

TECHNOLOGY AS A TOOL: THE USE OF TECHNOLOGY IN THE CLASSROOM  
AND AFTER SCHOOL CLUB

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## DEDICATION

To my husband Leon, you have supported me in achieving my dreams since undergrad, across time zones, oceans, over 15,000 miles of traveling, and almost 20 years together.

I'm proud to be your Dr. Cook.

To my children Mia, Allana, and Collin, thank you for your understanding, forgiveness, and love. I missed practices, games, performances, and tucking you in at night. I can't thank each of you enough for understanding why.

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## ABSTRACT

LISA TAYLOR COOK

### TECHNOLOGY AS A TOOL: THE USE OF TECHNOLOGY IN THE CLASSROOM AND AFTER-SCHOOL CLUB

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Technology usage within schools is prevalent and research has focused on the value, challenges, and benefits of using technology within classrooms (Brown, Englehardt, & Mathers, 2016). However, little research exists to provide guidelines for evaluating technology usage once implemented within the classroom.

The purpose of this research study was to illustrate and exemplify how a teacher created an inquiry-based culture through the use of technology. The theoretical lenses Bronfenbrenner's bioecological theory (1994), Wenger's community of practice (2001), and Ribble's digital citizenship (2012, 2015) allowed for the creation of a framework that encompassed the teaching pedagogy and usage of technology. Ethnographic case study methods illuminated the teaching practices and interactions of students and teachers within an elementary classroom and after-school animation club. Data collection methods included interviews, observations, audio recordings, transcriptions, field notes, contact summary sheets, and reflexive journals. A constant comparative analysis of data, in

addition to three peer review processes and member checking, helped to ensure rigor and trustworthiness of findings.

Research findings included the importance of a constructivist teaching paradigm and practices that encouraged student inquiry. Technology was used as a tool to extend activities and encourage student collaboration to strengthen learning. The digital citizenship element of digital literacy was expanded and the element of digital collaboration-was created to fully explain the importance of student to student and student to adult interactions and collaborations. Subsequently, the research results highlight the importance of reflective teaching practices in modifying classroom expectations based on student learning, needs, and feedback.

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## CHAPTER I

### INTRODUCTION

External influences on students' development constantly change based on the environments of which children are apart (Bronfenbrenner, 1994, p. 38). Students are part of home, community, and school environments. This dissertation research study focused on school environments. Within the school environment, student expectations are shaped by the district, principal, and teacher. Teacher expectations affect classroom practices and the ways that activities are planned and implemented within the classroom (Baser & Yildirim, 2012; Holzweiss, 2014). Currently, the use of technology within schools is being researched to determine the value, challenges, and benefits of using technology within classrooms. However, a gap exists where the research fails to provide guidelines for evaluating technology usage once implemented and determining the benefits to teachers and students (Couldry et al., 2014; Meeks, 2012).

#### **Statement of Problem**

Technology usage within schools is varied due to a lack of teacher training, resources, and standardized methods to evaluate the technology usage within the classroom (McManis & Gunnewig, 2012; Ribble, 2012, 2015). Furthermore, technology implementation within schools/classrooms is usually evaluated on an infrastructure level, such as evaluating the technology tool itself, rather how the student used the technology tool inside the classroom (Meeks, 2012). Since technology is being used in schools,

teachers need to acquire teaching strategies for implementing technology as well as guidelines to ensure students are using technology efficiently and safely (McManis & Gunnewig, 2012; Ribble, 2012, 2015; Texas Education Agency, 2012; Watkins, 2009). Some states, such as Texas, have created guidelines to regulate what technology skills must be taught when technology is implemented within the classroom (Texas Education Agency, 2012). However, there are limited resources available on teaching practices to successfully implement technology within the classroom (Brown et al., 2016).

### **Significance/Need of the Study**

Two gaps in the research literature influenced the goal of this dissertation. The first gap was a lack of research about effective teaching practices to use when implementing technology within the classroom (Brown et al., 2016). The second gap was a lack of research describing how technology usage influences classroom cultures (Cook & Ellaway, 2015). Based on these gaps, this proposed research study aimed to describe and present the practices of a teacher who used technology devices to enhance the culture and learning in her classroom and after-school club.

Research findings will add to the body of literature on teaching paradigms and practices, technology within elementary schools, community of practices, and effective ways to evaluate digital communities using the framework of digital citizenship (Wenger, 2001; Ribble, 2012, 2015). In addition, through a discussion of findings, educators will learn practical methods to increase the successful connection of technology devices to extend classroom activities.

## **Researcher's Perspective**

I have worked for over 20 years in the early childhood and education field. I taught students with special needs in grades five through eight. I have also worked with young children in licensed child care facilities, trained center caregivers and family child care providers, and taught college-level child development courses for approximately 10 years. This dissertation research was completed at the elementary school that my three children attended. Prior to this research study, I volunteered in several classrooms, including the teacher participant's classroom of this study.

My teaching and research paradigms influenced this dissertation study. Theories that address how external factors and environments shape the development of individuals and the world around them, such as Bronfenbrenner (1994) and Pepper (1970) align with my research paradigm. When viewing the world and how people learn, I believe that a fluid relationship exists between nature and nurture. Due to this relationship, it is important to understand the various characteristics and components that create an environment or community that someone is part of in order to understand the entity as a whole. Interactions between people greatly influence learning (Bronfenbrenner, 1994; Wenger, 2001), and I believe the interactions that occur during educational activities must be considered in research. Understanding the importance of context, participants, and interactions is essential when attempting to understand how a classroom or school club functions and benefits participants. I decided to conduct an ethnographic case study to illustrate the practices implemented by a teacher whose unique methods encouraged learning within a classroom and animation club.

As a participant observer within the classroom and school club, I collected data on the interactions and practices that occurred. Data sources included observations of small and large-group activities, direct teaching methods, and classroom expectations. I conducted interviews with the teacher and students to glean additional information about the practices and interactions observed. Finally, I completed field notes, contact summary sheets, and reflexive journals to document my interactions and influences within these communities. The methodology chapter contains a detailed description of each data collection method.

Within this ethnographic research study, portions of Bronfenbrenner's bioecological theory (1994), Wenger's community of practice framework (2001), and Ribble's digital citizenship framework (2012, 2015) provided lenses to describe and analyze the participants' behaviors and interactions within the classroom and after-school animation club. The previously mentioned theories are defined and described in the review of the literature. These theories were used in data coding as detailed in the methodology and then discussed in a synthesis of findings and connection to current literature in the final chapter of this dissertation.

### **Assumptions/Researcher's Biases**

Prior to completing dissertation research, I conducted a pilot study of the after-school club as a way to gather background information to support the purposeful selection of the teacher and the environments she created. I formed expectations about the teaching practices that would be observed and the student interactions that would occur in the after-school environment. There were two assumptions made within this research

study. The first assumption was that effective practices of technology implementation with students would be presented through the teacher's actions, environments, and activities. A second assumption was that both the teacher and students would verbally share their thoughts and experiences when using technology within the classroom and after-school club.

An ethnographic case study was completed to collect data within the classroom and after-school animation club and to provide a glimpse into the interactions that occurred within the school environments. As a participant within the environments, I can present an emic view of the data collected through a detailed narrative (Guba & Lincoln, 1994; LeCompte & Schensul, 1999). Through this emic view, I can also provide an etic view of how the research findings may be useful to others outside of the environments (LeCompte & Schensul, 1999).

Based on research by Shenton (2004) on how to minimize bias in collecting and coding data, I completed reflexive documents. Therein I journaled about my influences and impressions of activities I both observed and participated in within the classroom and after-school animation club. I used these documents in conjunction with other forms of data collected to triangulate data sources and increase the rigor of my data collection and coding process (Marshall & Rossman, 2011). A description of each reflexive document used is presented in the methodology.

### **Theoretical Framework of the Study**

To explore the classroom and after-school environments, I completed an ethnographic case study. I was a participant observer and documented the behaviors and

interactions of the teacher and students through observations, interviews, and reflexive documents (LeCompte & Schensul, 1999; Maxwell, 2013). As described in the data collection methods in Chapter III, data were coded using three theoretical lenses that created a framework for analysis. The theoretical lenses were Bronfenbrenner's bioecological theory (1994), Wenger's community of practice (2001), and Ribble's digital citizenship elements (2011, 2015).

Bronfenbrenner's bioecological theory (1994) proposes that a student has various systems that influence development. These systems include the microsystem, mesosystem, exosystem, macrosystem and chronosystem. The district and school guidelines for classroom instruction and technology usage detailed in Chapter III provides a description of the exosystem that influences practices within the classroom and after-school club. For the purpose of this dissertation research study, I focused on the microsystem and mesosystems that were present within a classroom and after-school club. There were two microsystems evaluated in both environments. The first was the interactions between students with other students, and the second was the interactions between students and an adult. The mesosystem was based on the interactions of both microsystems. The descriptions and exemplars from the microsystems and mesosystem were also connected to the lenses of community of practice and digital citizenship elements. This connection provided a synthesis of the theoretical lenses that were used in the research study.

Wenger's community of practice theoretical framework (2001) described the activities, processes, and participants that need to be present to create and maintain the

learning environment. Characteristics of the community of practice include voluntary participation, a shared goal and purpose, and socially constructed knowledge which expanded and developed the communities. Ribble's digital citizenship theoretical framework (2011, 2015) presented nine elements, discussed in detail in future chapters, that I implemented to describe the creation and maintenance of the digital communities of practice within the classroom and after-school club. The nine elements are a hierarchical list, but rather a guide of behavioral expectations implemented within the communities. The teacher chose when and how to implement the elements of digital citizenship based on the students' needs, classroom and club goals, and activities.

A detailed description and usage of Bronfenbrenner's theory (1994), community of practice theory (Wenger, 2001), and digital citizenship (Ribble, 2011, 2015) will be presented through the review of literature. Furthermore, how the theories guided the coding and data analysis will be further discussed in the methods. The intersection of theory through the literature review and methods used provided a methodological foundation for this ethnographic case study of digital communities in an elementary classroom and after-school club.

### **Research Questions**

To identify the unique practices within a classroom and after-school club, I first had to characterize the fluid relationship between the teacher and students. The goal of this ethnographic case study was to explore and exemplify the teaching practices and

interactions within the digital communities of an elementary school classroom and after-school animation club. The overarching research question was:

In what ways does the teacher create an inquiry-based culture through the use of technology in a classroom and after-school club?

Specific research questions guided my data collection focus as a way to define and describe the various interactions that occurred. The specific research questions were:

1. How are components of the community of practice framework (Wenger, 2001) implemented by a teacher within the classroom and after-school club?
2. How are elements of digital citizenship as defined by Ribble (2012) implemented by a teacher within the classroom and after-school club?
3. In what ways does technology usage within the classroom and school club extend students' learning and relate to the Technology Texas Essential Knowledge and Skills ([TEKS]; Texas Education Agency, 2012)?

### **Definition of Terms**

The definition of several terms is necessary for this dissertation research. This is not an extensive list; however, defining these terms assist in understanding how the theoretical framework was used within this study as well as the information presented in the literature review.

#### **Bronfenbrenner Bioecological Theory (1994)**

Bronfenbrenner's bioecological theory (1994) proposes that an individual is influenced by both internal and external stimuli. In addition, the interactions between various external stimuli has an effect on the individual (Bronfenbrenner, 1977). For this research study the

classroom and after-school club microsystem and mesosystems were observed and described.

- Microsystem was defined as the first level of influences that may affect an individual's development (Bronfenbrenner, 1977). Within this system, the individual had direct contact with others that influenced development (Bronfenbrenner, 1977). For the purpose of this study, two microsystems were observed within the classroom and after-school club: student-student interactions and student-adult interactions.
- Mesosystem was defined as the second level of influences that may have affected an individual's development (Bronfenbrenner, 1977). Within the mesosystem, the interactions of multiple microsystems on the individual were described. For the purpose of this study, the mesosystem included the connection of the students' two microsystems: student-adult and student-student interactions.

### **Community of Practice (Wenger, 2001)**

Wenger (2001) defined communities of practice, also called a community of learners, as a group of people with a shared interest or goal that work collaboratively and collectively to create and extend learning and understanding on the shared topic of interest. Within this research study, I examined three components of a community of practice (1) community participation, (2) community development, and (3) community knowledge used in novel ways.

1. Community participation describes the various interactions that occurs between participants within a community (Wenger, 2001).

2. Community development describes the growth and changes that occurs within a community as a result of the shared learning experiences of the participants (Wenger, 2001).
3. Community knowledge used in novel ways describes the ability of participants to extend the learning that occurs within the community to new experiences and actions (Wenger, 2001).

### **Digital Citizenship (Ribble, 2011, 2015)**

Ribble (2011, 2015) defined digital citizenship as nine socially constructed elements that provided guidance on positive technological behaviors and experiences. The nine elements are not hierarchical, but rather, address different behavioral expectations. The nine elements are (1) digital access, (2) digital commerce, (3) digital communication, (4) digital literacy, (5) digital etiquette, (6) digital law, (7) digital rights and responsibilities, (8) digital health and wellness, and (9) digital security/self-protection (Ribble, 2011, 2015).

1. Digital access refers to the availability of technology tools (Ribble, 2011).
2. Digital commerce refers to buying and selling of items electronically (Ribble, 2011).
3. Digital communication refers to communication that occurred electronically (Ribble, 2011).
4. Digital literacy refers to a user's understanding of how to use a technology tool appropriately and effectively (Ribble, 2011).
5. Digital etiquette refers to the socially acceptable behaviors that occurred via technological devices or programs (Ribble, 2011).

6. Digital law refers to the governing laws that regulated what could and could not occur when using digital tools such as the sharing of licensed programs (Ribble, 2011).
7. Digital rights and responsibilities refers to rights, such as free speech, when using technological devices (Ribble, 2011).
8. Digital health and wellness refers to the protections that were taken to ensure physical and mental wellness while using technology (Ribble, 2011).
9. Digital security/self-protection refers to the measures taken to secure the technological devices and also identifiable information of the user (Ribble, 2011).

### **Environments**

Two environments were observed during this study to include an elementary classroom and after-school club. A detailed description of the environments is presented in Chapter III.

Definitions of terms related to the environments and participants within the environments are presented below.

- School culture refers to the behavioral, moral, and educational standards within a school that can be created and maintained by administration, teachers, parents, and students (Cakiroglu, Akkan, & Guven, 2012; Ernst, 2012)
- Classroom culture refers to the behavioral and educational standards and expectations that were created and maintained by the teacher and students (Cakiroglu, et al., 2012; Ifenthaler & Schweinbenz, 2013).

- Inquiry-based culture within a classroom is a classroom environment that allows students to explore, wonder, and question what is occurring around them (Lindfors, 1999).
- The after-school club is defined as an elective club that students in third, fourth, and fifth grade choose to join. The students were able to stop participation in the club at any time.
- Teachers are defined as the lead educator in a classroom. Teachers are certified and responsible for classroom activities and student success (Holzweiss, 2014).
- Social learning is defined as the learning that occurs through interactions with other people (Nistor, Baltes, & Schustek, 2012; Wenger, 2001).
- Teaching paradigm is defined as the behaviors displayed by a teacher within the classroom. Such behaviors may include teaching practices demonstrated within the classroom and student behavior expectations (Lane, 2015).
- Learning paradigm is defined as the teacher's expectations on how children learn and then demonstrate their understanding and application of material (Lane, 2015; Weselby, 2016).
- Technology is defined as an electronic device or platform (Ribble, 2011, 2012).
- Texas Essential Knowledge and Skills (TEKS) are academic outcome standards that determine what every student in a public Texas school should learn in grades kindergarten through twelve (Texas Education Agency, 2012).

- Digital communities are defined as a shared collaborative community that occurs digitally or contains technological tools that create collective digital communications between participants (Nistor et al., 2012; Wenger, 2004).
- Apple Tech is the name of a student job within the classroom. The teacher created the classroom job to empower the students by encouraging peer interactions when technical support was needed. The job duties included answering questions about the technology devices and explaining the use of applications that were on the technology devices.

### **Delimitations of the Study**

This ethnographic research study focused on one teacher, in one classroom and one after- school club. The purpose of ethnographic studies is to explain a specific phenomenon that occurred within a location or culture (LeCompte & Schensul, 1999). The classroom and club participants shaped findings of this research study. Ms. Fromm's unique teaching practices were confirmed via interviews with the principal, teacher, and pilot study data collected within the classroom and after-school club. Since no two teachers or their practices are exactly alike, using the same research methods within another classroom could produce different research findings. This would be expected since a case study focuses on telling the story of a specific group or participant (Creswell, 2013; Maxwell, 2013). Furthermore, Ms. Fromm's pedagogy and paradigm influenced the classroom participation, student expectations, and expectations of adults within the classroom. These practices shaped the community along with the students' individual personalities.

Interactions and growth of the communities were influenced by each student and adult within the communities of practice (Wenger, 2001). It was essential for me to understand the participants' thoughts and reasons for their actions that occurred. I used audio recorders to capture the language that was used within the communities. I also completed field notes, observations, and contact summaries to document what I visually saw occurring within the communities. If the students and teacher did not verbally communicate their thoughts and understanding of what occurred within the communities, I would not have been able to gather as much research data. The verbalizing of one's learning, actions, and feelings, allowed me to collect data to inform the description of the classroom and club communities. At times when a student did not verbally express their thoughts or actions I asked probing questions when possible. However, since multiple small-groups used technology simultaneously, I was not present at every technology or social interaction. During these times, field notes and contact summary sheets were used to contextualize audio recordings.

In an attempt to collect as much descriptive information as possible on the technology usage and learning within the classroom and after-school club, I provided Ms. Fromm with an audio recorder. By having this audio recorder Ms. Fromm could capture technology instruction and interactions that occurred when I was not present in the classroom or after-school club communities. I then took the recorder home and gave Ms. Fromm another recorder to use while I transferred the audio files she collected to my external hard drive.

Finally, Ms. Fromm and the students did not have a digital divide (Modarres, 2011; Yemothy, 2015) in terms of access to the technology needed to expand on activities and learning. If one iPad did not work, there were additional ones for a student to use, and this same access occurred with laptops and computers. Students did not have to wait on a technology tool nor share a technology tool unless they desired. The availability of technology influenced the interactions that occurred between participants who shaped the classroom and club communities. Although I was able to account for the previous items, there were some limitations within my dissertation research study that I could not account for.

### **Limitations of the Study**

When conducting this research study there were two limitations that I could not account for and may have influenced the research findings. The first was my inability to be present in the classroom every week as originally planned. Personal sickness, work responsibilities, and school/state testing limited the amount of time and number of days I could collect data within the classroom and after-school club. During my absence, it is feasible that students displayed their learning via technology, interactions between participants occurred which shaped the community development, and the classroom daily activities continued without my presence. Furthermore, even though Ms. Fromm was given a recorder to capture technology usage and community interactions, it is plausible that she did not record every technology discussion or interaction that shaped the communities. Since Ms. Fromm's responsibilities were to her students and enriching their

learning, I could not expect her to also continually collect research data for my dissertation research study.

The second research limitation resulted from the limitation of the technology tools themselves. As with any electronic device, challenges occurred which influenced the students' and teacher's productivity and ability to work collaboratively. One of Ms. Fromm's goals was for students to digitally collaborate more as a way to extend learning. However, some programs and apps continuously froze, and, even with assistance from Watt School District technical support, or support from the makers of the program, collaboration was not possible. In addition, programs froze throughout this study, which limited students' abilities to save and continually extend their creations and display of knowledge. Due to this technology malfunction, some data could not be collected thereby creating a research limitation.

Ultimately, the two previously mentioned limitations did not drastically affect the amount of data I was able to collect and did not greatly influence my ability to write a thorough ethnographic dissertation. Based on the feedback from Ms. Fromm, who read some of my dissertation findings and analysis, an accurate description of the classroom and after-school club environments has been portrayed.

### **Summary**

This chapter presented an overview of the ethnographic case study research that was completed from October 2015 to May 2016. The lack of research on effective teaching practices and technology guidelines has been presented to demonstrate the significance of this research study. The influence of my teaching and research paradigm

has been connected to theoretical frameworks that framed the coding and analysis of data. Three theoretical frameworks were used to provide a description of the classroom and club activities that fostered learning through the usage of technology. The frameworks stated are Bronfenbrenner's bioecological theory (1994), Wenger's community of practice (2001), and Ribble's digital citizenship (2012). Finally, definitions of terms used within this study, delimitations and limitations were presented to situate this research study.

A detailed explanation of the theories, how the theories have been used in research, and a comprehensive literature review will be presented in the next chapter. The research methods used to complete this study, coding of data, and the steps used to increase trustworthiness through triangulation of data will be presented in Chapter III. The connection of research questions, theory, and coding of research data will be presented in Chapter IV. Finally, a synthesis of findings connected to current literature, presented along with recommendations to educators and future researchers will be presented in the final chapter.

## CHAPTER II

### REVIEW OF LITERATURE

In this chapter, research on technology usage within schools is presented. Technology is a tool that can support and expand a student's education and also provide positive cognitive, social, and emotional development experiences (Watkins, 2009). This literature review provides information on possible factors that influence school and teacher choices whether to use technology, benefits of using technology within classrooms, and technology guidelines. In addition, information will be presented on the Texas Education Standards, the use of technology in schools, and possible factors that should be considered when implementing the use of technology within schools and with students. Finally, gaps in current research are presented, specifically gaps in the evaluation of technology usage within schools, and ways schools can support student usage and learning of appropriate digital/technological behaviors. To organize the research within this literature review, three theoretical frameworks are presented. The theoretical frameworks are Bronfenbrenner's bioecological theory (1994), the community of practice framework (Wenger & Snyder 2000; Wenger 2001), and digital citizenship framework (Ribble, 2011, 2012, 2015). These lenses were used to synthesize published research studies and literature to create a literature as a foundation for this dissertation research study.

## **Theoretical Frameworks**

Research studies are influenced by a theoretical framework that situates the researcher within the chosen field and research topic. This research study occurred in a third-grade elementary school classroom and an after-school animation club. The overarching goal was to gain an understanding of the classroom and club cultures and the usage of technology within these environments. Consequently, I needed a research design that encompassed methods allowing for data collection that provided a description of the community culture and actions. Ethnographic research methods offer data collection procedures that can assist researchers in understanding the relationships, behaviors, and events within a community (LeCompte & Schensul, 1999). Ethnographic research methods were chosen to gain information to depict settings, events, and contextual information to understand what occurred within the communities population. Furthermore, in conjunction with additional theoretical frameworks/lenses, a comprehensive description was developed of chosen communities.

Within the social science field, the interconnection between the various people within a community partnership can be understood by applying the tenants of systems theory (Thomas, 2005). Thomas (2005) explained a system theory as a theory that “consists of components, a pattern of relationships among components, and process by which the components function to produce development” (p. 480). When using a systems theory as a theoretical framework, it has been suggested that several internal and external factors must be considered (Adams, Hester, Bradley, Meyers, & Keating, 2014; Reynolds, 2011). These factors include the context of what is being observed, the purpose

or goal of the behaviors being observed, the roles of participants, the hierarchical relationship between participants within a system, and the researcher's ability to understand the behaviors within a specific situation. An understanding of these components, and the influence of one component on another, assists the researcher in being able to understand, explain, and predict what occurs within a system (Onwuegbuzie, Collins, & Frels, 2013; Reynolds, 2011).

Since systems are constantly evolving, a system can be considered “non-linear, multi-level oscillating patterns of communication that occur and have occurred in time” (Reynolds, 2011, p. 30). There is a need to view a person not only as an individual, but also as someone “embedded in a system” (Reynolds, 2011, p. 29). Reynolds (2011) suggested that families and schools should be viewed as a system in order to understand the complexity of each. One specific systems theory that focuses on various levels of influence on an individual is Bronfenbrenner's bioecological theory (1994). Bronfenbrenner's theory has been used as a framework for researchers to study the relationships between people and how social influences can affect a person's development (Adams et al., 2014; Bronfenbrenner, 1977, 1986; Deurden & Witt, 2010; Leonard, 2011). Consequently, Bronfenbrenner's theory provides a lens through which one can view the interactions of others and the corresponding effect on a student (Bronfenbrenner, 1977, 1986; Deurden & Witt, 2010; Leonard, 2011).

