instant message on there and get it to them as a way of communication. And sometimes I'll use other people's blogs to look for ideas.

Q: Can they check Facebook at school where you teach?

Participant James: Yes, we can.

Q: Do you participate in any online discussion forums or groups related to planning for instruction, professional development, or professional reflection?

Participant Christy: Our school district has a folder on our network where we can share resources with other teachers. A group of (content) teachers I've heard of have also established a group account to share resources for the upcoming CCGPS on Edmodo which is a networking sight. And so we share units that we've prepared, lessons and how to teach them in tasks.

Participant Stan: We're the same way at our school. We have a folder in our network that we can collaborate not only just with the (content) department but the sped (content) department as well. And we can collaborate on Edmodo as well.

Q: And the sights for your school that you said is that just for your school or for all the school in your district?

Participant Stan: All the schools in the district.

Participant Christy: All the schools in the district.
(previous question)

Participant James: I like using blogs because you can get different ideas from all over the United States or even the world. But you have to be careful I think when using blogs to know what your sources are, what their qualifications of the people that are putting things in there. But at our school we have, for our county we have different types of, we have a data base that you can put

different plans and lessons on so that we can share them with each other in the entire district from different schools.

Q: What impact do you think participation in an online collaborative setting has for you as a teacher?

Participant James: I like the fact that we have a data base that we can all plug into and share ideas and if I am teaching on a certain topic then I can pull a lesson from another teacher that's created and I can use that. I think it would be nice to be able to have more online participation from other schools and other teachers so that we would have more, different things to pull from, more ideas and if everyone used it I think we would have a lot more use out of it over all for the class room.

Participant Stan: I totally agree. I think it's being used in a decent amount of most school systems, I know it is in mine. But if everybody joined in as a team and to truly utilize the severity of how well that it benefits all the students and especially more importantly the teachers, I think it would help us out as teachers and schools a whole lot more if they would. Now when you have the older teachers that are not a big fan of it, it does throw a big chink in the chain for a group if two out of six people do not utilize it. So I think over a period of time it will be more beneficial not just for small school systems but large ones as well.

Participant Christy: Personally the impact has been tremendous for me being a new teacher. It's really resourceful to be able to send an email to someone and get an instant response. Or to need some strategies and not have to track someone down to locate something or just to be able to log in online to a discussion group and see how things have been used and successful implementations of strategy that you're trying to teach with. And like he (Participant STAN) said it would be tremendous if everyone would use it. There are always some teachers, like in our district, that do not communicate with you as well through email as you would like but the ones that do really have provided me with a lot of resources and a lot of things I wouldn't have been able to find on my own.

Q: Thank you all for participating. Is there anything else you would like to add?

Participant Christy: Shakes head. Your welcome

Participant Stan: No. No. Anytime.

Participant James: No and you are welcome.

APPENDIX Q: Framework for Coding Surveys

Question	Strongly Agree (5)	Agree (4)	Not Sure (3)	Disagree (2)	Strongly Disagree (1)
1. Time for planning collaboratively is important to me professionally.	62%	36%	0%	0%	2%
2. My school provides time for teachers to collaborate.	41%	52%	2%	5%	0%
3. The time provided for teachers to collaborate is sufficient and protected.	17%	51%	10%	22%	0%
4. Feedback from colleagues benefits me in planning instructional units.	59%	40%	0%	1%	0%
5. Feedback from colleagues benefits me in reflecting on my instructional strategies.	58%	41%	1%	0%	0%
6. I prefer to collaborate with colleagues in face-to-face settings.	52%	40%	5%	3%	0%
7. I communicate with colleagues with whom I work frequently through electronic communication (email, text messages, discussion boards).	38%	56%	0%	5%	1%
8. I communicate with teachers from other schools frequently through electronic communication (email, text messages, discussion boards).	17%	48%	4%	26%	5%

9. I gain ideas from online discussion boards, online forums for teachers, or other web-based resources to incorporate into my instructional strategies.	20%	46%	10%	20%	4%
10. I use online discussion boards, teacher forums, or other web-based resources to improve my instructional practices for struggling students.	15%	45%	11%	23%	6%
11. I have collaborated with another educator through a social networking site (Twitter, Facebook, EdModo, etc.) in dialogue related to improving my teaching strategies.	9%	32%	5%	40%	14%
12. I have collaborated with another educator through e-mail, instant chat, or SMS text in dialogue related to improving my teaching strategies.	22%	63%	5%	6%	4%
13. I have not collaborated with another educator through e-mail, instant chat, or SMS text in dialogue related to improving my teaching strategies but am interested in this form of collaboration if I had contacts to do so.	4%	30%	12%	27%	23%
14. I have not collaborated with another educator through e-mail, instant chat, or SMS text in dialogue related to improving my teaching strategies and do not wish to participate in technology-based communication.	2%	9%	10%	47%	32%