### **Bronfenbrenner's Bioecological Theory**

Bronfenbrenner's theory (1977, 1986; Bronfenbrenner & Ceci, 1994) proposes that a student has various systems that influence development. These systems include the

microsystem, mesosystem, exosystem, microsystem, and chronosystem. The influence of each of the systems on a person may occur through direct or indirect contact. The microsystem includes the people and activities that the individual has direct contact with. An individual is part of several microsystems that may include relationships with parents, siblings, peers, and teachers. Within the microsystem, the individual's innate preferences affect the type and amount of interactions with others. The mesosystem focuses on the connections that occur between more than one microsystem and the influence on a student through these connections. For example, within a school a student can have two microsystems. One microsystem would include the student and his/her peers, and the other microsystem would include the student and the teacher. The interactions that occur within each microsystem influences the student's development. In addition, the interactions between both microsystems will also influence the student's development. These indirect influences are part of the student's mesosystem. For this research study, the microsystems that I observed included the student-student microsystem, the student-adult microsystem, and the interactions of these two microsystems. The exosystem is a system where indirect interaction of external forces influences a student. For example, school behavior expectations would influence a student's development as specific behavioral expectations would be instilled within a classroom. In addition, a parent's work schedule would be part of the exosystem too as the hours a parent works would influence the quantity of time a student could spend with his/her parent. The influences of the exosystem on the individual student is an indirect influence as the student is not an active participant within the entities within the exosystem. The macrosystem focuses on

the cultural milieu that the student is raised in and the effects of these external expectations on a student's development. Finally, the chronosystem considers the time or era in which the individual is developing. This is important to consider as expectations of families and schools have changed throughout the years (Leonard, 2011).

Leonard's (2011) mixed methods research used Bronfenbrenner's ecological theory as a framework when reviewing and collecting information about a school's history and the history of portions of the community during a span of 60 years. Research methodology included document analysis on records such as school attendance records, yearbooks, student publications and other artifacts that could provide information on the students, teachers and school culture during the 60-year time span. Bronfenbrenner's theory allowed researchers to focus on the macrosystem and chronosystem as a way to situate the information within a specific time frame. By doing so the researcher could describe how the shifts in the macrosystem and chronosystem affected the relationships between families and schools and also the change in enrollment demographics. Leonard's (2011) research also provided specific examples of how one's environments and interactions within and between the microsystem, mesosystem, and exosystem influenced students' development which tied to Bronfenbrenner's theory. Finally, research results from proposed factors of the various systems can affect student success and challenges within the school system.

Focusing on ways to create positive youth programs, Duerden and Witt (2010) completed a meta-analysis of literature and research articles on youth programs to determine what aspects of a student's microsystem, mesosystem, and exosystem

contributed to successful programs. The goal of the research was to present efficient and effective ways for policy makers and advocates to create programs that would benefit students based on the needs of the various groups of students. Participant needs, program features, and the relationships between those within the programs were stressed as key factors that should be considered when making decisions (Duerden & Witt, 2010). Best practices for each system were presented and focused on recognizing individuality in addition to commonality features of possible participants of the program. Consequently, an understanding of the various systems to include the microsystem, mesosystem, and exosystem were part of the evaluation that program makers would need to consider prior to making decisions.

For this research study, the microsystems and mesosystem that students were part of within the school was observed and described (Bronfenbrenner & Ceci, 1994). Within a school, students can have several microsystems that can include their interactions with teachers as well as with peers. In addition, the interactions between the two microsystems which occur within the mesosystem, will also be described. As a way to evaluate the mesosystem, the community of practice theoretical framework (Wenger, 2001) and the digital citizenship theoretical framework was used (Ribble, 2015). The community of practice theoretical framework focuses on the relationship of the participants and the contributions of the participants to develop and expand knowledge within the community. In addition, within a technological community, the framework of digital citizenship presents nine elements that are interconnected and can assist in understanding and evaluating a technological community. Figure 1 displays the connection between the

theoretical frameworks that are discussed in this literature and how the frameworks were used to explain the interactions between participants within Bronfenbrenner's microsystem and mesosystem.

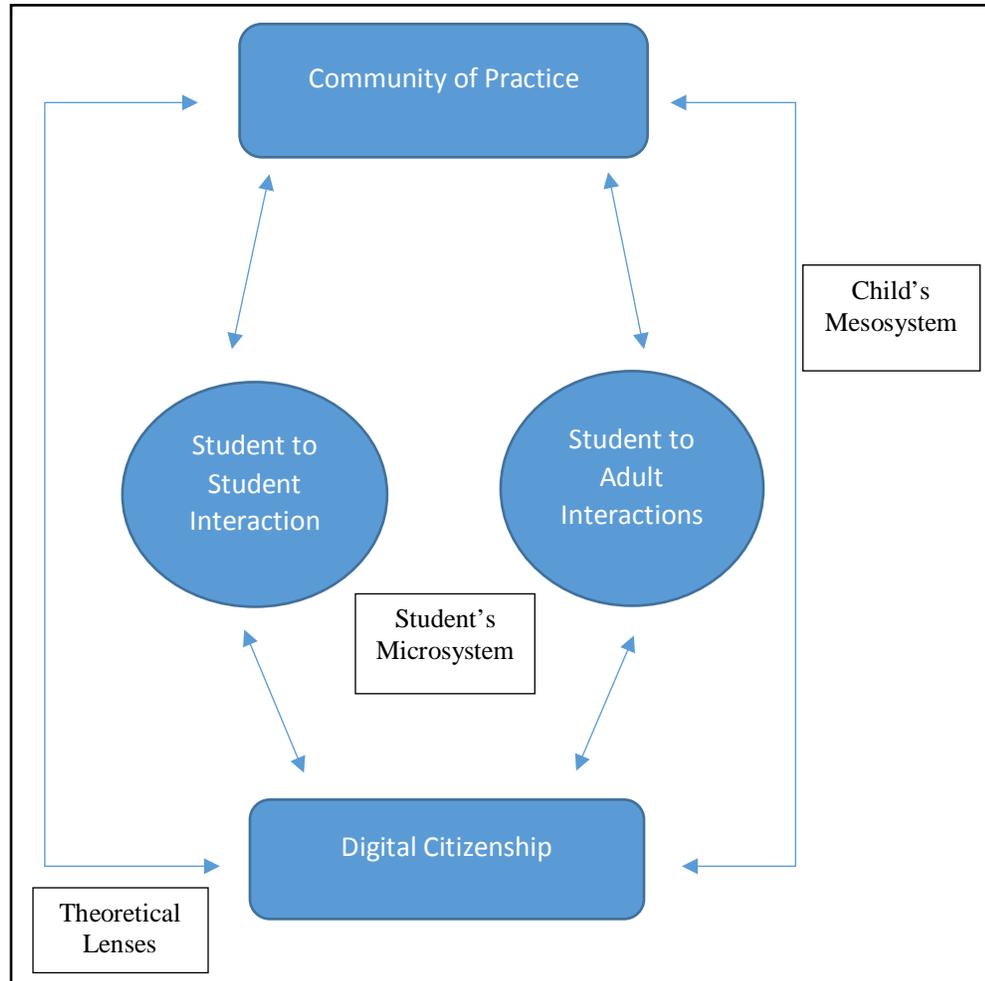


Figure 1. Overview of mesosystem and how microsystem and theoretical lenses are connected.

This visual represents how the different frameworks were connected to complete the research. There are at least two microsystems that a student can be part of within a school classroom. The first would be a microsystem that would include the student and the student's peers. Direct interactions between members in this system can influence learning. A second microsystem that a student can be a member of within a school classroom would include the direct interactions of the student and teacher. The mesosystem would then account for the interactions between the two microsystems, student to student and student to teacher. To understand how a classroom system is developed, maintained, and influences learning, two frameworks will be used to evaluate the interactions within the microsystems and mesosystem. These frameworks are the community of practice framework and digital citizenship framework.

### **Community of Practice**

Interactions and learning experiences between students and teachers occur in the student's microsystem and mesosystem. As a way to define and describe the learning that occurs from social interaction, one must understand the dynamic relationship between the participants. A community of practice is a framework that describes the collective and collaborative learning of both tacit and explicit knowledge that is presented by the participants in a community. Furthermore, knowledge is formed by the sharing of information and by observing the implicit and explicit actions of others within the community (Duguid, 2005; Wenger, 2001). The creation of a community of practice is a choice made by the participants and not by others outside of the community (Wenger & Snyder, 2000). In addition, the goals, actions, and knowledge creation are based on the

needs of the participants and are influenced by the learning and sharing of information (Nistor et al., 2012). Within a school, some may not view a classroom community as a community of practice since the participants, students, and teachers, did not choose to be part of the group and were assigned instead. However, a community of practice can be created within the classroom and in after-school club when the level of participation is varied, chosen by the participants, and the thoughts and knowledge of all participants are supported and valued (Nistor et al., 2012).

There are several characteristics of a community of practice. These characteristics include (a) a desire between participants to support the learning of each other, (b) self-selection in the group, (c) the ability to leave the community at one's discretion, (d) a belief in the ability of others within the group to meet the needs of each person's development, and (e) a commitment to the chosen topic (Wenger & Snyder, 2000). Social interactions are key components of a community of practice since participants' influence and direct their own learning, which is also influenced by others (Nistor et al., 2012; Wenger, 2004). A benefit to having a community of practice within schools is that the knowledge created and developed within the school learning community may help form a connection between school experiences and experiences that occur outside of the classroom (Wenger, 2001). This can occur through internal dimensions that connect school subjects with activities that focus on the same subject outside of the student's normal classroom but still occur within the school. An external dimension would connect the school experiences to learning outside of the school such as within the student's

home. Finally, the development of interests can help create a desire within the student to continue learning after required educational classes.

A shared collaboration of information is what creates and maintains knowledge within the shared social community. Wenger (2001) proposes that three characteristics are necessary in the development, growth, and application of a selected focus within the community. The first characteristic is the domain, the “shared interest” (Wenger, 2001, p. 2) and the interactions that occur to develop a deeper understanding of the shared interest of group participants. The second characteristic is the community. Within this community, the interactions between the participants are focused on sharing ideas, active interactions between participants, and the growth in knowledge of both the individual and the group as a whole. The third characteristic is the practice. This characteristic explains how the knowledge learned from the community is applied and connected both within the group and outside of the group.

A further examination of the three previous characteristics (i.e., domain, community, and practice) reveals seven broad categories that could be used to evaluate the attainment of a community of practice (Wenger, 2001). Furthermore, these seven categories contain 13 elements to further describe the structures of the categories. The first category is time and space, which contains the elements of presence, visibility and rhythm. This category focuses on the amount of time one spends within the community and the importance of the community to the participant(s). The second category is participation, which contains elements of variety of interactions and efficiency of involvement. This category focuses on the interactions of participants and the ease at

which individuals are able to actively participate within the community. In addition, how the participation within the community is valued in relation to other priorities and responsibilities outside of the community is also addressed within this category. Value creation is the third category which is broken into both short-term and long-term values. This category focuses on the value that a participant places on the interactions that occur within the community.

Wenger (2001) continued to define a community of practice by describing connections that are made within a community as the fourth category. This category contains the element of connections to the world which focuses on how the participants are able to connect the knowledge gained from the community of practice to other areas outside of the community. Personal and communal identity are included in the fifth category, which is the broad term of identify. This category focuses on the identity that the individual has within the community and the identity of the community itself. The sixth category is community membership. This category contains the elements of belonging, relationships, and complex boundaries. Belonging and relationships focuses on the relationships between participants within the community. Complex boundaries focuses on the relationships with people outside the community who still contribute to the community in various ways. The final category is community development, and this contains the elements evolution/maturation, integration, and active community-building. Evolution/maturation and integration focuses on the stages of development and change that the community goes through. The element of active community-building is focused

on the person or small-group of people who keep the momentum of the community going in the chosen direction.

The community of practice framework allows researchers to view a community as a whole entity and understand the dynamics that influence the community. At a school, a community of practice could occur within a classroom or an after-school club. At least two types of interactions would be influential in the development of the community. One type would be the interactions of the student to his/her peers. The second type of interactions that would be influential to the community development would be the interactions between the teacher and students. The behaviors exhibited within a community of practice could be evaluated when framed using Bronfenbrenner's microsystem and mesosystem.

Nistor, Baltes, and Schustek (2012) presented the importance of interactions between participants when they researched the acceptance of educational technology within an online community of practice at a university. The researchers used quantitative methods to evaluate the acceptance of the technology, the expertise of the participants, and the amount of participation within the community. Data collected via online questionnaires were used in several regression analyses, which showed a significant positive influence between a participant's expertise and their participation within the group. Additionally, the amount of participation within the community was positively correlated with technology usage and content creation that was shared within the community. The use of a community of practice to assist participants to learn, expand, and develop an understanding of the shared content was shown to be beneficial.

## **Digital Citizenship**

A type of community of practice that may occur in schools is a digital community. This community could be influenced by the administrators, teachers, parents, students, and technical tools available. Within schools there are behavioral expectations and these would relate to the behavioral expectations implemented to ensure appropriate technology usage. Ribble (2011, 2012, 2015) created a digital citizenship framework to guide the implementation and usage of technology tools within homes and schools. The fundamental basis of digital citizenship provides socially constructed expectations that, when followed, can help create positive technological behaviors, experiences and communities for all users. Within the broad term of digital citizenship are nine elements that address varying aspects of users' technological behaviors and expectations. The nine elements should not be considered a set of structured rules, but rather a guide to assist with appropriate technology usage both in homes and schools no matter the technological device (Ribble, 2011, 2012, 2015). The nine elements include (1) digital access, (2) digital commerce, (3) digital communication, (4) digital literacy, (5) digital etiquette, (6) digital law, (7) digital rights and responsibilities, (8) digital health and wellness, and (9) digital security/self-protection.

These nine elements focus on a different aspect of technology usage that students may encounter when utilizing various technological tools. Digital access focuses on the availability of tools. In addition, digital access also focuses on the equitable opportunities for technology usage by all participants. An evaluation of the tools within a student's home, classroom, school, school district, and city could all be viewed through this

element of digital citizenship. The larger discussion of the digital divide that occurs within some cities and schools could be connected to the digital access element as defined by Ribble (2011, 2012). The digital divide occurs for numerous reasons, including a lack of funding, availability of tools, and understanding on how to use the technology tools available (Modarres, 2011; Rogers & Wright, 2007). The second element of digital citizenship is digital commerce, which focuses on the “the electronic buying and selling of goods” (Ribble, 2011, p. 20). Ultimately digital commerce focuses on what needs to occur to become a conscientious electronic consumer. The third element is focused on digital communication and the “electronic exchange of information” (Ribble, 2011, p. 23). This exchange of information through digital communication in schools can occur through various participants to include teacher to student, teacher to parent, and student to student. The fourth element is digital literacy which focuses on the process of learning about the technological tool and appropriate ways to use it. Aspects of a digital divide is also connected to this element of digital citizenship.

The fifth element of digital citizenship focuses on the user’s behaviors when utilizing the technological tool and is called digital etiquette (Ribble, 2011, 2015). This would include information on how one’s actions can affect another person. The sixth element is digital law. This element refers to the laws that govern users’ behaviors, such as downloading programs and installing programs on more than one device. The seventh element refers to the user’s digital freedoms and is titled digital rights and responsibilities. This element proposes that within a digital community users should be able to expect and follow “certain rights or privileges” and protections (Ribble, 2011, p.

35). The eighth element focuses on the wellbeing of the user and is titled digital health and wellness. This element focuses on how the use of technology can affect the user's health in various ways. Finally, the ninth element of digital citizenship is focused on the security of users and is titled digital security. This element focuses on security of the technology tools and of the user themselves. The implementation of digital citizenship elements is influenced by those within the classroom, the teacher, for example, and those who influence the teacher, such as administrators and parents.

The use of digital citizenship elements to guide student's technology usage and behaviors can assist in the creation of electronic standards similar to other school standards that are already expected of students (Johnson, 2014; Marcoux, 2014; Ohler, 2012; Young, 2014). The importance of guiding students' electronic behaviors, or implementing electronic character expectations allows for the creation and maintenance of a safe community where students can learn not only the academic curriculum, but also how their actions affect others when using electronic devices (Ohler, 2012; Young, 2014). The implementation of digital citizenship elements provides guidance for students in many ways. The elements of digital citizenship encompass the behaviors that would be demonstrated when a student searches the internet for academic reasons, as well as the safety expectations that should be implemented to ensure a student's electronic and physical safety (Young, 2014). Many students may be considered digital natives and have used electronic devices within their home and school. Collaborative discussions between teachers, parents, and students can help establish how and when digital citizenship expectations are implemented. The implementation of digital citizenship expectations

does not have to be a challenging task and can be incorporated within academic and social settings (Ohler, 2012; Young, 2014). These expectations may be implemented district-wide or with the use of specific digital devices (Johnson, 2014; Young, 2014). The framework of digital citizenship can assist in understanding the expectations of a community of practice within a classroom and after-school club.

## **School Environment**

### **School Culture and Climate**

School environments, like home environments, are influenced by multiple people's actions and the relationships between people within the school. Although a district may have specific overarching goals, the realization of such goals are based on the implementation of expectations as supported and guided by the school principals. School principals influence what types of programs occur within a school by providing support and assisting teachers with challenges (Cakiroglu et al., 2012; Ernst, 2012). In addition, principals help to determine the school culture by setting behavioral, educational, and teaching expectations. The expectations within a school provide a framework for the implementation of other programs and practices.

The social and behavioral expectations within a school shape the school culture and climate (Rufo, 2014). The societal norms within an environment influence what type of social and behavioral expectations are considered appropriate within school settings. The direct or indirect teaching of societally appropriate behavioral and social expectations can be defined as character education (Berkowitz & Bier, 2005; Rufo, 2014). Research has shown that character education can support, enhance and extend academic curriculum

within classrooms (Berkowitz & Bier, 2005; Rufo, 2014). Character education may focus on teaching skills such as collaboration, team work, the importance of honesty, and the importance of hard work. These skills should be embedded not only within a classroom, but also as characteristics valued within the entire school culture. The values emphasized at different times may vary based on the age of students, academic subjects, curriculum tools used, and classroom needs. However, the values taught are always based on the widely accepted values in society, and character education also extends to the usage of technology (Ribble, 2011, 2012).

Digital citizenship can be considered as character education for technological tools (Ohler, 2012). Ohler (2012) states that schools should consider a student's technology usage within a school and the school's character expectations as one unified entity. The character expectations of the school would extend to character expectations when using technology. For example, bullying would not be acceptable in face-to-face situations, and cyber bullying would not be considered appropriate either. The tools used to bully may have changed, but the character expectations for the student has not. Consequently, digital character expectations within the school are needed. The challenge then lies in creating character expectations that meet the needs of everyone affiliated within the school to include parents, teachers, and students.

Successful character education programs have been found to contain (a) training for school personnel, (b) hands-on strategies that implement a connection to academic subjects, (c) varied teaching strategies to include direct teaching of skills in addition to modeling, and (d) incorporating and creating partnerships with families to create a link

between home and school values and expectations (Ohler, 2012). Character education becomes meaningful when implemented within various settings and activities. It is essential that opportunities to incorporate character education are used to help create and sustain the cultural expectations of both the classroom and school. In addition, through the reinforcement and varying character education experiences, students may begin to internalize and apply the values in situations outside of the school environment. The character beliefs that are expected of the students must also align with the character beliefs of principals and teachers. Teachers need support from principals to create a continuation of character expectations aligned with the academic expectations. It is essential that principals and teachers have a supportive relationship.

The relationship between teachers and principals may be influenced by classroom evaluations (Goldhorn, Kearney, & Webb, 2013; Rufo, 2014). Teacher evaluations conducted by administrators may reveal useful practices that are occurring within a school or may reveal what the teacher believes the administrator wants to see on that specific day. A trusting relationship between administrators and teachers is needed in order for meaningful appraisals to occur. One way to build trust is through frequent teacher observations or walkthroughs of classrooms. Goldhorn, Kearney, and Webb (2013) created a 360° Walkthrough instrument that equipped administrators with a method to provide constructive feedback that could be implemented within the classroom and possibly improve the administrator and teacher relationship. The 360° Walkthrough instrument assessed aspects of the classroom such as teacher interaction, student interaction, classroom management, and engagement of learners (Goldhorn et al., 2013).

This tool emphasized a community learning experience within the classroom between students and teachers. In addition, the 360° Walkthrough instrument completed observations at various times during the day and week, in an effort to provide information that could be used in thoughtful conversations between administrators and teachers. (Goldhorn et al., 2013). The completion of reflective conversations was also a way to build a positive relationship between teachers and administrators within a school. The benefit of this observation tool is that there is not one specific classroom format that is considered the best or only way to create a classroom environment and implement lessons. Rather, this tool is flexible enough to allow for the individual characteristics and needs of both the teacher and student to be recognized and valued. By allowing for variations in pedagogy techniques, administrators allow for teachers to meet the needs of individual students and the class as a whole. A teacher's ability to meet his/her student's academic and social/emotional needs is partially influenced by the teacher's belief in his/her own abilities and the ability to implement practices that will be helpful within his/her classroom without negative consequences from administration (Brown et al., 2016; Opdenakker & Van Damme, 2006).

The success of students within a classroom is influenced by numerous factors (Baser & Yildirim, 2012; Holzweiss, 2014; Opdenakker & Van Damme, 2006). Within academic classrooms, Duffy and colleagues (2016) found a connection between teaching styles and classroom climates which influenced student achievement. The classroom climate included not only a teacher's ability to teach, but also the relationship between the teacher and students. Classroom climates was found to be influenced by a teacher's

satisfaction with his/her job, classroom management abilities, and the roles that students and teachers had within the classroom. Lane (2015) also found that teachers who focused more on student-centered teaching not only had more positive classroom climates, but also more student success. Data were collected using standardized questionnaires and surveys. Portions of the questionnaires and surveys were quantified using factor analysis and multilevel analysis which is similar to hierarchical multi-linear regression. Lane (2015) quantified the individuality of students and teachers based on preconceived standards. Although this research presented useful information to assist in understanding possible relationships that may exist between student success and teacher behaviors, a deeper understanding of what factors influence teacher's behaviors is not available due to the quantitative methods of this research. A qualitative research study that seeks to understand the fluid relationship between teachers' and students' behaviors may provide valuable information on why teachers demonstrate varying teaching styles. In addition, the connection of these teaching styles with technology usage also adds additional variables that should be addressed (Blackwell, Lauricella, Wartella, Robb, & Schomburg, 2013; Ifenthaler & Schweinbenz, 2013; Miranda & Russell, 2012).

### **Teaching Paradigms**

Just as parents use different parenting behaviors with their children, teachers also use varying teaching strategies or styles with students within the classroom (Gill, 2016; Muis, Psaradellis, Chevrier, Di Leo, & Lajoie, 2016; Tudor, 2014). The use of these various teaching paradigms may differ based on classroom goals, which are influenced by the types of knowledge outcome expected, or based on the pedagogy beliefs of the

teacher (Blackwell et al., 2013; Muis, et. al, 2016). Teacher beliefs may also be based on what value and role a teacher has within the classroom in relation to teaching and providing information to students as well as the student's role in learning the new information (Evans, Harkins, & Young, 2008; Miranda & Russell, 2012; Muis, et. al, 2016). Furthermore, teaching paradigms are influenced by (a) the teacher's beliefs in his/her own ability to create new techniques or practices, (b) his/her own belief in his/her effectiveness as a teacher, (c) interactions with other teachers and students, and (d) past evaluations of his/her practices (Duffy et al., 2016; Rufo, 2014; Tudor, 2014). Teaching practices can be defined into two broad categories "teacher-centered style (direct) and learner-based style (indirect)" (Khandaghi & Farasat, 2011). Teacher-centered style behaviors are focused on what the teacher is comfortable implementing, and based on a teacher's needs and beliefs (Gill, 2016; Khandaghi & Farasat, 2011). The teacher-centered classroom may not vary from class to class or year to year unless the teacher deems a change necessary. However, within a learner-based classroom, students have a more active role in decision-making, and teachers acknowledge the importance of individual student differences (Muis et al., 2016; Weselby, 2016). Consequently, a teacher who creates a learner-based environment within the classroom may demonstrate varying teaching behaviors and techniques during various classes based on the student needs within that specific classroom.

Evans, Harkins, and Young (2008) proposed that a consistent way of measuring and describing teaching styles was not available when research was conducted due to the variety of ways to define teacher actions and the numerous number of teaching rating

scales. Through the use of the Teaching Style Questionnaire (TSQ), originally designed by Evans and colleagues in 2008, researchers attempted to learn more about teachers' classroom behaviors in conjunction with understanding a teacher's cognitive style. Some of the correlations between teaching styles and teacher cognitive style showed moderately significant results while others did not. However, the factors of structure, sociability, formality, and caution within a teaching style were similar to teaching styles discussed by other researchers such as Plank, Dixon, and Ward (2014). The research conducted by Evans and colleagues (2008) addressed the importance of teachers understanding how a reflective process may influence their teaching behaviors and ultimately may influence student learning. It was suggested that, through the use of self-reflection and personal awareness, teachers can make informed decisions within their classrooms to meet their student's needs (Evans et al., 2008; Plank et al., 2014).

Recent research literature extends the findings of Evans and colleagues (2008) by suggesting that not only does the teacher need to be reflective in his/her classroom practices, but also students should be reflective in their learning and about the classroom culture. (Lane, 2015; Muis et al., 2016; Plank et al., 2014). Plank et al. (2014) demonstrated qualitative research where data were collected from students on the importance of receiving and providing feedback. Data collected via semi-structured interviews were coded to three common themes. These themes included the importance of being able to provide "feedback to improve learning and teaching" (Plank et al., 2014, p. 101), the type of climate that was conducive to receiving feedback, and the type of classroom climate that was not conducive to receiving feedback. Within this research, the

classroom climate was influenced by teachers' actions, characteristics, and practices. These common themes illustrate the values that students placed on being able to influence the classroom and their own learning.

Lane's (2015) exploratory literature research on flipped classrooms extended the literature on the importance of students influencing learning. By allowing students to influence their own education and providing opportunities to critically influence what occurs in the classroom, Lane (2015) created servant leaders who took on a more active role than they would have in most classrooms. "Flipping" the classroom means changing how the teacher presents information to allow students to become empowered, critical thinkers. Muis and colleagues' (2016) research added to the literature by providing research findings that demonstrate the importance of allowing self-regulatory behaviors while students are learning. This includes direct teaching, demonstrating, and encouraging students to use metacognitive skills while learning and practicing skills. These practices, in conjunction with student inquiry, are crucial within a constructivist teaching paradigm and classroom (Duffy et al., 2016; Singh, Yager, Yutakom, Yager, & Ali, 2012). The use of student inquiry to guide activities and learning provides opportunities to build upon student learning and understanding of not only the academic material, but also the processes involved in learning. Constructivist learning can be defined as learning that extends past the remembering of facts to the learning of skills that can be extended to multiple activities and environments (Anderson, 2016). The importance of shared experiences, active learning, and dialog between teacher and students is at the foundation of constructivist learning. The sharing of knowledge allows

teacher and students to co-create and build upon experiences to develop new meaning (Brooks & Brooks, 1999). Reflective teaching practices guide the classroom learning and activities to encourage students to construct their own knowledge through experiences, collaboration, and metacognition about what is known and why the information is known. Thus, the assessment of learning is demonstrating through the application of skills in multiple ways. Students can then apply their knowledge in novel situations and ultimately, increase problem-solving.

Both the teacher's paradigm and pedagogical practices, as well as student behaviors, shape classroom interaction, learning, and ultimately, the classroom culture. Consequently, when viewing the behaviors displayed by a teacher and the corresponding behaviors displayed by students, the use of qualitative methods may provide a more detailed description and understanding of the relationship between and among all classroom individuals. This is especially true when teachers are asked to implement tools such as technology.

### **Technology**

Skills needed to be considered literate in a society are constantly evolving (Gee & Haynes, 2011). One skill now considered upon as being necessary is the ability to use technology (Watkins, 2009). When appropriately combined with classroom activities positive outcomes from technology use can emerge, such as deepening of one's understanding of the material and sharing of information with others (Ifenthaler & Schweinbenz, 2013; Watkins, 2009). Research on technology in schools is evolving due to the continual changes in technology applications, programs, and hardware. In many

educational settings, students are only consumers of knowledge; however, the ability to produce new creations via technology is a unique and empowering experience (Ghee & Haynes, 2011; Holzweiss, 2014; Watkins, 2009). Technology is a tool that can transform learning into hands-on experiences (Ghee & Haynes, 2011; Ifenthaler & Schweinbenz, 2013). The use of technology to create a new product enables students to become producers and consumers of new experiences (Ghee & Haynes, 2011).

With constant technology changes, guidelines are needed to ensure that students are acquiring the necessary skills that will help them become literate digital citizens (Texas Education Agency, 2012; Watkins, 2009). In addition, since technology is implemented in classrooms, guidelines must exist to regulate the technology usage to ensure students' safety (Ribble, 2012, 2015; Watkins, 2009). McManis and Gunnewig (2012) furnished guidelines for educators to evaluate the potential technology use within the classroom. These guidelines include (a) creating technology outcome goals for students, (b) evaluating current and potential technology that can be used in the classroom, (c) correlating technology with specific learning outcomes, and (d) planning activities that incorporate technology within the curriculum. These suggested guidelines compliment the nine elements of digital citizenship and the technological guidelines that have been created by various agencies to include the state of Texas.

### **Texas Essential Knowledge and Skills (TEKS)**

The Texas Education Agency created educational standards known as the Texas Essential Knowledge and Skills (TEKS). The TEKS are academic outcome standards that determine what every student in a public Texas school should know. Periodic reviews of

the TEKS ensure the standards are based on current educational research. For the school year 2012-2013, updated TEKS related to technology were implemented, requiring new applications of technology within the classroom and including six broad threads of content knowledge. These threads require students to (1) be able to apply technology to create products, (2) use technology for communication and collaboration, (3) research using technology, (4) critically evaluate the usage of technology within classrooms and assignments, (5) gain an understanding of digital citizenship, and (6) comprehend various technology systems. Consequently, the connection exists between the need for students to not only know how to use a tool, but also to know when, where, and why the use of the tool is beneficial (Ribble, 2011, 2012).

Currently, teachers in Texas are required to complete a School Technology and Readiness chart, also known as the STaR (Texas Education Agency, 2012). The STaR tool requires teachers to evaluate their current use of technology, the school's technology needs, and their training needs. This evaluation is completed anonymously and then evaluated by the principal, who also completes a similar STaR scale to evaluate the overall school use of technology. Aspects of the STaR also mirror components of digital citizenship as described by Ribble (2011). These aspects include understanding and implementing components of digital access, digital communication, and digital literacy (Texas Education Agency, 2012).

The variation in classrooms and technology usage will influence which elements of digital citizenship are displayed and should be addressed. In addition, although teachers may be leery of focusing on digital citizenship elements, the amount of time

needed to address the nine elements will vary and can also connect to the general academic curriculum. The implementation of digital citizenship can occur as easily as presenting the elements as class expectations similar to courtesy, manner, and class rule expectations and also by connecting to the academic curriculum such as math lessons. Implementation of technology within schools is not the final step of technology usage. There is also a need to evaluate how technology is being used within the school and classroom (Cook & Ellaway, 2015; Ribble, 2011, 2012). Using digital citizenship as a lens to review and evaluate technology implementation, researchers are able to evaluate how the technology device is being used as a tool to create inquiry and influence the behaviors/teaching practices within the classroom.

### **Possible Challenges to Technology Usage**

Technology usage in schools can be viewed as cycles of new technology being implemented, personnel displaying excitement about new possibilities, and then minimal implementation of the new technology occurring (An & Reigeluth, 2011; Brown et al., 2016; Pittman & Gaines, 2015). A teacher's belief in the usefulness of technology also influences technology being implemented in classrooms (An & Reigeluth, 2011; Blackwell et al., 2013; Pittman & Gaines, 2015). The connection between teaching paradigms and beliefs about the usefulness of technology usage within the classroom has been researched for years (Chen, 2011; Miranda & Russell, 2012; Pittman & Gaines, 2015).

One change within a school can influence multiple elements of the school. Cakiroglu, Akkan, and Guven (2012) conducted a mixed methods research study to

understand how implementation of new technology within the school influenced the school culture, perceptions on technology usage, and communication between teachers and administrators. Data collection included surveys, observations, and interviews. Results proposed that support from principals had a positive influence on a teacher's willingness to implement new technology, work collaboratively, and ultimately implement new teaching techniques. Principals reinforced the change in programs within their respective school by providing funding, training, and teacher support. In addition, principals influenced teacher success by having clear expectations and providing meaningful feedback (Goldhorn, et al., 2013).

Furthermore, the success of technology usage within a classroom can be influenced by the teacher's beliefs in the benefits of the technology and in the teacher's beliefs about his/her own ability to effectively use the technology (Pittman & Gaines, 2015). Through a study which examined pre-service teachers' views on the usage of technology in a future classroom. Brown, Englehardt, and Mathers (2016) found that many pre-service teachers felt unsure of their ability to effectively use technology as a learning tool within the classroom. Part of this uneasiness came from limited practice using the technology tool on both a personal and educational level. Furthermore, the pre-service teachers were leery of using the iPads as they were unsure of the students' technical knowledge of using the device. These two concerns have been prevalent within research for years and demonstrate a gap between research and practices within educational settings. Fox's (2006) research accounted for external factors within schools that may influence teachers changing their teaching behaviors and classroom practices and presented useful

information when understanding why technology may or may not be used within schools. A synthesized research study on laptop initiatives and notebook research projects that were implemented in North America started in 2001. Technology hardware varied and included laptops, iBooks, notebooks, and access to the wireless internet and wireless classrooms. Through various research methodologies, including surveys, observations, and site visits, the researchers were able to observe a paradigm shift with technology usage. The study reported a shift in technology usage including the use of technology to extend class activities. This paradigm shift occurred due to the accessibility of devices, student interest, and teacher understanding and knowledge of the devices. Furthermore, the expansion and improvement of communication skills via the use of technology occurred due to the ease of individualizing lessons and the ease of allowing collaboration on assignments when using technology in groups. This research showed the importance of teachers, students, and parents receiving necessary support when technology is implemented and the benefit of users being able to implement technology in ways that addressed their specific needs.

Research within the last four years proposes that some of the same needs of teachers and students that were described by Fox (2006) still need to be addressed today. Ifenthaler and Scweinbenz (2013) conducted a qualitative research study to determine what influenced teachers to implement technology within the classroom. Data were collected via semi-structured interviews, which were coded using a priori codes. The codes were based on current educational technology research literature and were “pre-experiences... attitude towards tablets/PC... performance expectancy...and ease of use”

(Ifenthaler & Scweinbenz, 2013, p. 528). Interview responses showed that although teachers had experience using technology for personal use, they lacked knowledge regarding how technology could be implemented and extend lessons within the classroom. Furthermore, the availability of technological support was also found to be a factor that could influence the use of technology within the classroom depending on the teacher's previous technology experience. Finally, the use of technology as a secondary plan to pre-existing activities was found to be the primary purpose of technology usage instead of using technology to extend or expand lessons and curriculum within the classroom. The challenges of implementing technology within a classroom can be caused by numerous factors and must be addressed (Ifenthaler & Scweinbenz, 2013). The differences in technology availability, usage, and understanding are aspects of a digital divide (Modarres, 2011; Reinhart, Thomas & Toriskis, 2011).

### **Digital Divide**

Modarres (2011) expanded on the topic of the digital divide by presenting several challenges that may exist and contribute to the digital divide. One challenge was the lack of knowledge about the various technical devices. Having a technological tool does not mean that a person can use the tool to the maximum benefit possible. In addition, all technological tools are not created equal. Having one tool, such as a cell phone, may not provide the same opportunities as a laptop or computer (Brown, et al., 2016; Modarres, 2011). Consequently, supplying technology may not be sufficient, and instead the types of technology available and the uses of technology must be considered. As with any new tool, training on the tool's usefulness and application in various

environments must occur. An understanding of digital literacy aspects should be considered whenever purchasing and implementing new technology (Ribble, 2011, 2012).

Student use of technology within classrooms and schools is an added expense that cannot always be funded by school districts. In addition, when funds are available, there may not be adequate funding to purchase enough of the technology tools or to provide the necessary resources that are needed for a successful implementation of technology. The digital divide can be defined as the difference in the amount of technology usage and availability that occurs between home and schools or a difference in technology usage due to economic reasons (Edmondson, 2016; Ghee & Haynes, 2011; Reinhart, Thomas & Toriskis, 2011). The digital divide that occurs due to economic reasons is a variable that must be accounted for in research. When focusing on technology usage in schools, Edmondson (2016) found that an inequity of access within homes affected the ability of students to complete academic assignments from school. Access to computers, the internet, and technology trainings have been suggested as a way to overcome the digital divide that may occur in various populations due to economic reasons (Edmondson, 2016; Banister & Vannetta Reinhart, 2011). When connected to the components of digital citizenship, the digital access is limited and consequently, may affect participation within a digital community even within the classroom.

When understanding the needs of students and parents, administrators and teachers must decide what is needed to create a welcoming environment to promote technology usage. When combining knowledge of technology with the knowledge of

student and parent needs, teachers can implement technology effectively in the classroom (Cook & Ellaway, 2015; Sherblom, 2010) and a connection to home technology usage may also occur. The future uses of technology within classrooms are endless based on the constant evolution of technology. Currently, research is focusing on the uses of technology to expand classroom activities (Cook & Ellaway, 2015; Honan, 2008). However, there is minimal research available that evaluates the actual implementation of technology within schools to determine what aspects of technology usage have been successful and what aspects still need to be developed to create a digital community.

### **Influences on Technology Usage for Academic and Social Purposes**

As with any new tool, training on the tool's usefulness and application in various environments must occur. McManis and Gunnewig (2012) explained the use of cognitive scaffolding, in conjunction with learning how to use a new device, as a method to understand new types of technological devices. Through trial and error, and slow building of skills, both teachers and students learned to effectively use technology in the classrooms. Furthermore, through technical scaffolding (McManis & Gunnewig, 2012), technology facilitated the development and deepening of skills. Teachers' limitations in technology usage are correlated with a lack of familiarity with technology and this deficiency in training needs to be addressed within school systems (Brown et al., 2016; Chen, 2011). After the implementation of training and feedback some teacher's usage of technology increased and expanded the amount of technology implemented within the classroom. School districts then should consider the importance of parents, teachers, and

students understanding how to use the technology that is being implemented in the school.

Murphy, King, and Brown (2007) conducted research using standardized surveys with Likert scale questions to learn about the technology usage in schools. They found that, although teachers believed technology could create extensions of class activities, the teacher's self-efficacy greatly influenced the implementation of technology in the classrooms. Parette, Quesenberry, and Blum (2010) and Brown et al. (2016) advocated that teachers' appreciation and valuing of technology is needed first in order for technology to be integrated as a useful tool in the classroom. Consequently, for technology to effectively extend class activities, all users must be proficient in using the technological devices and must be willing to explore the uses of the technology (Bebell, & Kay, 2010; Cruz & Snider, 2009). Educators' roles have fundamentally been to provide information to students. However, through the use of technology inquiry, teachers can present opportunities for students to synthesize, analyze, and create without fear of the unknown technology (Sangra & Gonzalez-Sanmamed, 2010). When teachers allow inquiry, the students and teacher gain new information about technology (Cruz & Snider, 2009; Lindfors, 1999). Consequently, an environment where the teacher is not required to have all the answers is created and welcomed (Lindfors, 1999), and students are able to learn by social interactions via technology. This type of environment may be seen within a community of practice that is implemented within a school or classroom. Mercer, Warwick, Kershner, and Staarman (2010) found that the interactive whiteboard is a technology hardware that can foster communication by motivating students to

collaborate with each other. By allowing the students to work together, teachers were able to expand the educational activities via constructing a collaborative activity. Furthermore, Jin, Wen, and Gough (2010) observed that virtual worlds converted learning activities into social opportunities and helped develop social interactions. Virtual worlds allowed multiple learners in real-time interactions to encourage and collaborate on the topics presented while eliminating the challenges of distance between students. The ability of technology to overcome physical boundaries is advantageous and can help develop social interactions and an environment where both teachers and students learn together. The benefits of technology usage within a classroom are limitless. In order to determine the effectiveness of the technology implementation, an evaluation of technology usage should occur (Cook & Ellaway, 2015; Johnson, 2014).

### **Evaluation of Technology Practices**

Evaluation of technology does not always need to occur after technology has been implemented. Rather, some aspects of technology should be evaluated prior to technology being implemented within the classroom. Mariola (2012) suggested that exposure to the technology tools should occur prior to implementation to allow for the creation of technology goals, an understanding of how the technology works, and how it will be utilized within the classroom. If these aspects are addressed, and the teacher understands how to operate the technology, it may be implemented more frequently within the classroom (Mariola, 2012). In addition to these aspects, another level of evaluation should be focused on (1) the infrastructure of the technology usage to include security of the technology tools, (2) possible technical support including trainings, (3)

troubleshooting assistance that will be needed, and (4) the ability to keep the technology in working condition (Mariola 2012; Meeks, 2012). The assistance from technical support needs to be part of a collaborative relationship with the technology users (Meeks, 2012). Technical support departments will need to evaluate what, if any, changes to the infrastructure are needed to ensure a technical tool will work with minimal challenges for the user. In addition, since technical support departments usually have responsibilities to large service areas, the availability access and knowledge of the new tools needs to be evaluated and addressed before being implemented within a classroom. Once these evaluations at various levels outside of the classroom have occurred, evaluation of technology usage within the classroom should occur too.

Once technology has been implemented, there is a need to evaluate the influence of technology on technology consumers (Couldry et al., 2014; Hampel & Dancshazy, 2014; Johnson, 2014). However, there are multiple ways to evaluate the management and implementation of a technological program based on the various aspects of the program itself (Hampel, 2014; Hampel & Dancshazy, 2014, Mariola, 2012; Meeks, 2012). The creation of a technology program within a school may have occurred for various reasons. Technology implementation may have expanded or developed to bridge a physical gap between teacher and students, expand the curriculum activities that occur within a classroom, or allow collaboration between multiple individuals (Hampel, 2014; Marcoux, 2014). The purpose of the technology usage must first be explored in order to successfully evaluate if the implementation and usage of the technology is effective (Hampel, 2014). Once the purpose of the technology is defined, the evaluation of the

technology program will help ensure that the technology usage is meeting the goals of the program and the technology user's needs (Hampel, 2014). Some evaluations need to occur on a continual basis to ensure that the needs and goals of the users are being met. These evaluations include (1) understanding the needs of the technology users, (2) ensuring the necessary training to use the tools effectively is being offered, (3) affirming that the correct technology tools are being used and used properly, and (4) the evaluation of the technology system itself (Marcoux, 2014). One way to ensure these evaluations are occurring on a regular basis is to implement aspects of digital citizenship into the school and classroom technology program.

Couldry et al. (2014) used the theoretical lens of digital citizenship to evaluate how technology can be used to increase civic culture and exchanges of information via technology, specifically through digital storytelling. A case study approach was used to evaluate how digital infrastructures may influence social interactions and experiences and ultimately influence civic culture. Three different case studies were completed with varying populations of group participants. The group case study that was conducted within a youth club with students ages 12 to 16 presented information that could be useful when evaluating technology implementations within schools. Couldry et al. (2014) identified a connection between the group's goals to encourage civic responsibility and several aspects of digital citizenship. Through a series of workshops focusing on storytelling, Couldry et al. (2014) documented an increase in the collaboration and respect displayed between the participants. This increase in skills not only occurred between participants of the same age, but also increased between the older and younger

participants. In addition to the workshops offered and observed, Couldry et al. (2014) also assisted with creating virtual spaces such as social media outlets for the group participants to use for documenting and displaying their activities, events, and creations. Furthermore, the benefit of the virtual spaces was evaluated by the group participants and found to help promote some of the group's core values.

Using digital citizenship as one of the theoretical frameworks, Couldry et al. (2014) found some common challenges occurred through all three case study groups. These challenges included the lack of participants' knowledge in how to use a tool and the lack of participants' understanding of the various uses of the technological tools. Both challenges are tied to the digital citizenship element of digital literacy, which focuses on the need for participants to understand a technological tool in order to use it effectively. Although a community of practice was not a theoretical framework that Couldry et al. (2014) used in their research, elements of a community of practice were evident. The ability of the participants to influence each other's learning is an aspect of communities of practice. Couldry et al. (2014) discovered that as a way to counteract the lack of understanding of the technological tools, participants worked together to create dialogue and knowledge-generating interactions about the specific tools. The actions of the group members were noted as a positive aspect of the group's culture, deepening the group members' connections to one another and expanded their knowledge of the technology being used.

## **Summary**

This literature review presented research focused on technology usage within schools. Challenges of technology usage and supports needed to increase technology usage have also been presented. Factors within a student's exosystem, mesosystem, and microsystem that may influence technology usage within the classroom demonstrate the fluid relationship of social learning within a system. Finally, I discussed the gap in available methods to evaluate technology usage and possible ways to evaluate classroom technology usage. The next chapter will address the qualitative methodology and research design used to complete an ethnographic case study within an elementary classroom and after-school animation club.

## CHAPTER III

### METHODOLOGY

This chapter presents the research methods of a qualitative ethnographic case study focused on describing and portraying the unique teaching practices and interactions within a classroom and after-school animation club communities. The methods used to implement tools within the classroom, such as technology, vary based on teachers' views of technology and teaching methods (Blackwell et al., 2013; Miranda & Russell, 2012). In addition, the interactions between the people within a classroom influence the class community, student learning and teaching practices. Bronfenbrenner's bioecological theory (1994) proposed that participants within a community have both direct and indirect influences on development. Direct influences occur within the microsystem, which accounts for the interactions that an individual has with others within the classroom or club. Within a classroom or after-school club, there would be at least two microsystems. One microsystem would account for the student to student interactions. The second microsystem would account for the student to teacher interactions. Each of these microsystems directly influence what an individual learns within the classroom or club. Indirect influences occur within the mesosystem. The mesosystem accounts for changes that occur based on the interactions of two or more microsystems. Within a classroom or after-school club the teacher's expectations may change based on interactions with students and observations of student to student interactions. Understanding these relationships in my ethnographic study also provided an

understanding of the community within the classroom and after-school club where the ethnographic study occurred. I was able to describe and exemplify the class and after-school club communities by collecting data on the interactions and practices that occurred.

The microsystem and mesosystem interactions in the classroom and after-school club were analyzed using the theoretical framework of community of practice, and digital citizenship. I used the community of practice framework developed by Wenger (2001) to describe the interactions that occurred between participants in order to develop and extend the knowledge of others within the community. I also used the theoretical framework of digital citizenship defined by Ribble (2011) to focus on various characteristics and aspects of technology integration. Consequently, I observed, defined, and described the participant behaviors, interactions, and activities that occurred while learning and using technology within the classroom and after-school environments to produce a comprehensive understanding of the communities the teacher created.

### **Method of the Study**

#### **Qualitative Ethnographic Case Study**

To characterize the idiosyncrasies of the classroom and after-school club communities, I had to understand the relationship between the participants and the factors that influence the learning experiences (Adams et al., 2014; McCracken, 1988). When conducting research on tablet and PC usage within the classroom, Ifenthaler and Schweinbenz (2013) discovered that a qualitative study allowed the researcher to gain an understanding of the choices teachers made when implementing technology within the

classroom. My ability to document information on the teacher's perspectives and actions allowed for a comprehensive understanding of influences that guided the technological practices within the classroom and after-school club. I completed a qualitative case study research project in order to understand the classroom and club communities, especially in relation to technology usage. As a participant observer, I identified and described several aspects and changes that occurred within the classroom and after-school club. These changes included teaching practices displayed, which influenced the creation and maintenance of the classroom and animation club communities, changes within the students' and adults' relationships, and changes in relationships between students. The teacher within the classroom and after-school club was the key informant for this research study.

I gathered information about classroom and club communities through observations, participation in the communities, and interviews of participants, which are all methods utilized in ethnographic research (McCracken, 1988; Schensul, Schensul, & LeCompte, 1999). This ethnographic case study analysis focused on the teacher's practices and behaviors that lead to the creation of communities of practice and implementation of digital citizenship elements. Through an extensive amount of time spent within the classroom and after-school club, I collected various types of data to confirm findings. Consequently, the data collected over time allowed me the opportunity to provide a rich description of the classroom and club practices and interactions. Ultimately, I viewed the classroom and club activities holistically and presented a comprehensive picture of the interactions, behaviors, and learning that occurred in the

various environments (Banks, 2007; Yin, 2014). The theoretical frameworks for this research study, Bronfenbrenner's bioecological theory (1994), community of practice, and digital citizenship, focused on the interactions between participants and provided lenses to view, document, and analyze the interaction of the participants.

### **Theoretical Framework**

Classrooms can be viewed as a system where the participants, teachers, and students, influence the learning environment. Systems theories attempt to explain how components of a system are connected and influence other components (Thomas, 2005). Within the social science field, one systems theory that can be used to understand the influence of factors on an individual's development is Bronfenbrenner's bioecological theory (1986, 1994). Bronfenbrenner's theory proposes that an individual is part of various systems that directly or indirectly influence his or her growth and development. Leonard (2011) claimed that an individual's learning is influenced not only by the teachers' pedagogical beliefs but also by the interactions between teacher and students with others. Consequently, in order to effectively understand the relationships that influenced development within the environments of my ethnographic study, I collected data on both the activities and the interactions within the class and after-school club. For this research study I observed, evaluated, and described the microsystems that the individuals, teacher, and students were part of within a classroom and after-school club. The two microsystems within the classroom included (1) the interactions between adults, myself and/or the teacher, and students, and (2) the interactions between students and other students. The same type of microsystems was observed in the after-school club.

The classroom and after-school club's microsystems and mesosystems were described based on the theoretical frameworks of community of practice (Wenger, 2001) and digital citizenship (Ribble, 2012, 2015). The community of practice theoretical framework focused on the relationship and contributions of each participant to develop and expand knowledge within the community. Aspects that I observed and evaluated in relation to the community of practice framework included (1) community participation, (2) community development, and (3) connections made within the community to extend learning. The aspect of community participation focused on the interactions between and among the participants. This aspect was documented when observing the interactions between (1) students and adults and (2) students with peers within the classroom and after-school club. The aspect evaluated within community of practice was community development. Community development related to the creation, development, and maintenance of the community as a whole. I observed and documented this aspect by being in the classroom and after-school club for several months. In addition, I observed and documented the community knowledge, interactions, and social relationships that developed and maintained the community were observed and documented. Finally, the aspect of connections made within the community focused on how the knowledge developed was extended past the initial learning experience. Since the communities of practice within the classroom and after-school club were technology based, I also used the framework of digital citizenship to describe participants' actions when using technology tools.

The digital citizenship theoretical framework proposes behaviors and expectations of what should be expected of technology users (Ribble, 2011, 2012, 2015). I observed, described, and evaluated the technology usage behaviors and expectations during this research study in relation to Ribble's (2011) nine elements. The first element is digital access, which related to the availability of technology tools. The second element of digital citizenship is digital commerce, which dealt with the purchasing and exchange of electronic goods or services. The third element of digital communication encompassed interactions that occurred electronically via the technology tools. The fourth element digital literacy referred to a person's ability to use the technological tool effectively and display learning. The fifth element digital etiquette referred to the behaviors that are considered appropriate for technology usage. The sixth element is digital law, which dealt with copyright and licensing regulations. The seventh element is digital rights and responsibilities. This element focused on topics such as electronic free speech and privacy. The eighth element is digital health and wellness which focused on how the user maintained healthy practices while using technology. The ninth element is digital security. This element focused on topics such as electronic privacy and security of technical tools. A more extensive explanation on how this theoretical framework was used for coding and describing interactions/behaviors of participants within the community of practice is provided later within this chapter.

### **Research Questions**

The goal of this research study was to characterize the practices within a classroom and after-school club that encouraged inquiry through the use of technology.

The research results of this study will add to the body of literature on teaching paradigms, technology within elementary schools, and community of practices within elementary schools. Furthermore, the results from this research study will benefit administrators, principals, and teachers who have influences on the teaching practices within schools and on the types of technology that are purchased and implemented in classrooms.

The overarching research question was

In what ways does the teacher create an inquiry-based culture through the use of technology in a classroom and after-school club?

Specific research questions guided my data collection focus as a way to define and describe the various interactions that occurred. The specific research questions were as follows:

1. How are components of the community of practice framework (Wenger, 2001) implemented by a teacher within the classroom and after-school club?
2. How are elements of digital citizenship as defined by Ribble (2012) implemented by a teacher within the classroom and after-school club?
3. In what ways does technology usage within the classroom and school club extend students' learning and relate to the Technology TEKS (Texas Education Agency, 2012)?

### **Field Site and Participants**

To maintain the privacy of the school district, school, teacher, and students, real names of the research locations and research participants are not used in this dissertation. I used pseudonyms so that descriptive information could be provided in a concise way instead of using generic labels such as “the school”

or the “teacher.” To understand the influence of external factors and decisions that occurred outside of the research environments, I have chosen to present field site description information from a broad exosystem view of the school district first and then focus in on the specific research location and participants.

### **District Description**

This research study took place at Watt Elementary, which was located in the Franks-Grove Independent School District. The school is about 30 minutes south of a major metropolitan city in Texas. The school district had seven elementary schools, two middle schools, and two high schools. Each elementary school had grades kindergarten through fifth grade. The middle schools had students in grades six through eight, and the high schools had students in grades nine through twelve. Franks-Grove Independent School District had two Title One schools, but Watt Elementary was not one of the Title One schools. All the technology devices that were used within the classrooms throughout the district were Apple© devices. These devices include desktops, laptops, and iPads. There was one Information Technology department for the district, and technicians went to the various campuses when technology assistance is needed.

Franks-Grove School District had technology policies that were enforced throughout the district. These policies applied to students’ technology usage in elementary school through high school. The policies addressed when and where students could use technology and the guidelines and standards that students were expected to follow when using technology within the school and classroom. The

updated strategic plan for Franks-Grove Independent School District addressed the possible future needs of updated technology and training. Furthermore, through an interview with the principal of Watt Elementary School (as part of a pilot study completed in May 2015 and addressed later in this chapter), I learned more about the district's policy on technology integration within the schools and classroom.

The principal discussed a technology program that was implemented district-wide about six years ago. The program was called Project Launch and focused on effectively implementing technology usage within the classroom to extend student learning. One teacher from each school, elementary through high school, was chosen to be part of the Project Launch Program. Each teacher chosen attended training on how to use and implement an iPad device within the classroom. Teachers were required to reflect on their learning and implementation of the devices for the first year of the project. Professional development was offered to teachers in the Project Launch Program in addition to meetings that allowed teachers to discuss their individual successes and challenges. Once a teacher completed the trainings he/she was given a classroom set of iPads. These iPads belonged to the specific teacher/classroom and did not have to be shared with other teachers within the school. The reason to have a personalized class set of iPads was to enable the Project Launch teacher to implement the use of the iPad whenever he/she believed the iPad would extend the students' learning. As a way to continue the use of technology within all classrooms, the district provided

professional development opportunities and also offered grants that were used to support technology usage within the classroom.

Professional development was offered to the teachers prior to school starting, throughout the year, and after students left school at the end of the school year. Teachers were also able to seek reimbursement from the district if he/she chose to attend professional development outside of the district-scheduled trainings. Teachers throughout the district could also apply for grants funded by the district to purchase new technology tools, programs, and applications. The amount of technology used throughout the district was dependent on the individual school, principal, and teacher.

### **School**

Watt Elementary School was approximately seven years old. The school contained one Head Start classroom, one inclusive program for students with disabilities, and grades one through five. There were approximately four classrooms for each grade level. Each elementary school within the Franks-Grove Independent School District had its own school motto and essentials. Watt Elementary School's motto was created by Mrs. Watt, the school namesake, who was a teacher in Franks-Grove. The motto was "Our goal is simple...to help you achieve yours." This motto was seen several places within the school, including the office and lunch room. The Watt 5 Essentials were (1) be a strong listener every day, (2) show respect to everyone and everything at all times in word and action, (3) be honest no matter what, (4) always use your best manners, and (5) surprise others by performing random acts of kindness. Both the motto and essentials

helped to create the school culture and a welcoming learning environment. In addition, the expectations presented within the essentials could also be seen in the school's policies. These values connected to all actions within the school and were listed within the technology guidelines and student handbook. Each classroom within Watt Elementary had at least one desktop for student usage. In addition, there were grade-level laptops that teachers rotated and used as desired within the classroom. All teachers at Watt Elementary completed the Texas STaR technology evaluation tool (Texas Education Agency, 2012), which was an anonymous survey that asks teachers to rate technology usage within their classroom and school. This tool addressed areas such as technology availability, technology access, the teacher's understanding of technology tools, and other factors that may influence technology usage.

The principal stated that the overarching school technology culture was focused on change that benefited students' learning. The principal expressed a desire and need to incorporate technology as a learning tool within the classroom of the school. She stated that technology was available throughout the school by having devices for students to use in the classroom library and on class-specific laptop carts. Some teachers had incorporated "Bring Your Own Device," which meant for students to bring their own technology device, for class-specific activities throughout the week. The principal stated that she spoke to teachers, parents, and students to learn more about the technology needs and desires of everyone within the school. This information influenced what types of updates or changes were made within the school.

## **Teacher**

After interviewing the principal, I learned more about one classroom that used technology more than any other. The classroom was Ms. Fromm's third-grade class. She had taught for over 11 years and seven of these years were in third-grade. She previously taught kindergarten for four years prior to moving to Franks-Grove Independent School District. She worked at Watt Elementary School since the school opened. Ms. Fromm was part of the district-wide Project Launch Program and learned how to implement iPads within her classroom to extend student learning. Ms. Fromm volunteered to be part of the Project Launch Program because she wanted to learn more about using technology within the classroom to extend her lessons and students' learning. She believed that technology was a useful tool that could be used in varying ways, and she was excited to learn more through the school district Project Launch Program and trainings. Ms. Fromm believed that using students' natural curiosity could help to extend learning, and she felt that students' curiosity about technology could be used within her classroom environment.

Ms. Fromm had a set of 24 iPads solely for classroom usage. The iPads were kept in a charging station that remained in the classroom at all times. While volunteering in Ms. Fromm's classroom during the 2014-2015 school year and during the data collection for the pilot study, I learned about her classroom structure and expectations. In addition to the class set of iPads, there were also two desktop computers for student use. If additional computers were needed, a grade-level set of laptops that had the same programs as available on desktops could be used, or a class set could be borrowed from

the library. Ms. Fromm chose to implement technology within the classroom almost daily. She used apps on the iPads in her academic lessons that covered subjects such as math, English, and science. Furthermore, Ms. Fromm applied for, and was awarded, a grant to create an after-school club that allowed students to use technology in new ways. The after-school animation club began in Spring 2015 and was called the Masters of Animation Club (MAC). In the first semester that the club met, there were approximately 100 students. Half of the group met on Wednesday, and the other half met on Thursdays. During my dissertation research, the club only met one day a week on Wednesday afternoons and had approximately 40 students enrolled. The club was for students in third, fourth, and fifth grade.

Through volunteering in the classroom and the completion of a pilot study, I observed and learned about Ms. Fromm's teaching methods prior to dissertation data collection. I found her teaching practices and interactions with the students in both her classroom and after-school club intriguing due to the inquiry she allowed in the classroom and social learning experiences. Ms. Fromm created a unique classroom climate. I used a purposeful sampling design by choosing Ms. Fromm's classroom and after-school club as the research location for my ethnographic case study.

Ms. Fromm stated she encouraged creative and inventive thinking, and this is why she enjoyed teaching and applied for the various grants for the after-school program. Ms. Fromm created learning environments that allowed students to learn from her, each other, and through introspection. In addition, demonstration of learning was allowed in various ways, such as written assignments, verbal presentations, and group assignments, which

encouraged students to demonstrate their personal strengths while enriching other areas. Although Ms. Fromm did not view her classroom through a specific theoretical lens, her classroom practices can be described as encouraging learning through social interactions and sharing of knowledge. I chose to observe Ms. Fromm in both the classroom and after-school animation club to ensure I collected enough data on her technology usage and creation of inquiry based communities. Observing Ms. Fromm in multiple environments provided me with a comprehensive understanding of her teaching paradigm and practices.

### **Classroom**

Ms. Fromm's classroom was located on the second floor of the elementary school, in the third-grade hallway. There was an iPad cart immediately to the left of the door when walking into the room. There were bookshelves on the walls with hundreds of books that the students were allowed to read during the day or borrow and take home. The students' desks were split into groups of four or five desks. The desks were facing each other and looked like a large table. Some groups had an extra desk at the back of the group so the student sitting there was facing the board. The groups of desks were lined up with two groups on one side of the room, an overhead projector in the middle, and two more groups on the other side of the projector. The teacher always had various books and papers on the overhead. The overhead was used as a way to display papers that Ms. Fromm reviewed with the students prior to them starting their work. In addition, the overhead was used to display the book(s) that she read to the entire class. A laptop was attached to the overhead, and Ms. Fromm could share her screen with the entire class.

Within the various learning environments that Ms. Fromm created, she constructed experiences and situations that allowed for self-reflection, social learning interactions, and individualism of students. She used a mix of teacher-directed large-group instruction/work, small-group instruction/work, student lead groups, and individual work for students to accomplish classwork daily.

Large-group lessons were used to first introduce new information to the entire class. Ms. Fromm used the method of self-talk, where she verbally explained the steps taken to solve a problem and demonstrated to the class the type of internal speech that the students should use when solving problems (Muis et al., 2016). Large-group experiences were also used for Ms. Fromm to read various youth reader texts to the students. She enjoyed reading herself and believed that through the use of reading to the class, she and the students were able to discuss, analyze, and infer information on the chosen text. This whole group reading is separate from the actual English and Literature instruction that was specific to grade-level course content.

The students rotated through small-groups, which allowed them to work on skills demonstrated within the large-group lessons. Usually four small-groups were created and students were placed in these groups based on their current needs. Within these small-groups, students could use technology or paper and pencil depending on the activity. One of the four center rotations that each group rotated through during the small-group time allowed for small-group time with Ms. Fromm. When I was in the classroom, Ms. Fromm allowed me to work with the students as one of the small-group rotations. The four lessons that each group rotated through were written on the board so students knew when

they would complete each lesson and who was in their small-group during the rotations. Another way Ms. Fromm facilitated peer interaction, learning, and enforced the importance of each student within the classroom was to create and implement the use of classroom jobs, which are further discussed in Chapter IV and Chapter V.

### **Students**

Classroom jobs provided a specific purpose for each student to fulfill within the classroom community development. During the 2015-2016 school year, Ms. Fromm created jobs related to technology usage and non-technology focused jobs. The technology-related jobs included Apple Tech, Knights in Shining iPads, and Instabugs. The non-technology related jobs included paper passers and office runners. Apple Techs were student tech support. Other students would contact the Apple Tech when assistance was needed due to trouble using any of the classroom technology. Apple Tech jobs required the techs to help peers and to figure out why an iPad would not work (if student could not connect to the internet, etc.). Any type of technology problems were supposed to be addressed with an Apple Tech and then, if needed, the Apple Tech would go to Ms. Fromm for assistance. Knights in Shining iPads were responsible for ensuring that students got their correct iPad and also helped distribute laptops when needed. The Knights in Shining iPads were also required to make sure all iPads were accounted for within the docking station, so that all iPads were plugged in throughout the day and at night to ensure the technology was ready to be used again. The Instabugs were students responsible for taking pictures to capture the learning that occurred during the day. The Instabugs used their iPads to take these pictures. Ms. Fromm spoke with the Instabugs

about their job responsibilities and also how to take pictures that represented learning. Unfortunately, Ms. Fromm had to repeatedly remind the Instabugs that taking over 100 selfies was not appropriate for school and that the subject of their pictures should represent learning and not other behaviors that may occur, such as tying one's shoes. The non-technology jobs included paper passer and office runner. These students helped Ms. Fromm distribute papers to their peers, collect papers, and pass out materials as needed. The office runners were students who took papers to and from the office as needed.

In previous years the students produced pictures and videos to document learning and posted these artifacts on social media sites such as Twitter and Instagram and/or sent emails with artifacts attached. The use of visual images and videos was originally going to be collected as a data source. I planned to follow the teacher and class posts on social sites such as Twitter and Instagram and asked to be part of the class email list. By reviewing the images and videos that were published by the class, I wanted to view the products that were thought to have value by the participants. However, although Twitter and Instagram were used this year, the accounts were not updated as frequently as in the past, and Ms. Fromm had to take control of the picture taking. Ms. Fromm had a big influence on what was captured within the pictures, and she directed a lot of the students' picture taking. I could not get a true understanding of how the students captured their learning through the pictures. Due to this, the products put onto social media were not evaluated as a data source. I did, however, receive the parent emails sent to all parents and any class-created videos or artifacts that were sent as attachments in the emails from Ms. Fromm. This data source is described later in this chapter.

### **Students in Animation Club**

Data were also collected in the after-school animation club as a way to learn about Ms. Fromm's teaching behaviors when using technology in all the school environments she created. The students in the after-school club were in third through fifth grade and ranged from 8 to 12 years old. There were approximately 50 students and a mixture of both boys and girls were in the club. Approximately half of the students in the 2015-2016 school year were in the animation club the previous year too. Students had to complete an application packet which included a teacher recommendation, a short statement written by the student on why he/she wanted to be in the club, and a written comic story.

The after-school animation club met in the school's computer lab. The computer lab was on the first floor and located near the library. There were three computers at each table and there was a total of eight tables. Four tables were on each side of the room, and in the middle was an overhead projector. Ms. Fromm used the overhead to display books about animations and creating characters. In addition, a computer was hooked up to this overhead which Ms. Fromm used to show the students how to use the various tools in the program including manipulating shapes to form characters, saving their creations, and using school-appropriate resources.

Since there were more students than computers, the laptops from the library were borrowed. Sometimes the laptop cart was already in the computer lab, but other times I would get it from the fifth grade hall since the students used the laptops for science activities. The laptop cart stayed at the back of the room, and each student retrieved his or her laptop to work on his or her animation. Each student chose where to sit at the

computers or with the laptop. The students used the same laptop or computer for the entire year and were taught how to create a folder to save their animations.

### **Role of Researcher**

As a student and now a researcher, my goal has always been to understand the processes and influences that shape the way people behave and how environments are created. I have always questioned what factors influence one's thoughts, decisions, and actions. To understand the classroom structure and interactions, I believed that an ethnographic case study would allow me to explore not only the practices that were occurring but also the reasons behind those practices. My teaching and research paradigms are modeled after Pepper's (1970) theory that address how smaller aspects of an environment, or external factors, influence an individual and ultimately shape environments. I used systems theories and social theories as a way to answer questions that I encounter in my teaching and when conducting my dissertation research. My research goal was to describe and exemplify how Ms. Fromm created a community of learning within her classroom and after-school club with technology. Technology can be a solitary tool (Ribble, 2015); however, Ms. Fromm incorporated technology and group learning techniques to allow students to learn from others. My role in Ms. Fromm's class and after-school club was as a volunteer, researcher, and ultimately as a participant observer.

As a volunteer, I encouraged each student's individual learning in addition to learning as part of a group. I was asked to assist students in exploring new technological tools and also encouraged their thought processes as they attempted to solve academic

problems. Marshall and Rossman (2011) emphasize the importance of researchers putting aside biases. Thus, as a researcher, I was aware of my own personal biases, such as my belief in the practices that should be used when teaching children, and put these biases aside in order to collect nonbiased data. I functioned as an instrument in collecting data by observing interactions within the classroom and after-school club. In addition, I completed reflexive journals, contact summary sheets, and field notes that were used within the data analysis and also allowed me to reflect on my own actions and the influences and changes that I may have been creating within the classroom and club environments.

### **Data Collection and Plan of Analysis**

The evaluation of technology can occur on different levels, such as an infrastructure level (i.e., the internet connections that all school computers use) and a classroom level (Meeks, 2012). The methods to evaluate technology vary based on the type of evaluation being conducted and the purpose of the technology integration (Couldry et al., 2014; Ribble, 2012, 2015). It is important to understand why technology is being implemented and the goals of the technology usage within the environment. One challenge to technology evaluations within schools is the lack of a standard method or scale to evaluate student usage of technology (Couldry et al., 2014; Ribble, 2012). In order to gather data to understand the actions of the teacher and classroom environments, multiple data sources were used. Furthermore, by having multiple data sources and lenses to view the data, I was able to create trustworthiness of my results and also triangulate

my findings within the theoretical frameworks of community of practice and digital citizenship.

### **Pilot Study**

As a way to learn more about the school's technology culture and the teacher's pedagogy and paradigm of teaching, an IRB-approved pilot study was completed in May 2015. The archival data from the pilot research study "Technology Usage Viewed Through the Lens of Digital Citizenship" were used as part of the data collection for this dissertation and assisted in determining how to collect data. The results of the pilot study helped to situate the research location and provided details about the technology practices within the school district, school, and classroom. Pilot study data gathered included recorded interviews with the principal and teacher, transcriptions of these interviews, and observations that provided information on classroom procedures and technology tools used with the classroom and after-school club.

The interviews in the pilot study followed Seidman's (2006) interview process. Seidman (2006) stated that interviews should have three specific purposes including: (1) gathering of background information in relation to the focused experience, (2) gathering of information on the specific experience(s), and (3) participant's personal reflection on the experience(s). The interview questions focused on (1) the background information on the principal's and teacher's view of technology usage in schools, (2) the principal's and teacher's specific experiences with technology, and (3) the goals and expectations that the principal and teacher set for their technology experiences within the schools. This

information helped me to situate myself as a researcher to gain a better understanding of the district, school, principal, teacher's beliefs, and policies.

### **Qualitative Data Sources**

Information about technology usage within the classroom and club communities were gathered through multiple sources of data. These data sources included observations, audio recordings, interviews, and three types of reflexive documents. As a participant observer I collected data sources within the classroom and club communities to gain an understanding of the underlying characteristics of the communities. Trustworthiness of findings occurred through triangulation of multiple data sources (Ifenthaler & Schweinbenz, 2013). In addition, I collected a comprehensive account of interactions and descriptions of the classroom and after-school club environments by using multiple data collection methods.

**Observations.** Researchers Crichton, Pegler, and White (2012), who studied the use of personal technology devices within school settings found the completion of classroom observations rich in data sources. The observational data were then used to support the findings of other qualitative and quantitative data that were collected. The use of observation has been demonstrated as a thorough research method in other published research studies (Yin, 2014). In order to gather information about the microsystems (i.e., student to student and student to teacher) and mesosystem interactions within the classroom and after-school club, I completed direct observations weekly to document the challenges and successes that occurred.

The use of technology tools was an integral part of Ms. Fromm's classroom activities and after-school animation club meetings. When the introduction of new technology devices and the application were a preplanned classroom or club activity, I completed direct observations and audio recordings (discussed below) to capture the teaching and interactions. All observations of classroom technology activities and club meetings occurred during regular scheduled classroom/club activities. The number of times I observed in the classroom varied based on the classroom activities. This allowed me time to volunteer and complete participant observations, where I not only observed, but also participated in some of the activities. I observed the implementation of technology and the development of the community of practice through classroom observations that began in October 2015 and ended in February 2016. The after-school club activities began at 2:45p.m. and lasted until 4p.m. once a week. I attended the after-school club meetings to volunteer, observe, and collect data from November 2015 until May 2016. I completed more observations within the after-school club for several reasons. First, the amount of time that I could observe the interactions and technology usage was only about an hour each week. This was considerably less time each visit compared to the classroom observations where I was there for approximately three hours at least during each observation. Second, since each student was using technology and creating an animation at the same time, frequently multiple students needed assistance at the same time. Although peer assistance was encouraged, there was still a time when multiple students needed adult assistance simultaneously. I decided to stay to observe and to assist the students with the creation of their animations and usage of the technology

tools and applications. Finally, I formed a bond with the students both within the classroom and after-school club during my research. Although I had reached saturation with the data collection within both environments, I wanted to continue to assist both Ms. Fromm and the students within the after-school animation club.

**Audio recordings.** While completing observations and interviews (discussed below), I audio recorded the verbal interactions that occurred. I collected audio recordings of small-group discussions and large-group discussions within both the classroom and after-school club environments. I used five different audio recorders to collect audio data. During small-group rotations within the classroom, an audio recorder was placed near each small-group, and another recorder was placed near the teacher to capture verbal interactions that occurred. At the beginning of each small-group rotation I asked students for permission to record their interactions. Each time, students agreed to be recorded, and at the end of small-group rotations they would stop the recording. In the after-school animation club I placed the recorders on the tables that held the computers. I rotated where the recorders were placed each week to ensure that I gathered audio data from all tables and children lying on the floor using laptops. I audio recorded interactions to listen to the recordings after the observation or interviews to make reflexive documents (discussed below) which assisted in understanding, coding, and triangulating my data sources. Furthermore, since all audio recordings were transcribed, I was able to have a written document of the speech that occurred during the visual observations that I completed. This further allowed me to verify observation notes for data analysis and to ensure accuracy when coded.

When I transcribed audio recordings, the teacher's name was coded as "teacher" or "Ms. Fromm." The students' voices were coded as "student 1," "student 2," etc. in relation to the conversation being transcribed. Across more than one transcription, the use of "student 1" was not connected to one specific student, but rather to the student that spoke first within the recording. The use of generic codes such as "student 1" was sufficient and allowed me to analyze all coded recordings based on the theoretical lens being used. Only my research advisor, a peer reviewer and myself had access to the audio recordings and transcriptions. I transcribed a total of 60 classroom audio files and 40 after-school club audio files which were then coded and analyzed.

**Interviews.** In conjunction with my teaching experience, volunteer experience within the classroom, and educational background, the completion of the observations provided me with the necessary background information and expertise needed to conduct quality follow up interviews with the teacher to gain additional information on the actions of the class and after-school club communities. Semi-structured interviews that followed guidelines set forth by Kvale (1996) and McCracken (1988) allowed me to clarify any questions and create an opportunity to learn the teacher's perspective on the class and community development. The questions I asked varied but were (1) probing questions such as "Can you explain ...?", (2) explanatory questions such as, "Can you expand on...?", and (3) questions aimed at understanding the teacher's thoughts on the experience such as "What did you think about.... ?". All of these questions allowed me to gain a deeper understanding of the activity and the teacher's perspective and followed the Interview Guide in Appendix A. Furthermore, I was able to situate what occurred within

the classroom community and/or club community based on the teacher's answers. The discussion between the teacher and I was audio taped and transcribed for data analysis.

**Reflexive documents.** Ethnographic research seeks to understand the influence of social interactions on others within a specific environment (Angrosino, 2007; LeCompte & Schensul, 1999; Schensul et al., 1999). Consequently, I completed three types of reflexive documents to chronicle my influences and thoughts based on my interactions within the classroom and after-school club environments: field notes, contact summary sheets, and reflexive journals. Each of the reflexive documents allowed me to situate myself within the environments and also provided additional data to answer my three dissertation research questions.

**Field notes.** While observing interactions between students and adults and working with students within the classroom and after-school environments, the majority of my observations and interactions were audio recorded. However, specific behaviors or actions made by myself or the students could not always be audio recorded and when this occurred, I completed field notes. McCracken (1988) explained that field notes allow a researcher to make note of possible information that may be beneficial in terms of themes being made at the time of observation with research frameworks. In addition, when questions arose that I could not ask during the specific observation, the field notes were beneficial so that I could ask the teacher at a later time about the technology devices used, applications that were implemented, or comments made by her or a student. Field notes were handwritten on a piece of paper during interactions and observations. When working in small-groups with students, I also made note of the time recording stamp for

any statements or conversations that I found interesting. This allowed me to focus on specific portions of an audio recording when transcribing and coding data. I chose to make note of portions of the audio data I collected when working in small-groups since this provided me with reference points of specific actions or language I thought was important during the interaction/activity. All field notes were typed and analyzed as data sources. In conjunction with field notes, I used contact summary sheets as a way to reflect on my data collection and interactions.

**Contact summary sheets.** Trinter, Moon, and Brighton (2015) created a graphic organizer contact summary sheet, which allowed for comparisons between student work and teacher responses during their research study. The use of the contact summary sheets was used to guide future interview questions with teachers to better understand what had been observed when collecting data. I followed a similar practice by creating contact summary sheets for the classroom and after-school club environments. I documented key activities during observations within the classroom and after-school club on the contact summary sheet I created (Appendix B). This information was used to create follow-up interview questions/topics that were discussed with the teacher. Furthermore, I also noted possible connections to theoretical frameworks that I used to analyze data on the contact summary sheets. Making note of these possible connections while in the process of collecting data allowed me to frame my understanding of what I observed or participated in within the classroom and after-school environments.

**Reflexive journals.** Based on my ethnographic research design that included collecting data via observations, interviews, and interactions with participants within the

classroom and after-school club communities, I also became a means for collecting data. Shenton (2004) proposed that introspection occurs through the use of reflexive journals. Consequently, I completed reflective journals to document how my behaviors and presence within the classroom and after-school environments influenced the data that were collected. The completion of reflexive journals allowed me to situate myself within the classroom and club environments by reflecting on how my interactions influenced the learning and community development. All reflexive journals were typed and analyzed as data sources. In addition, after the completion of some reflexive journals, I had new questions or insights about data collected that I then discussed with the teacher.

**Parent emails.** Ms. Fromm believed in the importance of home-school connections and felt that transparency regarding what occurred within the classroom was key in having a productive parent-teacher relationship. At the beginning of the school year, she requested and received all parent emails and created a parent email directory that she used to communicate with the parents of students in her classroom. Ms. Fromm sent emails almost weekly to parents, and since I volunteered in the classroom, she included me on the emails. The topics of the emails varied but focused on informing parents of school-wide events, classroom occurrences, and updates on classroom needs. Ms. Fromm also sent weekly spelling words and updates on the curricular material being covered each week. All parent emails were copied into documents and analyzed. The usefulness of the parent emails in terms of this dissertation research goal is discussed in detail below.

### **Phases/Timeline of Study**

The research study occurred in three phases. Phase one included gathering background information about the classroom, club, and Ms. Fromm's teaching practices. This information was necessary to understand the classroom climate and dynamics in order to present a comprehensive description of the environments and interactions. Based on the pilot study data, I had an understanding of Ms. Fromm's teaching practices, beliefs, and some of the technological tools she used. For the remainder of phase one I learned about current practices including the technology being used in the 2015-2016 school year. Phase two included collecting data, transcribing observations and interview recordings, and the beginning of coding data. This phase focused on understanding the interactions that occurred in the classroom and after-school club. The final phase focused on analyzing the data collected to build a comprehensive description about the community of practice and digital citizenship practices that shaped the classroom and club communities. When needed, additional interviews occurred to clarify any remaining questions after all data were coded.

The entire research study occurred from October 2015 until May 2016. I volunteered in the classroom almost every week on Wednesdays for approximately three to four hours. In addition, when the teacher notified me of planned technology activities, I came to the classroom to observe the interactions between students and teacher. I attended the after-school club meetings almost weekly from November 2015-May 2016 for approximately one hour. Table 1 presents a list of the data collection methods and the months in which the various types of data were collected. In Appendix C, a detailed chart

is provided, which includes the (a) dates and location of data collection, (b) my role as researcher within the classroom, (c) data sources collected, (d) data formats collected, (e) participants present, (f) data topics, and (g) coding strategies for each day that I was in the classroom and/or after-school club.

Table 1

*Data Collection Timeline and Methods*

Method	Dates	Locations
Observations	October 2015-February 2016	Classroom
	November 2015-May 2016	After-school club
Audio recordings	October 2015-February 2016	Classroom
	November 2015-May 2016	After-school club
Field notes	October 2015-February 2016	Classroom
	November 2015-May 2016	After-school club
Reflective journals	October 2015-February 2016	Classroom
	November 2015-May 2016	After-school club
Interviews	October 2015-February 2016	Classroom
	November 2015-May 2016	After-school club
Pilot study results	May 2015-August 2015	Classroom & After-school club

## **Data Analysis**

### **Triangulating the Data Analysis**

NVIVO 10 was used as the software program where all data were analyzed. Data files were uploaded into NVIVO 10 weekly. As data were collected I completed a constant comparative analysis of the coded data too. I created different sets of coded data for the classroom data and the after-school club data within the NVIVO 10 program. When the teacher spoke about both the classroom techniques used and the after-school club techniques within the same conversation/interview, I teased out the information that pertained to each environment and coded accordingly. In NVIVO 10 I searched the data sources for specific words, word clusters, and themes which allowed me to connect more than one data source and triangulate my findings. Furthermore, by using various sources of data, with multiple theoretical lenses, I was able to triangulate the data and ensure that findings were supported by more than one data source and lens. This process allowed me to check for consistency in my findings. The findings of my research study will be discussed in Chapter IV. However, as a way to present the changes that occurred in my thinking and research methods I will briefly mention some research findings to explain why coding methods evolved over several coding processes.

Data collected in the classroom and after-school club were coded using the same lenses and coding methods. I used two different types of first cycle coding methods. The first was provisional coding and the second was descriptive coding. When analyzing and coding transcriptions, I used the additional notes that were taken to include filed notes, contact summary sheets, and reflective journals. This allowed me to situate the

transcriptions within the context of the data collection and allowed for a deeper analysis of the transcribed data (McCracken,1988).

## **Coding**

**First cycle coding-provisional coding.** Provisional coding was used twice since two predetermined lists guided the coding of data (Saldana, 2009). First, provisional coding was completed using the three aspects of the community of practice framework (Wenger, 2001). Next another review of data for provisional coding occurred using the nine elements of digital citizenship as the predetermined codes (Ribble, 2012, 2015). Definitions and sample questions were created for each a priori code, prior to collecting research data, and used to guide me when completing the coding for each framework. The sample questions for the community of practice were based on a review of previous literature and the sample questions for the digital citizenship framework were modified from Ribble's (2015) essential questions.

The coding of data based on the community of practice framework was centered on three components as defined by Wenger (2004). Furthermore, the sample questions helped me focus data into the various codes when I evaluated the interactions at both the microsystem and mesosystem levels.

- **Component 1. Participation:** the interactions of participants and the ease at which individuals are able to actively participate within the community.

Sample questions for coding: What types of interactions are occurring? Interactions between teacher and student, student and student, small-group, large-group, etc? What is the value of these interactions within the group?

- **Component 2. Community development:** how has the community changed or evolved?

Sample questions for coding: What are some specific changes/developments that have occurred to shape the learning of the entire group? What are some specific changes/developments that have occurred to shape the learning of students or the teacher?

- Components 3. Connections to the world: how the participants are able to connect the knowledge gained from the community of practice to other areas outside of the community.

Sample questions for coding: What type of connections are being made? How are these connections made? Who influences or addresses these connections? How do these connections further the community's growth?

The coding of data based on the digital citizenship framework were centered on the nine elements and essential questions as defined by Ribble's (2011) publications of the components of digital citizenship. Ribble (2011) used the term "elements" when labeling the behaviors that should be considered when students use technology devices. The sample questions helped me focus the data into the various codes when I evaluated the interactions at both the microsystem and mesosystem levels.

- Element 1. Digital access: the ability for all students to use technology.

Sample questions for coding: 1. How is equitable technology usage addressed within the program/classroom? 2. How are students provided "the opportunity to be involved in a digital society?" (Ribble, 2011, p.17).

- Element 2. Digital commerce: "the electronic buying and selling of goods" (Ribble, 2011, p. 20).

Sample questions for coding: 1. What do students know about electronic purchases and/or selling of goods? 2. What is the teacher's role/responsibility in teaching students about digital commerce?

- Element 3. Digital communication: "the electronic exchange of information" (Ribble, 2011, p. 23).

Sample questions for coding: 1. In what ways is information being exchanged electronically? 2. What standards are followed in relation to digital communication and how were these standards created and implemented?

- Element 4. Digital literacy: “the process of teaching and learning about technology and the use of technology” (Ribble, 2011, p. 26).

Sample questions for coding: 1. What methods are employed to teach the students to use the technological tools? 2. What aspects of the technological tools are discussed for the purpose of extending the use of the tools beyond the initial usage/application prescribed by the teacher?

- Element 5. Digital etiquette: “the electronic standards of conduct or procedure” (Ribble, 2011, p. 29).

Sample questions for coding: 1. In what ways are students taught digital etiquette? 2. “Do students realize how their use of technology affects others?” (Ribble, 2011, p. 29).

- Element 6. Digital law: “the electronic responsibility for actions and deeds” (Ribble, 2011, p. 31).

Sample questions for coding: 1. In what ways are students being informed about infringement standards/guidelines? 2. How is the teacher/school holding students responsible for their actions when using technological tools?

- Element 7. Digital rights and responsibilities: “those requirements and freedoms extended to everyone in a digital world” (Ribble, 2011, p. 35).

Sample questions for coding: 1. “What rights and responsibilities do students have in a digital society?” (Ribble, 2011, p. 35). 2. “How do we make students more aware of their rights and responsibilities when using digital technologies?” (Ribble, 2011, p. 35).

- Element 8. Digital health and wellness: “physical and psychological well-being in a digital technology world” (Ribble, 2011, p. 38).

Sample question for coding: 1. In what ways may “students be physically affected by technology... and are students aware of the physical dangers” (Ribble, 2011, p. 38)?

- Element 9. Digital security: “the electronic precautions to guarantee safety” (Ribble, 2011, p. 40).

Sample questions for coding: 1. “How do students protect their technology in a digital society?” (Ribble, 2011, p. 40). 2. “How can students be taught to protect themselves and their equipment from harm?” (Ribble, 2011, p 40).

After the review of the data using provisional coding, I then revised and expanded the coding of data as needed which is presented later in this section. Furthermore, while coding data with the predetermined codes I found that some information did not match a predetermined code. The emerging themes or statements of interest were coded by descriptive coding methods.

**Coding-descriptive coding.** Constant comparative analysis was used to define my coding methods and coding labels used within this dissertation research study. First, descriptive coding methods were used. Descriptive coding methods are useful for ethnographic research studies as the researcher is able to note areas in the data that appear frequently or that present new information that was not originally accounted for (Saldana, 2009; Schensul et al., 1999). In addition, descriptive coding also helped to create sub-codes for predetermined codes of information. I created a label for the emerging codes based on the topic. The code label provided a description of the emerging theme. After all data were reviewed and coded using provisional and descriptive coding methods, additional cycles of data coding and review occurred, which are described later in this section.

Twenty-nine files were coded using the nine a priori codes of digital citizenship (Ribble, 2012, 2015), three a prior codes of community of practice (Wenger, 2001) and

two a priori codes from Bronfenbrenner's bioecological theory (1994). During this initial coding of data, emerging codes were also created to organize themes that were not originally accounted for with the a priori codes. I created a total of four emerging codes to categorize the interactions within the classroom and after-school animation club. The emerging themes are:

1. Lack of verbal interactions and no assistance assumed. This was defined as: could not hear any type of assistance being provided, and student continued to ask for assistance and no assistance is presumed. There were nine different times this code was used within five data sources.
2. No assistance provided for sure. This was defined as: based on what is heard, there is no assistance provided. This code was not used in any of the 29 data sources.
3. Nonverbal assistance provided and assistance assumed. This was defined as: didn't hear actual assistance provided but based on verbal communication, believe assistance was provided. There were three different times this code was used within three data sources.
4. Verbal assistance provided. This was defined as: verbal assistance heard on the recording. There were 19 different times this code was used in seven data sources.

In addition to the emerging themes on the interactions of participants within the community I also found emerging themes on other topics. These emerging themes are as follows:

1. Teaching practices were defined as examples of how the teacher teaches the students, her questioning, her answers to questions, the setup of the classroom, etc. There were 12 references in two sources coded to this emerging code.
2. Technology usage for academics. This was defined as how the students are learning/expanding on academic concepts by using technology not directly told to kids working on specific skills, but the usage of the technology creates opportunities for teachable moments. There were nine references in three sources coded to this emerging code.
3. Interesting statements made by the teacher or students. This code included statements that I found interesting, surprising, or poignant while collecting data and observing and volunteering in the classroom and after-school club. There were 11 references in six sources coded to this emerging code.

While in the classroom, I realized that the communication with the parents also influenced the teacher's teaching practices and extension of the classroom community of practice she was creating. Since the teacher added me to her parent email list, I received copies of the emails that the parents received, too. In my first cycle of coding, I copied 29 emails sent from Ms. Fromm to parents, saved the emails as doc and PDF files, and

imported them to NVIVO to be coded. Originally, I started to code the parent emails based on emerging themes:

1. Connection of school and home. This was defined as information provided by Ms. Fromm to assist parents in making connections between school events to home discussions. For example, Ms. Fromm talks about benefits of Instagram as a way for parents to “see” what occurred in the classroom to provide a way for parents to start conversations with students by asking about the pictures posted. There were 16 references out of 12 data files for this code.
2. Information on class-specific items. This was defined as information being sent to parents on class-specific items/activities occurring. There were 36 references out of 23 data files for this code.
3. Information on school. This was defined as information being sent to parents about school-wide or grade-wide events. There were 19 references out of 16 data files for this code.
4. Teacher’s digital communication with parents. This was defined as “the electronic exchange of information.”(Ribble, 2011, p. 23). Sample questions for coding: In what ways is information being exchanged electronically? What standards are followed in relation to digital communication? There were 16 references out of 11 data files for this code.

After all data were reviewed and coded using provisional and descriptive coding methods I organized a peer review of the coded data. A peer review was done at this time to reflect on the data coding completed this far and to determine if the coding terms,

definitions, and questions would be clear to someone else, who was not directly involved with the research study. When discussing the peer review of data, some preliminary coding findings are discussed. The preliminary findings are discussed to explain how the coding definitions were expanded. The actual discussion of findings occurs in my next chapter, Chapter IV.

### **First Peer Review of Data**

Prior to a second cycle of coding, I had a peer reviewer examine my coded data. The peer reviewer was another doctoral student also pursuing her degree in Early Child Development and Education. She has a Bachelor's of Arts in Education, a Master's in Early Childhood Education, and a Master of Business Administration. The peer reviewer has three years teaching in an elementary classroom, 13 years working in early childhood/education, and five years teaching college level early childhood courses. She currently is the department chair and an early childhood/education professor for a local community college. In addition, the peer reviewer has worked on qualitative research studies in the past and has been responsible for collecting data, organizing data, and coding data. The peer reviewer has co-authored a chapter on technology usage with university faculty that has been published and is currently working on her own dissertation research.

I copied my NVIVO file with coded data and asked the peer reviewer to code five classroom data files. The files included three direct observation transcriptions and field notes, transcribed audio of students working alone, and students working in small-groups with me. I also gave her after-school animation club data files to code. The two after-

school club files were a transcription of the teacher talking, and a transcription of students working independently. A coding sheet was also provided to the peer reviewer that included a priori codes for digital citizenship, community of practice, and Bronfenbrenner's bioecological theory (1994) as well as the initial sample questions that were used to assist in coding data. The peer reviewer attempted to code the files, but found some of the definitions unclear. We then went through a file to discuss the coding that was completed. We both found discrepancies due to some of the definitions of the a priori codes being too confining. After going through one file, we decided to look at each code and the exemplars that I had already coded to see if we agreed that the exemplar matched the code and code definition.

Originally, the a priori code digital access was used to code data collected in the classroom and after-school club. However, since the teacher's use of technology was a key focus of this research study, we found that portions of every piece of data source were being coded as digital access in the first cycle coding. Consequently, I decided that the use of this a priori code within the research study was not needed as a code, but rather, as a way to present various aspects of the classroom and after-school club environments. For the a priori code of digital literacy the original definition and coding questions were:

- Digital literacy: "the process of teaching and learning about technology and the use of technology" (Ribble, 2011, p. 26).
- What methods are employed to teach the students to use the technological tools?

- What aspects of the technological tools are discussed for the purpose of extending the use of the tools beyond the initial usage/application prescribed by the teacher?

However, after the initial coding of data and peer review it was found that this definition and sample questions were too confining for what was actually being displayed within the classroom and after-school club. Consequently, a more appropriate definition and sample question for digital literacy are as follows:

- Digital literacy: the “process of teaching and learning about technology and the use of technology” (Ribble, 2011, p. 11).
- How are users learning about digital technologies and sharing that knowledge with others? (Ribble, 2011).

This new definition and sample question allowed the data collected to be represented in various ways to truly present an accurate picture of the digital literacy occurring within the two environments.

Furthermore, I divided the code of digital literacy into two subthemes. The first theme, digital literacy-learning/teaching, represented the data that demonstrated the various ways that users learned about the technology. This learning could occur via four modalities: (1) adult directed, (2) student with peers, (3) student independently, and (4) student directed with adult. Furthermore, this new code of digital literacy also encompassed some of the emerging codes that were found in the initial coding cycle. These combined emerging codes included (1) lack of verbal interactions and no assistance assumed, (2) no assistance provided for sure, (3) nonverbal assistance provided and assistance assumed, and (4) verbal assistance provided. These emerging themes were

combined with the new code since assistance either occurred or did not. The second theme, digital literacy-display of knowledge, represented how a user demonstrated technology knowledge to others.

Finally, during the first peer review of data, I discovered that some items were being coded as either digital literacy or digital communication when in fact, the exemplar did not match either code. However, a need to represent the communal actions between students that occurred digitally was needed. Therefore, the code of digital collaboration was created. This digital collaboration code connects to Ribble's (2015) belief that students need to know how to work with others even in virtual environments. For coding purposes, digital collaboration was defined as the digital sharing of work with another individual, or group, focused on a common goal.

After completing the first peer review of coded data and reviewing definitions of codes and sample questions, I reflected on my coding and realized the importance of being precise in my coding and also the importance of each participant's role. When I originally created the codes, definitions, and sample questions prior to collecting data, I focused on the teacher's role within the classroom. However, after the first coding and review of coding, I realized the importance of the interactions between all participants. I reviewed my a priori codes of Bronfenbrenner's bioecological theory (1994) and community of practice (Wenger, 2001) to ensure that the importance of the interactions were being effectively described and coded. I realized the redundancy of separately coding Bronfenbrenner's microsystem and mesosystem interactions and the elements of community of practice (participation and community development). I then decided that a

better understanding of the community development could be understood if these codes were combined. In the second coding of data, I divided participation coding into more specific codes. The new coding categories were as follows:

- Participation: teacher to student (teacher lead interaction)
- Participation: student to teacher (student lead interaction)
- Participation: student to student.

I observed these interactions with the participants during both small-group and large-group activities in both environments. When the need to understand the group size was essential in understanding an explainer, I made note of the group size using information from the field notes, contact summary sheets and observation notes taken on the day of the exemplar.

I also realized that I was not seeing a lot of my initial connections to the world code which was part of the community of practice codes. Since I was not able to see students outside of the classroom or learn how they were applying their technology knowledge outside of the classroom and after-school club communities, I was unable to learn how their new knowledge was being applied and generalized in other places. However, I was able to see how a student's initial learning of the technology device was expanded to novel situations, which is presented in Chapter IV. I realized that the exemplars that I had coded as connections to the world were not being represented by that code title. The code title was changed to connections made within the community to extend learning. This new code title reflects the change in where the connections were made- within instead of outside the community.

## **Second Peer Review of Data**

After making changes based on the discussion and findings of the first peer review of data I requested a second peer review of data to examine codes not previously reviewed. For the second peer review of data, I reviewed the codes digital commerce, digital law, digital rights and responsibilities, digital health and wellness, and digital security. For digital commerce, I did not have an exemplar already coded so we discussed the definition and events that had occurred that I would code as digital commerce. I summarized a discussion that had occurred within the classroom about needing money to stop advertisements from appearing. It was agreed that this would be an example of digital commerce. Furthermore, to ensure that the sample questions applied to not only the teacher's role but also the student's role in learning and teaching, I created an additional sample question. The new sample question was "What is the students' role in teaching others about digital commerce?"

After reviewing the definition, sample questions, and exemplar for digital law, I decided that further explanation/defining of the code was needed. I expanded the definition for digital law which is now the legal standards and proprietary expectations that exist when using digital tools and resources. The first sample question, "In what ways are students being informed about infringement standards/guidelines?" stayed the same because it addressed some of the legal standards that occurred within the classroom to include discussions of copyright policies. However, the second question originally addressed the teacher's/school's methods of teaching students and did not allow for students to teach their peers. This was needed so I modified the second question to, "How

are participants held responsible for their actions when using technological tools?” This change of the question allowed for participants to be either the teacher or student and also allowed students to also hold their peers responsible for their actions. Originally, only two of the four exemplars were agreed upon as matching the older definition of digital law. With the change in the definition and sample questions of digital law, all four exemplars were agreed upon as matching the code. With one exemplar, the overlap between digital law and digital commerce was discussed. The peer reviewer and I then discussed the possibility of statements/actions being coded in multiple ways, and the importance and usage of field notes to provide necessary background information was determined.

When reviewing information on the code of digital rights and responsibilities, the definition needed to be expanded to include students’ ownership of the digital products they created. I had coded exemplars that discussed ownership; however, the original definition and sample questions did not address this. So, a new definition of digital rights and responsibilities is “the rights that one has within a digital environment” (Ribble, 2011, p. 35) to include ownership of digital products/creations. One sample question was added to address the removal of digital rights and responsibilities. The new sample question was, “Under what pretenses are digital rights and responsibilities modified and/or removed?” This new sample question addressed the removal of digital rights and responsibilities, which was not addressed originally in the a priori definition and sample

questions. With the expansion of the code and sample questions, the peer reviewer and I agreed on the coding of the exemplars.

For the a priori code of digital health and wellness, the definition was sufficient, but the sample questions were not. An expansion of the sample questions occurred to provide additional guidance on the coding of this theme. The sample questions were expanded to, “In what ways are students affected physically and psychologically by technology or influence others physically or psychologically?” and, “Are students aware of these physical and psychology dangers/influences?” (Ribble, 2011).

For the code digital security, the definition and sample questions were sufficient. The only suggestion was the need to provide additional information, such as contextual information to demonstrate why an exemplar should be coded as digital security. For example, in one exemplar, a student attempted to use a website and another student told them they could not. Additional information from the field notes supported that this was in fact a display of digital security, since the students were only allowed to go to approved school websites that had already been reviewed.

One final change I made for the next cycle of coding was to ensure that only the portions of data/exemplars that matched a code were coded. In some exemplars, I coded the entire conversation, when in fact, only portions matched a specific code. In another exemplar I coded an entire portion as two codes, when in fact, the first part of the exemplar was one code and then the conversation shifted and matched another code. Being more specific when coding demonstrated how each theme appeared within the

environments and also how the classroom and after-school communities of practice developed.

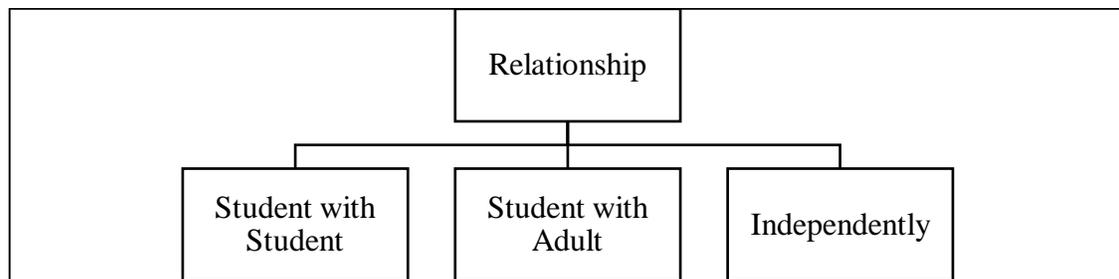
### **Final Peer Review of Data**

After all data was completely coded I completed a third and final review of data. During the final peer review of coded data, I examined exemplars for the digital citizenship codes with a peer reviewer, as well as, my academic advisor, who is an expert in the field. I gave the peer reviewer and my advisor 12 exemplars that I had already coded using digital citizenship codes. The reviewers attempted to code based on the definitions provided but felt that all exemplars could be a form of digital literacy and that the definition of digital literacy needed to be further defined. I then explained the various codes that related to digital literacy and explained what I had observed within the classroom and animation club as a way to help clarify the codes and definitions. Once more precise definitions were created and agreed upon, we worked through coding five exemplars together using the new codes and definitions. After we achieved inter-rater reliability on the exemplars we worked through together, we then coded seven exemplars independently. Inter-rater reliability of 100% was achieved on six exemplars without needing to discuss the coding of the exemplar. For the last exemplar, we discussed the additional contextual information that was needed and then agreed on the coding of the data.

Based on the third review of coded data, the final definition for digital literacy was expanded to demonstrate (1) the importance of the relationship between the participants, (2) the purpose of the interaction, and (3) the process and/or content of the

interaction. The overarching definition of digital literacy is “the process of teaching and learning about technology and the use of technology” (Ribble, 2012, p. 11). A sample question used for coding is “How are users learning about digital technologies and sharing that knowledge with others?” (Ribble, 2012).

The relationship, or lack thereof, between the participants can be categorized in three ways: (a) student with student interactions, (b) student with adult interaction, and (c) student working independently. The possible relationships are visually displayed in Figure 2.



*Figure 2.* Relationships, or lack of relationships, between participants displaying digital literacy.

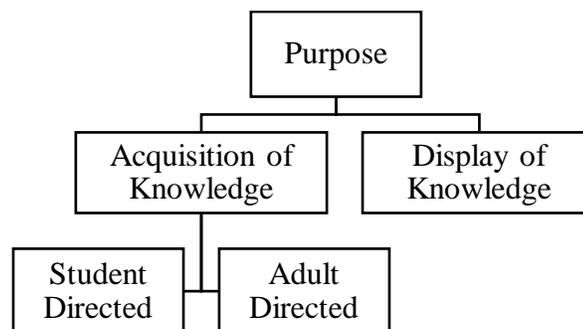
Understanding the relationship that existed between the participants was the beginning of understanding the interactions and the importance/meaning of the interactions. The transcription methods used proved to be helpful when coding data as I was able to differentiate between speakers within a conversation. I was also able to identify the relationship between the participants. In Table 2, the relationship of student to student is presented. In Chapter IV, I provide additional exemplars to demonstrate the other two possible relations for digital literacy.

Table 2

*Example of Digital Literacy Relationship Code*

Code	Exemplar
Digital literacy	Student 1: What do I do? Do I have to setup an account?
Relationship-student to student	Student 2: What are you trying to do?

I divided the purpose of the interactions within the digital literacy code into two categories. The first was acquisition of knowledge. This acquisition of knowledge could occur in two ways student-directed or adult-directed. When the acquisition of knowledge was student- directed, the student directed the learning that occurred. When the acquisition of knowledge was adult-directed, the adult controlled the learning that occurred. The second purpose of the interaction was a display of knowledge by a student participant. This meant that a student was not attempting to gain new knowledge, but rather, demonstrate the knowledge learned. The purpose of interactions is visually displayed in Figure 3.



*Figure 3.* The purpose of digital literacy interactions.

With the digital literacy code also being tied to other lenses such as community of practice it was important to determine why interactions occurred. Since the community developed and evolved during the year, identifying the purpose of the interactions helped to understand the changes within the communities. The example below is a continuation of the conversation that was previously coded in Table 2. However, with more of the conversation being known, I could code the purpose of a technology experience and interaction. In Chapter IV additional exemplars are provided to demonstrate acquisition of knowledge, adult-directed, and display of knowledge.

Table 3

*Example of Digital Literacy Purpose*

Code	Exemplar
Digital literacy  Purpose-acquisition of  knowledge-student directed	Student 1: What do I do? Do I have to setup an account?  Student 1: What do I do? Do I have to setup an account?  Student 2: What are you trying to do?  Student 1: Sign up for Bob's burgers.  Student 2: What?

Finally, the content of a digital literacy exemplar and/or the process that occurred during the digital literacy interactions were important to describe too. The content of the

digital literacy event can be focused on six different digital citizenship elements as defined by Ribble (2015), which were digital commerce, digital etiquette, digital health and wellness, digital law, digital rights and responsibilities, and digital security. The process code defines the modality that the digital learning occurred which was either via digital communication or digital collaboration. The visual image of the content or process for understanding digital literacy is below in Figure 4.

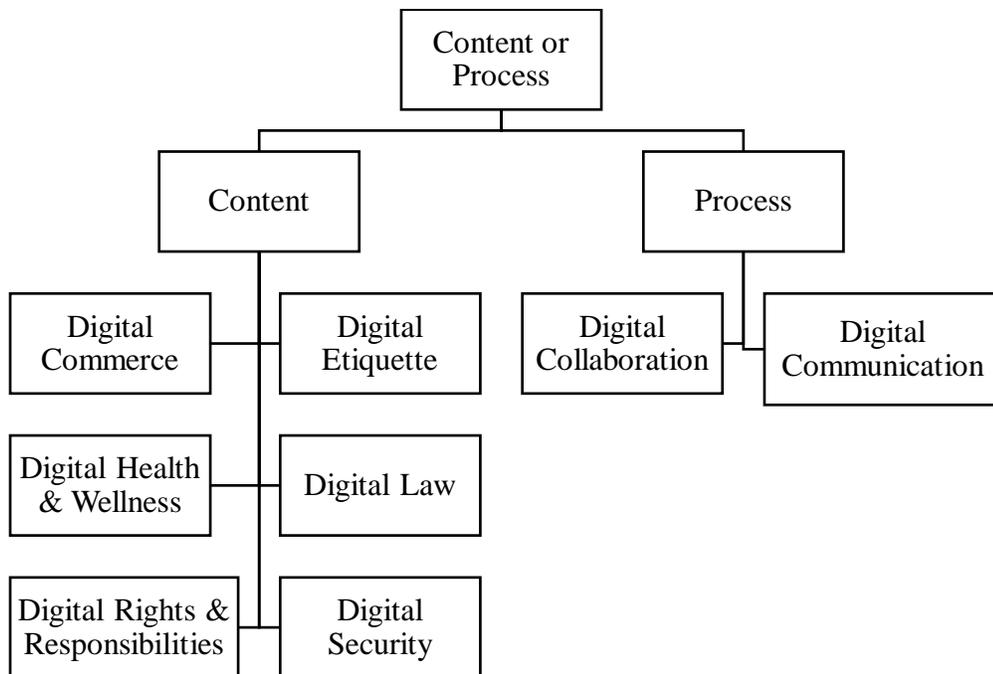


Figure 4. The possible content and/or process of the digital literacy occurrences.

Using the digital citizenship elements as a way to categorize the content of the interactions and conversations provided a detailed way to describe what occurred within the communities. In addition, by explaining this contextual information, I identified shifts within the conversations that shaped the community development and learning. In Table

4 is the entire conversation previously coded in portions in Tables 2 and 3. The complete exemplar in Table 4 demonstrates how content can be determined after hearing a conversation between participants. Exemplars for each digital literacy content code and process code will be presented in Chapter IV.

Table 4

*Example of Digital Literacy Content*

Code	Exemplar
Digital literacy Relationship- student to student Purpose- acquisition of knowledge-student directed Content- digital etiquette	Student 1: What do I do? Do I have to setup an account? Student 2: What are you trying to do? Student 1: Sign up for <i>Bob's Burgers</i> . Student 2: What? Student 1: It's from <i>The Simpsons</i> . Student 2: I'm not allowed to watch <i>The Simpsons</i> . You're going to get in trouble. You can't be on there. Student 1: Don't say anything. Student 2: Then get off. It's not school appropriate. Student 1: Whatever.

I discussed my research findings with Ms. Fromm using the coding definitions, sample questions, and language samples from the communities to ensure she agreed with the accuracy of the coding that had been completed.

**Member Checking**

As a way to confirm the coding of data, throughout the coding process I presented coded data to Ms. Fromm. Kavale (1996) stated that key informants within a research study should review coded data to ensure accuracy in the coding of data which assists in creating trustworthiness of research results. Since this was an ethnographic case study

with the goal of understanding the classroom and after-school club communities, Ms. Fromm was my key informant. She was able to answer questions that arose as I conceptualized data collected on the development of the communities into meaningful clusters of information. Therefore, during member checking, I explained to Ms. Fromm the themes that were used to code data and also explained any combination of themes. Member checking occurred four different times during the coding cycle to ensure that the actions of Ms. Fromm and students were being coded correctly and appropriately. Each time member checking occurred Ms. Fromm stated that she never viewed her classroom as I was and she found my research findings interesting. The use of member checking throughout the coding process added to the trustworthiness of this study to ensure that data were coded and analyzed correctly.

After I coded all the data and started to write Chapter IV, I met with Ms. Fromm to explain how I conceptualized her classroom and after-school communities. I reminded Ms. Fromm how I collected data, explained the various data sources, and then explained the different codes that I used to analyze the data. Once again Ms. Fromm stated that I had analyzed her classroom, after-school club, and teaching practices more than she ever has. I explained how the various codes were interrelated and provided some exemplars to support my findings. Ms. Fromm offered suggestions on how other codes could also connect to answer my research questions. She reminded me that technology is part of the TEKS (Texas Education Agency, 2012), and I added the Texas Technology TEKS to one of my dissertation questions. Finally, Ms. Fromm asked me if I had any recommendations on how she could improve her teaching. I didn't have any suggestions as this research

study did not evaluate her teaching practices. Rather, the purpose was to explain and illustrate her teaching practices. Ms. Fromm agreed that the trustworthiness of this study was based on the multiple data collection methods that were used and my integrity when researching and coding. Furthermore, I achieved and showed multiple codes for data which increased rigor to ensure a comprehensive understanding of the data and findings.

### **Triangulating and Trustworthiness of the Data Analysis**

Ethnographic research methods can provide a thorough understanding of participants within a research environment (LeCompte & Schensul, 1999). Therefore, I collected multiple data sources to illuminate the interactions that occurred within the classroom and after-school club. These data sources included observations, audio recordings, interviews, field notes, contact summary sheets, reflexive journals, and teacher-created emails. I was also able to triangulate my data sources to ensure trustworthiness of my research since findings were supported by more than one data source. Another benefit of completing an ethnographic research study was that I became part of the classroom, not only as a researcher, but also as a volunteer. This allowed me to reflect on both the data collection procedures and data analysis as I coded throughout the research process. I collected data within the classroom and after-school club as long as data collection was needed and was a participant observer for five months within the classroom and seven months within the after-school club. Both of these time frames were longer than originally planned. However, by being part of the communities for an extended period I was able to achieve saturation when collecting data. Saturation of data allowed me to collect enough data from various sources to create a thorough description

of the community practices and interactions, and provide a detailed description of the teaching practices of Ms. Fromm that occurred within the classroom and after-school club. Finally, I completed member checking by discussing results with the teacher who was the focus of this dissertation research study.

At the last member checking, Ms. Fromm and I met to discuss the completed data collection and coding. We first discussed the theoretical frameworks of community of practice and then the theoretical framework of digital citizenship. I provided exemplars for codes in both theoretical frameworks and asked Ms. Fromm if she agreed with the coding I had completed. Ms. Fromm agreed with how I coded the data and the preliminary description I had written on her teaching practices and the interactions of the students within the classroom and after-school environments. In addition, Ms. Fromm reiterated that she had never viewed her classroom or teaching practices in the way that I analyzed them. She stated that she was humbled by my results and my desire to complete my dissertation research on her and her teaching practices.

### **Ethical Considerations of the Study**

Fictional names are used throughout this dissertation, to protect the privacy of the school district, teacher, and students. Permission to conduct research within Franks-Grove Independent School District, that does not involve collection of identifiable student data, were requested from the school principal. The principal provided a letter stating that once the Texas Woman's University's (TWU) Intuition Review Board (IRB) approval was given, research could be begun in the school.

The IRB application included copies of recruitment emails/cover letters (Appendix D and E), copies of consent forms (Appendix F and G), the consent letter from the principal, information about proposed data collection techniques, and copies of the primary researcher's and advisor's CITI and NIH training forms. No incentives were provided for participation in the proposed research study. My volunteering within the classroom and after-school club was not viewed as an incentive since Ms. Fromm could ask me to stop attending at any time. In addition, parental participation from all parents was encouraged and accepted so my presence as a volunteer was not considered an incentive to participating in the research. In the consent forms all participants were made aware of the possible risks, which included loss of confidentiality, coercion, fatigue or physical discomfort during interview, loss of time from work for interview completion, and fear of being recorded.

I gained participant consent prior to collecting data and attempted to reduce the possible risks to participants. As a way to reduce the risk of loss of confidentiality, all participant data were coded. The master list with corresponding codes and names was kept in a locked filing cabinet separate from signed consent forms. Only my advisor and I had access to this information. Since my children attended or currently attend Watt Elementary school, I had a relationship with the principal, some teachers, and some parents. Knowing the principal and teacher made the fear of coercion risk possible. However, both the teacher and principal participants verbally gave their permission and offered assistance to get approval for this research project. However, as a way to

minimize coercion, all participants were told verbally and in the consent forms that they could stop participation in the study at any time.

Interviews occurred based on what I observed while in the classroom or after-school club. I was able to collect data from various sources in order to accurately explain the practices within the communities. When needed I requested interview time with the teacher to discuss any questions about classroom and club occurrences. Consequently, a possible risk for participants was fatigue during the interview. To minimize this risk, the interviews were scheduled during a time that was convenient to the interviewee. The participant could request to end or break from the interview at any time. Furthermore, I was aware of possible fatigue and suggested ending the interview as needed. Another possible risk was loss of instructional time to complete the interviews. To minimize this risk, I scheduled interviews outside of the instructional time. I was available at various times in an attempt to meet the scheduling need of the interviewee. I contacted the teacher to set up interview days, times and locations, and interviews were completed at a mutually agreed upon time and location. All interviews were audio recorded, and I kept all recordings on an external hard drive in a locked file cabinet. I also transcribed all interviews which were kept on the external hard drive as well.

Another possible risk was fear of being recorded. To reduce this fear, I explained to all participants that their name would not be used in the transcriptions. All names were coded and kept in a locked file cabinet separate from the consent forms and transcriptions. During the recording of the teacher in the classroom and the after-school club students' voices were also recorded. Although the students' voices/words were

transcribed, no identifying information on the students was collected and I did not keep any type of attendance forms. I served as a parent volunteer and completed a background check through the Franks-Grove Independent School District. Based on school requirements a letter went home to all students in the classroom and after-school club to let parents know that a student volunteer and observer was in the classroom. Since there were no additions to the normally scheduled activities and no identifiable student data were collected, individual parental consent forms were not required per district policy.

Once the IRB permission to conduct research was given I submitted a prospectus to the Graduate Office. I then received notice from the Graduate Office that I was able to begin my dissertation research. I obtained the teacher's email address from the school website and followed a script when emailing the teacher (Appendix D). Furthermore, the teacher signed a consent form (Appendix G) prior to any data collection.

### **Dissemination of Findings**

The principal and teacher at Watt Elementary School will be provided a PDF version of the entire dissertation or a summary of the dissertation based on their preference. Based on the research results, I will locate peer-reviewed journals to submit portions of the dissertation findings for publication. The journal submissions will occur within a year of completing this dissertation research project. In addition, I will find professional conferences that focus on the research topics, such as technology, digital citizenship, and community of practice and submit a proposal to present the research findings.

## **Summary**

Ethnographic data were collected through interviews, observations, and collection of audio recordings. In addition, pilot study data were used to create a foundation that included information on the teacher's pedagogical practices, classroom structure, and goals of technology integration within the classroom and after-school club. Finally, through the use of reflexive documents such as field notes, contact summary documents, and reflexive journals I situated myself as a researcher within the communities. Multiple data sources were used to increase trustworthiness and triangulate findings. Multiple cycles of data coding occurred, and definitions of several a priori codes were expanded to ensure accuracy in data coding. I arranged a peer review of data three times as well as a review with my advisor to ensure coding of the data were clear and understandable to those separate from the data collection. Finally, I completed several member checks with the teacher to determine that data being coded were represented correctly. Using the codes presented in this chapter, I will demonstrate my research findings in Chapter IV through the use of exemplars. In Chapter V I will synthesize my findings across multiple research questions and also connect findings with current literature.

## CHAPTER IV

### ANALYSIS OF DATA AND FINDINGS

This chapter presents the research findings of an ethnographic case study focused on a third-grade teacher, her teaching practices, and the methods she employed within the classroom and after-school club to foster students' development and technology usage. Regularly scheduled activities were observed for approximately five months in the classroom and seven months in the after-school animation club. Data collected for this ethnographic research study included direct classroom observations, interviews, parent emails, field notes, contact summaries, and reflexive journals. I also used transcriptions of interviews, direct teaching practices, and small and large-group conversations. The goal of this research was to illustrate and exemplify the unique teaching practices and interactions that occurred within the classroom and after-school animation club digital communities. I employed Wenger's (2001) community of practice theory, Bronfenbrenner's bioecological theory (1994), and Ribble's (2012, 2015) theory of digital citizenship to analyze the data collected and answer my dissertation research questions. This chapter presents information on how the use of the aforementioned theoretical frameworks were utilized to answer my research questions.

#### **Theoretical Lenses**

##### **Community of Practice**

Wenger (2001) described a community of practice as a group of people who have a mutual goal and work together to achieve that goal through interactions. I documented

the interactions between the classroom participants, including the teacher, students, and myself, to gather data to answer my research questions. Ms. Fromm's goals for the communities were to develop academic skills, increase technology usage and understanding for academic purposes. To understand a community of practice Wenger (2001) suggested three aspects of a community should be recognized and valued. These three aspects are:

- community participation, how each individual contributes to the community knowledge and common goal;
- the development and changes that occur within the community, how the community evolves and changes over time; and
- the connections made within the community to extend the understanding of the shared knowledge to new situations.

These three aspects are what make each community of practice unique. Each of these aspects of the community of practice were also viewed through the theoretical lenses of Bronfenbrenner's bioecological theory (1994) and/or the digital citizenship theory (Ribble, 2012, 2015).

### **Bronfenbrenner's Bioecological Theory**

The importance of social interactions between individuals and the ensuing growth of the individual is explained via Bronfenbrenner's bioecological theory (1986, 1994). Each individual brings to a learning experience their own personality, interests, likes, and dislikes (Bronfenbrenner, 1994). The interactions of the participants within the community of practice occurred within the microsystem level and influenced

development of all members of the community through shared experiences and collaboration. It was important for me to view not only the entire classroom and after-school club as a whole, but also to recognize the microsystem interactions that occurred between smaller groups of individuals when coding data. The individual participants within the interactions were recognized as a way to explain how social learning influenced academic development. For this research study I viewed two microsystem interactions students with peers and students with an adult. Viewing these microsystems provided generated the foundational information needed to understand the purpose of interactions within the communities of practice. These interactions between students and adults influenced changes that occurred within the classroom and after-school environments. Since the use of technology was an integral part of the communities' activities and interactions, the theoretical lens of digital citizenship was used to understand the technology aspect of the interactions and community development that occurred. Using the digital citizenship theoretical lens, I described a connection between the microsystem interactions that extended the communities of practice development of technology skills.

### **Digital Citizenship**

Ribble's theory of digital citizenship (2012, 2015) was used to analyze the technology usage within the communities and to describe the behaviors that occurred when technology was used. For the purpose of this research study, the overarching theme of digital literacy was defined as how a participant acquired or displayed their technology learning. Through digital literacy other digital behaviors could also be displayed. I

utilized a total of six other digital behaviors to describe technology usage within the classroom and after-school club. These digital behaviors are

- digital commerce, the buying/selling of goods electronically;
- digital etiquette, appropriate/expected digital behaviors;
- digital health and wellness, being aware of how technology usage can affect one physically and/or mentally;
- digital law, legal expectations that are to be followed when using technology;
- digital rights and responsibilities, propriety expectations one can expect when using technology; and
- digital security, the securing of one's information and/or technology devices (Ribble, 2011, 2015).

By merging portions of the theoretical frameworks of Wenger's community of practice (2001), Bronfenbrenner's bioecological theory (1994), and Ribble's digital citizenship (2011, 2015), I could generate a detailed description of the interactions and growth that occurred within the classroom and after-school club communities. Research questions were created to focus my observations while part of the classroom and after-school animation communities.

### **Research Questions**

The research goal of this ethnographic case study was to explore the teaching practices and interactions that occurred within digital communities in an elementary school classroom and after-school club. The overarching research question was:

In what ways does the teacher create an inquiry-based culture through the use of technology in a classroom and after-school club?

More specific research questions were created as a way for me to ensure that a thorough understanding of the teaching practices and interactions of the communities occurred.

The specific research questions were:

1. How are components of the community of practice framework (Wenger, 2001) implemented by a teacher within the classroom and after-school club?
2. How are elements of digital citizenship as defined by Ribble (2012) implemented by a teacher within the classroom and after-school club?
3. In what ways does technology usage within the classroom and school club extend students' learning and relate to the Technology TEKS (Texas Education Agency, 2012)?

As a participant observer within the classroom and after-school club communities I gathered an extensive amount of data and language exemplars to answer the four research questions.

### **Research Findings**

Ethnographic research methods were used to become part of the communities as research data were gathered. As part of the community, I gained an intimate understanding of the interactions between Ms. Fromm and her students, as well as the interactions of students with their peers. Data were collected through volunteering and observations within the classroom and after-school animation club. To observe the changes that occurred within the classroom and after-school club communities, I

collected data for five months within the classroom and for seven months within the after-school club. By collecting various forms of research data (discussed in detail in Chapter III), I provided contextual background information when using exemplars to demonstrate the skills displayed by the teacher and students.

Data collection methods included observations, audio recordings, transcriptions of audio recordings, field notes, reflexive journals, and interviews. I completed semi-structured interviews with pre-established questions to gain an understanding of interactions and activities within the classroom. All data sources were coded using the a priori codes previously mentioned for community of practice, Bronfenbrenner's bioecological theory (1994) and digital citizenship. I then completed three peer review sessions of my data, a review of data with my advisor, and member checking to assist me with synthesizing the data and ensuring the definitions of the codes were well defined. In addition, during these reviews and synthesizing of data, some a priori codes for community of practice and digital citizenship were expanded to accurately explain the data collected. I began collecting data by interviewing Ms. Fromm to gain a glimpse of her teaching paradigm and practices and understand her role as a participant within the communities of practice that she created.

**Research Question One: How are Components of the Community of Practice Framework (Wenger, 2001) Implemented by a Teacher Within the Classroom and After-school Club?**

While interviewing Ms. Fromm, I asked questions to ascertain background information on her teaching practices, experiences, and paradigm. Ms. Fromm's

interview answers provided me with information to contextualize what I observed when I volunteered and collected data. This information demonstrated how the three aspects of community of practice were implemented within her classroom and after-school animation club:

- community participation of participants;
- development of community through shared experiences; and
- connections made to extend learning.

I viewed Ms. Fromm's actions as a participant within the community of practice and as someone who shaped the development of the classroom and after-school animation club communities of practice.

I used the NVIVO software to quantify the usage of the aspects of community of practice and to find exemplars of each component to review. I discovered the three aspects of community of practice were coded 260 times within 74 data sources. These data sources included classroom and animation club audio transcriptions, reflexive journals, observations, and interviews. The large number of coded references of the community of practice aspects demonstrated how important the community of practice framework aspects were to Ms. Fromm's teaching pedagogy, classroom, and after-school environments. As displayed in Table 5, I coded the development of community learning at a higher frequency, and in more data sources than the other two aspects of community of practice. These data sources included observation notes, transcriptions, field notes, contact summary sheets, and interviews.

Table 5

*Frequency of Community of Practice Aspects*

Community of Practice Aspects	Number of Data Sources Component Found Within	Number of Times Component Coded
Community participation	48	86
Development of community	58	121
Extending understanding	30	53

The classroom and after-school club environments were consciously designed to allow adult to student and student to student interactions. The teacher created communities built on collaboration, which occurred through intentional practices. Each participant had an influential part within the development of the community as a whole, as well as each participant's individual development. Through a purposeful learning design, the teacher encouraged students to view each other as a resource. She encouraged microsystem interactions of the students through small-group activities and classroom jobs (discussed later in this section) within the third-grade classroom and through peer interactions within the after-school club. This allowed for the expansion and increase in the shared community knowledge and ultimately the development of the communities.

The teacher used small-groups throughout the week for several purposes. First, small-groups were used to encourage microsystem interactions between an adult and students to deepen the students' understanding of new material. Small-groups lead by an adult primarily focused on math or reading instruction/expansion and occurred at least three times a week. The students within the groups changed based on the content instruction and also based on the personalities of the students. The teacher expanded the students learning and thinking by asking probing questions within the small-group interactions, such as, "What did you notice about..." or "Let's look at a different way of getting the ...". These types of questions encouraged the students to verbally explain his/her thinking, which then provided peers within the small-group opportunities to hear other approaches for completing an activity and, extended the communities' shared knowledge. Through an understanding of the needs of each student, Ms. Fromm planned activities and rotated the students within the group to allow for peer interactions that deepen student learning.

When creating the classroom and after-school communities, Ms. Fromm frequently told the students to view their peers as a resource and not to always seek adult assistance. A phrase frequently used was "Go beside you before you go to me and Ms. Cook." This statement was encouraged collaboration with peers prior to seeking assistance from the adult in the classroom. Ms. Fromm believed that each student benefitted when collaborating. The student who needed help with a tool or had a question would get the assistance needed and the student helping would gain a deeper understanding of the tool or material by explaining it to someone. Through these

experiences, both students acquired a new and/or deeper understanding of the material from the shared experience and the community knowledge developed and expanded. In Table 6, an excerpt of a conversation between Ms. Fromm and students displays how the teacher encouraged students to assist one another. The second exemplar in Table 6 demonstrates students' views on how peer interactions during learning activities were helpful, and students provided their own reasons for the importance of working together to develop the community of practice.

Table 6

*Community Participation Exemplars with the Classroom*

Code	Exemplars
<p>Community participation</p> <p>Display of teacher encouraging student participants to shape community learning</p>	<p><i>(Students were about to begin working)</i>  Ms. Fromm: Raise your hand if you think you need help with this part.  <i>(Some students raise their hands)</i>  Ms. Fromm: Okay if you are close to somebody with their hand raised go and help them.  Student 1: What do you need help with?  Student 2: I can't get her to move.  Student 1: Oh, I know how to do that. <i>(Proceeds to explain how to access program.)</i></p>
<p>Community participation</p> <p>Display of student participants explaining how peer interactions shape community learning</p>	<p>Researcher: Why do you guys like doing this, the coding and all?  Student 1: It's really fun. It shows us like, how to like make a movie and all sometimes.  Student 2: And like our brain just starts working  Researcher: You like that? Your brain just starts working that's a good one. It teaches you how to make movies. Do you guys like being able to work together?  Student 1: Uh-huh  Researcher: Why?  Student 1: It's more easier.  Researcher: It's easier?  Student 2: Yeah, instead of just one, two is better.</p>

Through the use of peer interactions and assistance, students also learned how each individual was an important individual and influence within the classroom and after-school club. For example, within the animation club, students frequently asked one another how to work a specific function within the technology program. I consistently reviewed my data and noticed in observation notes and reflexive journals, then verified through member checking with Ms. Fromm, the fourth and fifth graders who were in the animation club in previous years became leaders within the animation club as they frequently assisted peers and offered assistance without prompting. The unprompted assistance from an older student is displayed in the following exemplar. This exemplar also demonstrates Wenger's (2001) claim that student participation shapes community learning and development.

Student 1 (*3<sup>rd</sup> grader*): Ms. Cook somebody needs help over there.

Researcher: Okay just a second.

Student 2 (*4<sup>th</sup> grader*): Oh, I'll go help them. Who needed help?

Researcher: Great thanks!

*\*\*A few minutes pass*

Researcher: XXXX (*student's name*) who needed help over here?

Student 3 (*3<sup>rd</sup> grader*): She already fixed it.

Researcher: Thanks XXXX (*4<sup>th</sup> grader's name*)

Student 2 (*4<sup>th</sup> grader*): No problem. She also saved it.

As the school year progressed, students began to assist each other without being encouraged to do so, which demonstrated a change within the community of practice. For example, students worked near each other in the animations club, and could view the

animations being created and the work being completed on a technology device. Frequently, students saw their peers completing a task, and when an alternative way of completing the task was known, this knowledge was shared. These types of interactions were heard on audio files, and through a connection with transcriptions and field notes, I was able to identify examples of students assisting other students unprompted. The exemplar below demonstrates this unprompted assistance, which connects to the community of practice component of community development.

Student 1: What are you doing?

Student 2: I'm trying to color the background.

Student 1: You know you can just do fill background.

Student 2: How do you do that? Where is it?

Student 1: You go fill, and choose background.

When I listened to audio files of students working independently, I also observed that peer assistance was not always available in both the classroom and animation club. Sometimes students believed that their peer wasn't trying and wanted someone to give him/her an answer. When this occurred, students denied assistance, which is demonstrated in the first exemplar in Table 7. This exemplar demonstrates a change in the microsystem student to student interactions within the community of practice. The lack of assistance between the students was expected, as the students were in third-grade and each student has his/her own personality that influenced his/her social and emotional development and interactions. At times, the presence of the recorder that I used to capture the technology discussions within the classroom was mentioned, reflected in the second

exemplar in Table 7. Students referred to the recorder in an attempt to have their peers begin working and remind them that their speech was being recorded. This was one way that students reminded each other of the participation expectations within the classroom community. Based on the students' speech in the second exemplar, I do not believe that the use of the recorder had any influence on the interactions, discussions, or actions of the participants.

Table 7

*Classroom Participant Interactions That Demonstrate Changes Within Community*

<p>Development of community</p> <p>Changes within the community</p>	<p>Student 1: How do you fill your body XXX (<i>student's name</i>)?</p> <p>Student 2: I don't know. Because you're not helping me. I'm not going to help you.</p> <p>Student 3: You can't just tell everyone to help you.</p> <p>Student 1: Well you guys are just ignoring me to do your own game.</p> <p>Student 2: That's because we don't want to help.</p> <p>Student 4: Hey, she's listening.</p> <p><i>**The "she" referenced above is assumed to be the researcher, since a recorder was located near the students.</i></p>
<p>Development of Community:</p> <p>Changes Within the Community</p>	<p>Student 1: You can't just sit there and watch him.</p> <p>Student 2: I'm not.</p> <p>Student 1: XXXX(<i>student's name,</i>) it's not okay to just sit there and watch him do it.</p> <p>Student 2: I can do what I want.</p> <p>Student 1: You know we are being recorded on that thing so you know it's being recorded that you aren't doing your work.</p> <p>Student 2: I don't care.</p>

The changes and development of the communities also occurred through the extension of learning and the display of knowledge in novel ways. The microsystem

interactions between a student and his/her peers provided opportunities that allowed for participants to extend not only their individual learning, but also the shared knowledge within the community. Sometimes this extension of learning focused on how to use academic information in novel ways or how to use a technology tool differently than previously presented and used. Other times, the extension of learning focused on applying new guidelines to support community use of a technology tool. In the exemplar below, a student demonstrated his/her understanding of the word “copyright” in a novel way, which demonstrated his/her extension of learning about technology copyright guidelines which is part of Ribble’s digital citizenship (2011, 2015).

Student 1: They copyrighted me.

Student 2: What?

Student 1: That’s my picture, and they took it.

Student 3: Unlock the screen.

Student 1: No.

Student 3: Unlock the screen.

Student 1: Stop copyrighting me.

Student 3: Okay, I won’t use your picture.

The use of technology within the classroom is discussed in the next sections within this chapter. However, one way that Ms. Fromm supported the community technology usage in a novel way was by modifying student technology jobs within the community. The jobs created demonstrated the importance of each student within the classroom community. The purpose of some of these jobs was to help peers with various tasks and challenges. One such job was the Apple Tech job. Within the classroom, the

Apple Techs assisted their peers with the Apple devices, such as the iPads and Apple laptops. When Ms. Fromm noticed an increase in the number of students needing assistance with the technology, specifically with remembering their passwords, Ms. Fromm made password assistance part of the Apple Tech's duties. This change in the Apple Tech's responsibilities allowed for a new usage of the technology tools within the community. In previous years, the Apple Techs only assisted peers with the various technology devices' functions or applications. However, with an increase in students' needing his/her passwords, Ms. Fromm decided that the Apple Techs could extend their learning and complete more troubleshooting tasks if they had access to passwords. Only the Apple Techs could access the password list that Ms. Fromm created and kept by her table, so she still instituted a measure of password security (which is discussed in this chapter in relation to digital citizenship). In the exemplar below an Apple Tech explained to me how he/she was able to use another student's password in order to provide additional technology assistance.

Student: Ms. Fromm had printed out those (*referring to list with passwords*) because she had went through all of our lists and she had figured out all of our passcodes and stuff. And, I'm an Apple Tech so like I have to help. There is a few different Apple Techs in this class. Like XXXX (*student's name*), and we, when somebody needs help, their Pad's not working, the Apple Tech, Ms. Fromm is busy so we go help them, and we fix it. So and he didn't know what the passcode was so I checked the list just to make sure, and then I logged in it and fixed it. Now he can use it (*referring to technology device*) and finish his work.

By March some students started to use their understanding of the functions of the technology applications in non-school approved ways. Numerous students downloaded apps that were not approved by the school and were no longer allowed on the technology devices. Ms. Fromm removed the apps and stopped the use of the all technology usage within the classroom for approximately one week. She spoke to the students about why their new usage of technology was not suitable in school and notified parents of the change in technology usage via email. Below is the email sent to parents explaining the students' extension of learning by downloading non-approved applications on school devices.

Dear Parents,

It is with a very heavy heart that I write to you this afternoon. Today I found some games that were not downloaded by me on the school iPads in our classroom. Two of them were games like Clash of Clans and Madden. In my classroom the children are not to download apps.

I have been blessed with a HUGE gift - the gift of technology in my classroom each day. I have been able to teach your child wonderful things like how to work in groups to communicate ideas or how to code. With great gifts come great responsibility.

Over half of my class has downloaded apps that are not welcome on their school iPad. I have deleted the apps. The children will not have recess next week. They will also not have any technology at all. No devices should be sent from home either. I have had close to 100 children on these devices before this class. This is

the first class to download apps that were not for school (L. Fromm, personal communication, March 2016).

Within the community of practice, the usage of technology as a tool was addressed daily. Students were provided with various technology tools to complete academic tasks. When completing these tasks student expectations were guided by the school behavioral expectations and the teacher expectations. To better understand the expectations of appropriate technology usage I utilized Ribble's elements of digital citizenship (2012, 2015) to code and then describe technology behaviors.

**Research Question Two: How are Elements of Digital Citizenship as Defined by Ribble (2012) Implemented by a Teacher Within a Classroom and After-school Club?**

When reviewing district, school, and classroom technology expectations, I noticed that the term digital citizenship was in the appropriate technology usage guidelines for Franks-Grove Independent School District. This term directly tied to my third research question, which focused on the ways digital citizenship as defined by Ribble (2012) was implemented within the classroom and after-school club. I learned about the various ways that digital citizenship was implemented by completing observations, working with students, interviewing Ms. Fromm, and coding transcriptions.

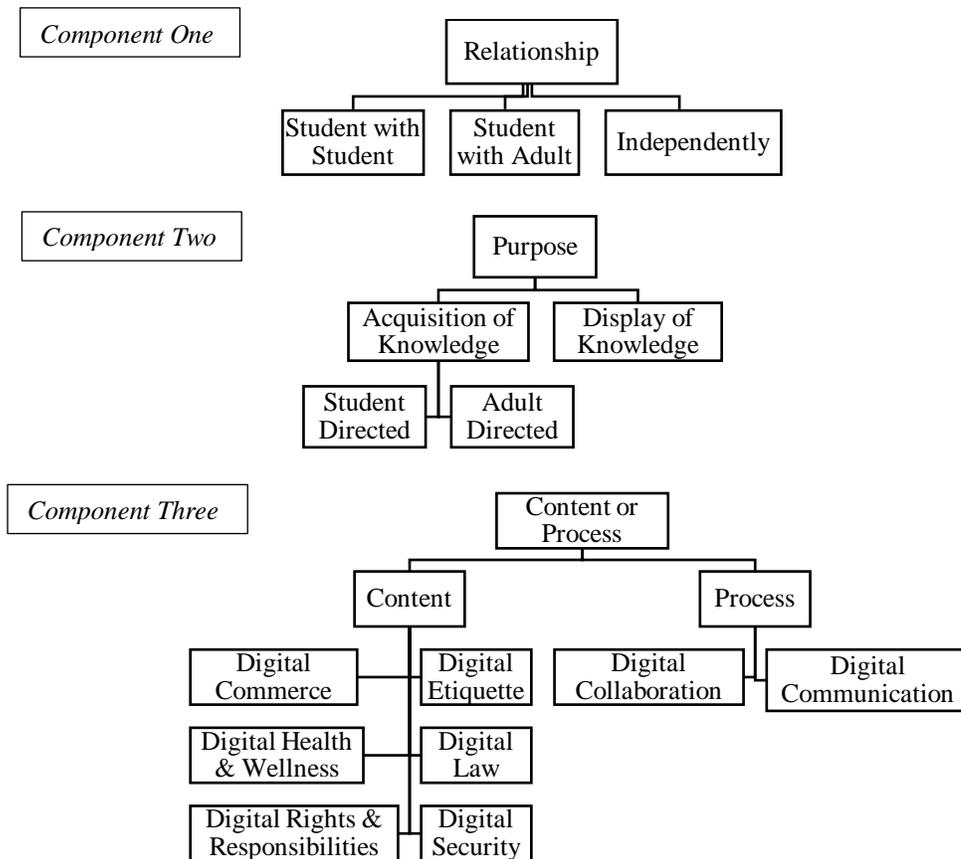
Digital access, or the ability to use a technology device, was abundant within Ms. Fromm's environments. She and the students had access to technology within the classroom including an iPad cart with 25 iPads that stayed in her classroom, a grade-level laptop cart with 25 laptops, a library laptop cart with 25 laptops, and two desktop computers in the classroom. Although the grade level and library laptop carts were

shared, Ms. Fromm's students had access to digital tools daily. The students in the after-school animation club used the school's computer lab with 24 desktops and the library laptop cart. Each animation club student was able to choose where he/she wanted to sit and if he/she wanted to work with a peer throughout the animation club experiences.

At the beginning of the school year, Ms. Fromm taught the students how to use the technology tools within the classroom and after-school club. This included how to gain access to the tool, how to turn it on/off, and what digital standards (discussed later in this section) were expected when using the tool. These "technology" lessons were necessary, as many students had not used the tools before or had used the tool for gaming and social purposes but not educational purposes. Once the basic usage of the technology tools was understood the use of these tools for expanding activities and learning occurred more frequently. The classroom and after-school communities' focus on learning and technology usage shifted as the school year progressed. I applied digital citizenship elements to code and describe the various interactions that occurred which helped me understand the shift in the participants' usage of technology from the beginning of the school year to the end of the school year.

When analyzing data, I realized that the digital citizenship element of digital access, the equitable ability to use technology, was demonstrated extensively within the classroom and after-school animation club. Since equitable access to technology was already established due to the number of technological tools and applications, I focused on the other digital citizenship elements that would be helpful to provide an extensive description of the community and the changes that occurred. After I coded data and

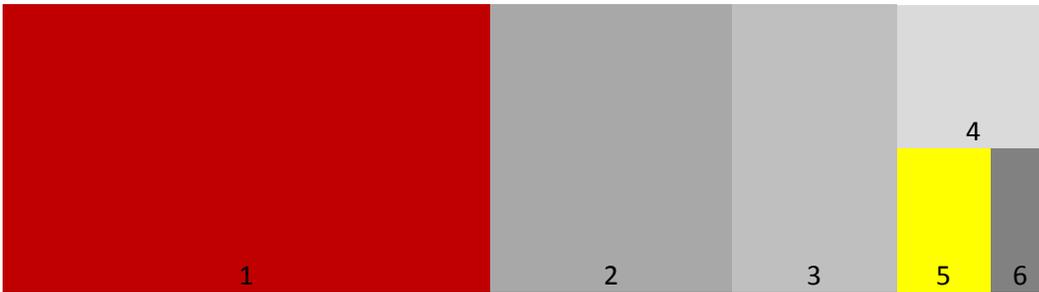
completed peer reviews, I realized that the original code of digital literacy, the learning and display of one's knowledge of technology usage, as defined by Ribble (2011, 2015) needed to be expanded. The expansion of digital literacy provided an effective way to define the display of digital knowledge that occurred within the classroom and after-school club environment. I then divided the digital citizenship element of digital literacy into a three-component relationship that allowed for a deeper understanding of how students displayed their knowledge through interactions with community participants. These components were (1) the participants, (2) the purpose of the interaction, and (3) the process and/or content of the interaction. Each component was then broken into smaller attributes to fully describe the digital citizenship interactions. The creation of this new digital literacy code was explained in detail in Chapter III. Figure 5 demonstrates the relationship between the three components and the smaller attributes of each component. Understanding how each of these digital literacy components were displayed within the communities provided a description of how the community functioned, evolved, and developed.



*Figure 5.* The three components of digital literacy and the smaller attributes of each component.

Each component of digital literacy, relationship, purpose of interaction, and content or process, were present throughout all types of data files to include small and large-group observations, audio recordings of small and large-group interactions within the classroom and after-school club, interviews, field notes, and contact summary sheets. The frequency that the content codes appeared varied and provided a picture of the various interactions that occurred within the classroom and after-school club. Figure 6 displays the various content codes with the larger portions of the image, showing the

codes that were found the most within the data collected. Each of these content codes have been defined at the beginning of this chapter and will be defined again prior to exemplars being presented in later portions of this chapter.



*Figure 6.* Nodes compared by number of items coded. 1. Digital security, 2. Digital etiquette, 3. Digital rights and responsibilities, 4. Digital law, 5. Digital commerce, 6. Digital health and wellness.

Digital security was the most prevalent content code, which included students’ conversations of digital security and discussions about securing the technology devices. A specific exemplar displaying digital security is provided in the Table 8 at the end of this section. Digital health and wellness was coded the least but was still important within the communities. The activities Ms. Fromm implemented demonstrate the importance of digital health and wellness, such as requiring the use of other tools so technology was not used all day.

At the beginning of the year interactions focused on how to work the technology tools. Sometimes students struggled with the mechanics of working the tools which was often blamed on the tool itself instead of the student’s lack of understanding. In the following exemplar, the element of digital literacy, the relationship of student to adult,

and the purpose to display knowledge, were shown when a student attempted to explain her understanding of the technology tool. This exemplar occurred during one small-group session when a student tried to explain to me why she was having trouble using the iPad.

Student 1: These iPads are old.

Researcher: Do you think that makes a difference?

Student 1: Probably. Like cause the older they get the more they get confused by like things.

This student did not realize her own lack of understanding on how to use the tool at the beginning of the school year. Furthermore, this student's display of digital literacy contained two components. First, she demonstrated a relationship between us, because I was someone to whom she could display her knowledge of the tool which was the purpose of the interaction. She did not however, display any specific process or digital citizenship context. However, as the school year progressed, I noticed a change and heard students implementing various components of digital citizenship when displaying digital literacy knowledge.

Table 8 contains excerpts of some of the verbal interactions that were recorded which demonstrates the various content elements of digital citizenship. These exemplars demonstrate how digital citizenship was implemented within the classroom and after-school club. The content elements include:

- digital commerce, which is an understanding of buying and selling items electronically;

- digital etiquette, which is the appropriate behaviors expected to be displayed when using technology;
- digital health and wellness, which focuses on the health and emotional wellness of technology users;
- digital law, which focuses on the laws that govern behaviors that occur when using technology;
- digital rights and responsibilities, which focus on the expected rights one has when using technology; and
- digital security, which focuses on the security of one's information and technology tools.

Table 8 also displays the digital citizenship process element of digital collaboration, which I created to describe the collaboration that occurred via technology between participants within the community. Additional information about the new element of digital collaboration was presented in Chapter III and will be addressed in Chapter V. Each exemplar displays the three components of digital literacy, (1) relationship, (2) purpose, and, (3) content or process. Table 8 shows exemplars that demonstrate how all three components of digital literacy assisted in understanding participant interactions focused on technology.

Table 8

*Exemplars of Digital Literacy-Relationships, Purpose, Content and Process*

Codes	Exemplar
<p>Digital literacy</p> <p>Relationship-student to Student</p> <p>Purpose- display of knowledge</p> <p>Content-digital commerce</p>	<p>Student 1: I'm trying to hide the ads.            Student 2: How do you do that? I don't like seeing them.            Student 1: It says it's 99 cents.            Student 2: Can we do that.            Student 1: No, no money.            Student 3: I have money.            Student 1: But not on here (<i>pointing to iPad</i>)</p>
<p>Digital literacy</p> <p>Relationship-student to student</p> <p>Purpose-acquisition of knowledge-student directed</p> <p>Content-digital etiquette</p>	<p>Student 1: How did you get that shape?            Student 2: I didn't get it, I made it.            Student 1: Oh. You made that?            Student 2: Yeah, I made that shape. I'm making a ninja.            Student 3: Oh yeah really that's not a Christmas theme.            (<i>The students were tasked with making an animated holiday card.</i>)            Student 1: I'm not trying to make it Christmasy. I really don't want to. I'm trying to make this an assassin movie. In this there is going to be blood everywhere on the ground.            Student 2: Dude, we're at school.            Student 1: Yup.            Student 2: You really think your allowed to do that in school?            Student 1: Yes.</p>
<p>Digital literacy</p> <p>Relationship-student to Adult</p> <p>Purpose-acquisition of knowledge-adult directed</p>	<p>Student 1: She has scary pictures on her page.            Ms. Fromm: What pictures do you have on your screen?            Student 2: It came from the page. It shows what happened to people.            Teacher: Where is your computer?            (<i>teacher and students walk to screen</i>)            Ms. Fromm: What is your topic?</p>

(continued)

<p>Content-digital health &amp; wellness</p>	<p>Student 2: Anne Frank  Ms. Fromm: Did you go to Britannica?  Student 2: No.  Ms. Fromm: You need to go to Britannica. The pictures there may not be so scary. But your topic is of an event that may have some pictures that some people think are scary.</p>
<p>Digital literacy</p> <p>Relationship-student to adult</p> <p>Purpose-acquisition of knowledge-adult directed</p> <p>Content-digital Law</p>	<p>Ms. Fromm: Why can't you draw Olaf?  Student 1: It's copyright.  Ms. Fromm: Yes, and what is copyright?  Student 1: It's a character that someone else already drew.</p>
<p>Digital literacy</p> <p>Relationship-student to Student</p> <p>Purpose-display of Knowledge</p> <p>Content-digital rights &amp; responsibilities</p>	<p>Student 1: Hand it over.  Student 2: Hold on. I have to sign off.  Student 1: No you don't. I can do it.  Student 2: But it's mine, so just wait. I don't want you getting in my doc.</p>
<p>Digital literacy</p> <p>Relationship-student to adult</p> <p>Purpose-acquisition of knowledge-adult directed</p> <p>Content-digital security</p>	<p>Ms. Fromm: Hey guys someone just asked why can't I just tell you guys what this is. Why can't I tell you what this is?  Student 1: Because it's a password.  Ms. Fromm: It's a username and password. So let me ask you a question. Should you share your password?  Several students: No!  Ms. Fromm: Why not? Raise your hand and tell me why not.  Student 2: Because someone could steal it.  Ms. Fromm: Steal what?  Student 3: Your stuff.</p>

(Continued)

Digital literacy	<i>(Student talking to two other students who are going to share a project)</i>
Relationship-student to student	Student 1: You can come on mine. Hold on. You can come on my project and help me and XXXX <i>(student's name)</i> . Hey XXXX <i>(student's name)</i> share it and we can all work together on it. He is going to share his and then we can all work together.
Purpose-display of knowledge	Student 3: I'm going to join his and work there?
Process-digital collaboration	Student 2: Yeah, just wait. It should be popping up anytime now. So go to "hey student." That's what it's called. Now push yes you want to join. <i>(Student explaining to other student how to join project)</i> Student 3: Okay, I'm going to work on the birthday cake. Student 1: Go to another page and do that. We can work on different pages.

I did not observe the process element of digital communication completed by the students within the classroom or after-school club. I observed Ms. Fromm sending emails to parents to communicate about classroom activities, school events, and the curricular activities that were occurring. Parents could email Ms. Fromm, and digital communication between the teacher and parent occurred. In addition, Ms. Fromm also posted pictures with captions on social media sites such as Twitter and Instagram. These pictures displayed students in different curricular activities working together, individually, and with classroom visitors. Parent followers could comment on the pictures, and communication occurred between the parents and Ms. Fromm via Twitter or Instagram. I expected to see the digital communication element implemented within the classroom when students posted pictures and captions of their interactions, activities, and learning on social media sites with the teacher's permission. Then students would respond to comments made on these social media posts and demonstrate digital

communication. I expected students to participate in this type of digital communication, as Ms. Fromm told me during an interview that she had student jobs called Instabugs. The job of an Instabug was to take pictures of learning experiences and update the social media for the class, under the supervision of Ms. Fromm. However, the social media sites that Ms. Fromm used were updated by her and not the students within the community. During an interview, I asked Ms. Fromm why the students were not communicating digitally via the social media sites, and she stated the following:

With this particular group, they're having so much trouble socially handling an iPad. To them and telling them to go take pictures, I end up with hundreds of them in just the gym. It's over taking their learning. As before I got to talk to those kids and say this is just to document. You might take 4 in a class. Make sure it is, it, make sure this is how you want to tell your parents. Well you don't take a 100 and you're not taking selfies in October. Maybe September. We're just not there, and I don't know if it's a maturity thing or what, I mean they're third-grade. I don't know if it's a shift in society (L. From, personal communication December 2015).

Although the element of digital communication by the students was not observed, I did observe the students demonstrating an understanding and application of the other elements of digital citizenship. I noted in observations, field notes, and contact summary sheets the elements of digital citizenship that were displayed via verbal communications. The use of the digital citizenship elements provided a framework for students to understand behavioral expectations when using technology. Furthermore, the digital

citizenship elements assisted students in providing a framework in which to guide their learning and shared experiences. The connection and influence of the community of practice aspects (Wenger, 2001) in conjunction with the digital citizenship elements (Ribble, 2011, 2015) was essential in understanding the classroom and after-school club environments.

**Research Question Three: In what ways does Technology Usage Within the Classroom and School Club Extend Students' Learning and Relate to the Technology TEKS (Texas Education Agency, 2012)?**

Prior to conducting research, I wanted to focus on how the community participants, teacher, and students used the shared knowledge acquired outside of the community of practice. However, I was unable to observe how the students used the shared knowledge of technology usage outside of the classroom or the animation club. I was able to view occurrences of the teacher permitting and encouraging the students to use the technology in new ways other than original/initial purpose. I was still able to observe how technology usage within the classroom and school club extend students' learning, which was my last research question. Once I completed observations, interviews, and assisted within the communities of practice, I learned that technology tools were used as a way for students to practice math, English/reading, and creativity skills. In addition, the students also increased other skills while using the technology tools. Understanding how the technology usage and community interactions extended a participant's learning and ability to use technology in new ways to further learning was crucial in evaluating the importance of the community or practice interactions. For

example, when asked why she allowed collaboration, discussions, and asked probing questions so often within her classroom and after-school club Ms. Fromm responded,

They have to see what's in the question that they know. If they don't know to look back, if somebody is always telling them, "Oh the link is nine." then they're going to trust it. They're not going to tell you you're wrong. Trust me. But if you have them go back, "What do we know?", it's right there. They just have to get in the habit of, "Okay- I already know this, so if I know this, what comes next?"

(L. Fromm, personal communication, February 2016).

Ms. Fromm's view on teaching demonstrates her ability and desire to connect learning of academic skills with additional technology skills that required critical thinking and problem solving skills. The use of technology was such an integral part of Ms. Fromm's teaching practices that the connection of technology usage and community of practice were viewed within the same interactions on numerous occasions. Since Ms. Fromm wanted to expand the development of all her students in academic skills, social skills, and technological skills, I viewed the overlapping of coding between the three community of practice elements (i.e. participants, development of community, and extending of learning) and digital citizenship elements. Figure 7 shows the number of times that a technology element from digital citizenship and a community of practice component was observed within the same exemplars within the classroom and after-school club transcriptions, observations, and interviews. The largest number of codes overlapping occurred with digital literacy (acquisition of knowledge) and community development. This was observed due to the classroom design, teacher's pedagogy, and

the high number of group activities that occurred with the goal of increasing students' understanding of material through the use of support from other classroom/community members.

	Connection to world	Community Development	Participation
Digital Literacy- Display of Knowledge	3	10	6
Digital Literacy-Acquisition of Knowledge	0	34	33
Digital Commerce	0	1	0
Digital Etiquette	1	11	1
Digital Health & Wellness	1	0	0
Digital Law	0	0	0
Digital Rights & Responsibilities	1	3	1
Digital Security	1	9	2

*Figure 7. Convergence of digital citizenship codes and community of practice codes.*

One way that I collected data to understand how the community of practice influenced technology usage was to ask questions when I worked with the students. Since the majority of my interactions with the students focused on strengthening academic skills, I focused my questions about technology usage on how it assisted with the academic tasks. The students' responses showed me how they were learning to use the various programs, through trial and error and with peer assistance to figure out what program worked best for them. The students were in a small-group and heard their peers' responses, which also assisted the students in learning more about a program. Table 9 shows an exemplar that demonstrates how each student viewed the technology usage differently and how a peer's opinion on which program to use to solve a math problem influenced individual choices. This exemplar influenced the display of active participant

learning and the influence of peers to expand the shared learning experiences within the community of practice when using technology.

Table 9

*Exemplar of Participants Influencing Community Technology Usage*

Code	Exemplar
<p>Community participation</p> <p>Influencing digital literacy-display of knowledge</p>	<p>Student 1: ScreenChomp is actually better because it's actually built for math and Doodlebuddy is built for like play and drawing and stuff.</p> <p>Researcher: Oh okay.</p> <p>Student 1: It's just better.</p> <p>Researcher to Student 2: You like that one better?</p> <p>Student 2: Yeah.</p> <p>Researcher: Well you know with math the way you solve the problem depends. So like if you have to draw something then maybe that's why she likes that one.</p> <p>Student 1: Yeah, but on this one you can do whatever you want (<i>referring to ScreenChomp application</i>).</p> <p>Researcher: So you can still draw and do things on that one?</p> <p>Student 1: Yeah, and like you can scan a, scan a math question and it will pop up as your background. So like you can read it as you go.</p> <p>Researcher: Wait, say that again.</p> <p>Student 1: So like if I go here (<i>student showing how to do action on iPad</i>) and go take photo. And if I like scan a, like if I do this and let it focus on there. Use photo, then done. Then it will pop up in the back and I can scroll, and I can read it.</p> <p>Researcher: Okay, so you can work the problem out there.</p> <p>Student 1: Yeah, and I can draw.</p> <p>Student 2: There's more paper.</p> <p>Researcher: So you're saying there's more paper because you can scroll down and up on the screen.</p> <p>(<i>At this point student switches from Doodlebuddy to ScreenChomp.</i>)</p> <p>Researcher: You can keep the other one; you don't have to switch programs.</p> <p>Student 3: Yeah, I just want to record; you can record on this one too.</p>

(continued)

	<p>Student 1: Yeah, you can record yourself making like... If you need to prove something for Ms. Fromm you can 3,2,1, (<i>pushes record button</i>).</p> <p>Student 2: And what I like about this one, too, is that you can change and erase.</p> <p>Researcher: You can erase it easier? Well it definitely sounds like you guys have an idea on which program you like, so let's try some of the problems and see how it works.</p>
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Furthermore, to facilitate the collaborative classroom environment, the teacher created classroom jobs, which gave each student a purpose within the community. She also reminded the students to go to their peers for assistance when needed, especially when adults were working with other students in small-groups. The students valued their individual jobs and were aware of how their jobs helped their peers, the adults in the classroom, and the community as a whole. When asked about their jobs the students freely and excitedly told me about their job responsibilities. Table 10 displays exemplars of students discussing the importance of their classroom jobs.

Table 10

*Importance of Student Jobs as Told by Students*

Code	Exemplar
<p>Community participation</p> <p>Influencing digital literacy- display of knowledge</p>	<p>Researcher: Do you like being an Apple Tech?</p> <p>Student 1: Yes.</p> <p>Me: Why?</p> <p>Student 1: Because I like to fix stuff.</p> <p>Researcher: That's nice. What kind of things do you fix?</p> <p>Student 1: Uh, iPads and computers.</p> <p>Researcher: Like what kind of things? What kind of problems do people have?</p> <p>Student 1: If there's like, if there's like frozen, I can fix it.</p>

(continued)

<p>Community participation</p> <p>Influencing digital literacy- display of knowledge</p>	<p>Researcher: Do you have a job in here?  Student 2: Uhm, yes I'm an Instabug.  Researcher: And what do you do?  Student 2: I uhum, when there are pictures, I take pictures of what we do.  Researcher: That sounds like fun.  Student 2: Yeah.</p>
<p>Community participation</p> <p>Influencing digital literacy- display of knowledge</p>	<p>Researcher: And do you have a job?  Student 3: Yeah, paper passer and Ms. Clean.  Researcher: And what kind of things do you do?  Student 3: Uhm, I sharpen the pencils when people need them and when Ms. Fromm needs us to go pass out papers me and XXXX (<i>another student's name</i>) will go pass out the papers. And me and XXXX (<i>another student's name</i>) job is to make sure all the lockers are shut and make sure everything is picked up.  Researcher: Oh, okay. Do you have to tell a lot of people to clean up their stuff?  Student 3: No. (<i>Shakes head no.</i>)  Researcher: No, they're pretty good at that. That's good. Makes it a little easier, right?  Student 3: Yeah!  Researcher: Do you help make sure the iPads are put away?  Student 3: Yeah, sometimes.</p>

I also noted the connection between the community of practice and technology in the after-school animation club. As a volunteer and researcher within the after-school club, I was expected to encourage students to work together to achieve a specific task instead of being the person that students sought answers from. Several times during my volunteering and data collection, especially at the beginning of the year, students asked me questions. I then scaffolded the interactions between students as a way to encourage students to help one another instead of me giving the answers. This allowed students to influence each other's learning and also influenced the community development as a

whole. Table 11 depicts conversation exemplars which occurred in the beginning of the animation club when I encouraged peer interactions as a way for the animation club community to develop.

Table 11

*Development of Community- Display of Knowledge Sought by Adult to Assist Peer*

Code	Exemplar
<p>Development of community</p> <p>Changes in technology usage when students displaying digital literacy-display of knowledge</p>	<p>Researcher: Can you show him how to put the music in?            Student 1: Go to this. Here.            Researcher: Go ahead and save it XXXX (<i>student's name</i>) before you make the changes. So tell him how to do it. Don't just do it.            Student 1: Okay, I'm going to sounds. Okay, it's not letting me go to sounds. Aahhh (<i>clicking buttons</i>) Okay, here we go. Uhum, music. And then whatever you want, you click on it and hold.            Researcher: Is it going through the headphones?            Student 1: Yes. And then if you're going to stop something, press this. And if you want to put it down there so you listen to it, press this arrow, okay?            Student 2: Yeah.            Student 1: If you have questions, go look for me.            Researcher: When he pushes the arrow which slide is it going to go to?            Student 1: This one. It's going to go beneath what he selected.            Researcher: He selected the first one so it's going to go under the first one?            Student 1: Yeah.</p>

The transcriptions of audio recordings of students working independently captured students assisting each other with computer tasks such as using new drawing formats within the animation program. As the school year progressed student to student microsystem interactions enabled the students to guide their own learning and make necessary shifts as needed to complete the assigned tasks. Although the assigned tasks changed depending on the club activity, students were always encouraged to verbally

assist each other and to verbally explain what steps needed to be taken. The teacher frequently explained that in order for everyone to learn from each other, verbal explanations of one's actions needed to occur, and this also allowed self-regulation of one's actions. Table 12 displays an exemplar that demonstrates how students became accustomed to verbally representing their actions, learning, and assisting peers, without adult prompts, to further the development of others within the community.

Table 12

*Development of Community Display of Knowledge to Assist Peer Without Adult*

*Prompting*

Code	Exemplar
Development of community	Student 1: Dude how did you do that? XXXX ( <i>student's name</i> ), how did you make his belly round? Student 2: That's not his belly that's his back.
Changes in technology usage when students displaying digital literacy- display of knowledge	Student 1: How did you make his back round? How did you do that? Student 2: I pushed little stubble button. Student 1: Like this? Student 2: No, no push the stubble button. There. Student 1: Wow. Student 2: Yeah.

Muis et al. (2016) and Paolini (2015) present research that demonstrate the importance of critical thinking in students. Ms. Fromm encouraged critical thinking by allowing students' inquiry to guide their learning and purposely allowed a student, or group of students, to "struggle" a little in order to use the strategies they had previously learned to figure out an answer. During this "struggle," Ms. Fromm encouraged the students to think about what they knew, what strategies they knew, then create a plan, and

follow through. She encouraged the use of metacognition whenever faced with challenges. She stated that getting the right answer is important but the process is just as important for a student to figure out how to find the answer. Ms. Fromm believed her job was not only to teach new information, but also to provide the students with the confidence and skills needed to figure out an answer in various ways. I heard the following exemplar on an audio recording, while I transcribed students' speech from a small-group activity using technology, which demonstrates a student verbally working through the steps needed to accomplish a task. This process of thinking aloud demonstrated the application of metacognition skills that Ms. Fromm encouraged the students to practice within the communities or practice. She promoted these techniques within the community whenever a technology or academic challenge occurred in order to develop the use of skills in novel ways.

*(Student verbally talking to himself.)*

Dude, I'm going to group this whole thing.

Now I'm going to take the whole thing to group.

No- I want you to move, I want you to move. *(Talking to computer.)*

No not that.

Okay fine, delete and now this.

I viewed the extension of student learning within classroom and after-school animation club through the lenses of community practice and digital citizenship to exemplify the extension of learning when using technology. I also connected Ms. Fromm's technology implementation with the Texas Technology TEKS (2012) since these state guidelines regulate the academic learning that should occur within all public schools in Texas when

technology is used. Texas Technology TEKS (Texas Education Agency, 2012) require teachers to use technology with the intent for students to create, collaborate, and be creative with technology usage. Six technology standards are expected to be practiced with students in grades three through five when using technology within schools (Texas Education Agency, 2012).

The first of the Texas Technology TEKS standards requires a student to display creativity and innovation when using technology (Texas Education Agency, 2012). Ms. Fromm allowed the students to be creative and make decisions on how to display learning when not using technology, and this practice was the same when using the technology. One of the first creative uses of technology as a whole class occurred when the students created a book trailer for a book that the entire class read. When creating the trailer, the students and teacher discussed the technology tool that would be used, the process of creating the trailer, and even what type of skills needed to be displayed by the speakers. The exemplar below is an excerpt from Ms. Fromm's parent email explaining the project, the program used, and how the students were being creative with technology to complete the project.

This week we are making book trailers with iMovie in class. Your child picked the group they wanted to be in. They got to pick a book that the class has read and they are planning to tell just a little bit of the story so that other children would want to read their books.

I am allowing the students to bring in props on Wednesday and Thursday for their filming on Thursday. I have encouraged them NOT to buy things. They should

use props and things they ALREADY have (L. Fromm, personal communication, November 2015).

Students worked collaboratively to present interesting information on books that the class read as a way to entice other students to read these books. The collaborative work with peers did not end with using technology to create book trailers. Ms. Fromm also allowed students to work collaboratively on stories and cards within the classroom using Google Drive to share projects, edit, and collaborate. Furthermore, in the animation club students were encouraged by both the teacher and each other to use the various functions on the program to create their own unique characters. The exemplars in Table 13 provide student language samples demonstrating the creativity and innovation that was encouraged to extend students' learning within the classroom and after-school club.

Table 13

*Student Demonstration of Creativity and Innovation With Technology*

Code	Exemplar
Texas Technology TEKS One Creativity and innovation with technology	Student 1: Can you help me? Can somebody help me because I want to make my mom a card? Student 2: Ah, nope. Student 3: Just go there and finish it. Push sketch. Student 1: XXXX ( <i>student one's name</i> ) can you help me? Where do you find the heart shape pictures and designs? I want to make my mom a card. Student 3: You open up that ( <i>pointing to screen</i> ), and then you can put it in the card.
Texas Technology TEKS One Creativity and innovation with technology	Student 1: Do you want to see what I've done so far? Student 2: Yes. Oh that's cute. Is that a fish? Did you make it? Student 1: Yeah, I made it with pencil and the colors! Student 2: Wow that's cute.

Within the animation club students worked collaboratively, selecting appropriate methods to create animations, deciding if the animation met the task expectations and discussing and assisting each other with editing needs as they arose. The first exemplar in Table 14 demonstrates how the students worked collaboratively and fulfilled the second Texas Technology TEKS of communicating and collaborating to display an understanding of how to use the functions of the technology application (Texas Education Agency, 2012).

Students within the classroom and after-school club were also expected to use various functions of the technology applications that were available on the technology tools being used. This included learning the best ways to accomplish a task and knowing which application to use given the specific academic task. The students were expected to know how to complete application functions independently, such as saving documents, modifying text type, modifying colors, inserting pictures, and formatting pages.

Sometimes students would share technology tools or needed to remember how to create individual folders to save their files, and remember to login and logout of programs/applications using their usernames and passwords. The second and third language exemplars in Table 14 demonstrate the students' knowledge of the technology tools functions that were used within the classroom and their ability to maneuverer through the application and seek assistance when needed.

Table 14

*Student Use of Technology Application Functions*

Code	Exemplar
<p>Texas Technology TEKS Two</p> <p>Demonstrate knowledge of functions of application</p>	<p><i>(Students speaking about moving part of a picture)</i></p> <p>Student 1: XXX <i>(student's name)</i> how do you do it when you put this in front of it?</p> <p>Student 2: Oh, you go to file, options, options, and send to back.</p> <p>Student 1: This isn't working.</p> <p>Student 2: You have to take another picture.</p> <p>Student 1: It won't work. Are you an Apple Tech? <i>(Apple Tech is a student job with the responsibility to assist peers with technical support as needed.)</i></p> <p>Student 2: No, but I can still do it and help. You just have to clear it and then take the picture again.</p>
<p>Texas Technology TEKS Two</p> <p>Demonstrate knowledge of functions of application</p>	<p>Student 1: How did you find the images?</p> <p>Student 2: I went here and did search.</p> <p>Student 1: Wait, what?</p> <p>Student 2: Go to the top. There, click on search.</p> <p>Student 1: Oh yeah. Okay so I put what I want right?</p> <p>Student 2: Yeah put the name.</p>
<p>Texas Technology TEKS Two</p> <p>Demonstrate knowledge of functions of application</p>	<p>Student 1: How do you log out?</p> <p>Student 2: I don't know; where are you?</p> <p>Student 1: Google.</p> <p>Student 2: Go here.</p> <p>Student 3: It's time to go.</p> <p>Student 1: I can't log out yet.</p> <p>Student 2: Go to the top and click it to log out.</p> <p>Student 3: Just close it and log out when we come back.</p>

The importance of collaboration was evident in most of the technology activities implemented in the classroom and after-school club. Ms. Fromm created learning

opportunities that not only addressed a specific skill, but also lent itself to teachable moments. One such teachable moment occurred when students created an animation focused on an important person, or event that somehow related to justice, injustice, equality, or freedom. Students were tasked with learning about their chosen person or event. Ms. Fromm provided paperback books on each person and/or event and also assisted the students in researching their chosen topic by using the school’s online library resources.

Ms. Fromm and students first discussed what online sources would be appropriate for researching their topics, and next, they evaluated possible sources, which is the focus of the third Texas Technology TEKS (Texas Education Agency, 2012). Students provided examples such as Google, Bing, and Wikipedia. Ms. Fromm explained how the library had access to Britannica resources that were school-approved and safe for the students to use.

Table 15

*Evaluating of Digital Sources*

Code	Exemplar
Texas Technology TEKS Three  Evaluating digital sources	Ms. Fromm: What sources do you have to get information? Multiple Students: Google, library, you. Ms. Fromm: For this you are going to use the library site to get Britannica. I’m going to show you how. Student 1: I’ve used Britannica before. Ms. Fromm: Good. Then you’ll know what to do. What do you see about this information here?

(continued)

	<p>Multiple Students: Different schools, different titles.</p> <p>Ms. Fromm: This information is separated into categories, elementary, middle school, and high school. I want you to start in elementary. Why do I want you to start in elementary?</p> <p>Student 2: That's where we are.</p> <p>Ms. Fromm: Yes, and the words get harder and smaller. See (<i>Changing to different information based on the school level.</i>) If you need more information you can go to middle. High school isn't bad, but it may have things you don't know. So stick to your books and elementary and middle school.</p>
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The importance of school-approved resources was addressed, which was another way Ms. Fromm took advantage of a teachable moment with the students. While walking through the steps to access the Britannica information, Ms. Fromm came across a picture of several students in the animation club presenting their animations to the Franks-Grove school board. One student commented that the caption under the picture was incorrect. Ms. Fromm then had the conversation in Table 16 with the students. During this conversation, Ms. Fromm and the students discussed what information they needed to think about while evaluating the validity of the source and the caption of the picture displayed on the school website.

Table 16

*Evaluating Digital Information on School Website*

Code	Exemplar
Texas Technology TEKS Three  Evaluating digital sources	Ms. Fromm: That’s interesting. It should also tell you that not all that you see in print is true. You gotta evaluate and think is that true. Hey just by looking at this and knowing your Watt, if it says third-grade does that even look true? Students: No. Ms. Fromm: What would you look for, for Watt third-grade? Student 1: I would look for, it says W and a number. Ms. Fromm: What color shirt? Multiple Students: Red. Ms. Fromm: Red. So if you just look at that and you look at Watt power shirts- third-grade is red, I don’t see red. That’s probably not Watt third-grade. So that’s a good way to evaluate it.

The teacher helped the students decide on ways they could evaluate the truthfulness of the caption for the picture provided. In this case, the shirt had a different grade number on it than what was provided in the caption and the color of the shirt was not the correct color for the third-grade students at the school. This conversation, along with the discussion of using appropriate sources, are just two ways that Ms. Fromm addressed the third Texas Technology TEKS which is focused on students learning how to evaluate digital content (Texas Education Agency, 2012).

The fourth Technology TEKS requires the application of “critical thinking, problem solving, and decision making” (Texas Education Agency, 2012). For this TEKS, students using a digital tool are expected to identify a problem situation, evaluate, the steps necessary to achieve the task, and then evaluate the completion of the task. Ms. Fromm provided numerous critical thinking tasks within her classroom. One task that the

students seemed to enjoy most was the coding exercises that they completed using different coding sites. The classroom earned coding time by earning high scores on assignments/tests and by displaying appropriate behaviors when outside of the classroom and for other activities. Once a specific number of points was earned, the students were allowed to use the laptops for coding during one of the small-group rotations. Students each had their own laptops, but collaboration and assisting their peers was encouraged and expected. When I asked Ms. Fromm how coding applied to academic skills needed, she replied, “It’s thinking in steps. It’s logically going from one place to another.” The exemplar below is from an excerpt of a conversation between three students who are assisting each other with coding. The use of critical thinking skills is evident in their speech and discussion of the steps needed to write code to make a character move.

Student 1: I need to take some steps here. She is making me get out of bed.

Student 2: You get out of bed and then you can walk into the room.

Student 1: How do I do that?

Student 3: Yeah just do this. Look and do this. Go downstairs, find kitchen, go to right. Open the door. Get cereal.

Student 2: I said- Get bowl, get cereal, put bowl down, put cereal in bowl, get milk, put milk in cereal, put bowl on table, get spoon, sit down and eat.

Student 1: That’s a lot of steps!

Through the coding process students had to think about the steps necessary to achieve an action, and they became aware that assumptions could not be made. The character would only do what the line of code told it to do. Students had to demonstrate an understanding

of the steps necessary to complete a task and had to recognize the importance of the smaller steps that make up a larger action.

The fifth Technology TEKS (Texas Education Agency, 2012) connects with digital citizenship elements. Specifically, within the TEKS the elements of digital etiquette, digital law, and digital security are addressed. Previous examples of students applying the practices of digital etiquette were presented in this chapter, and so I will focus on how Ms. Fromm implemented technology activities that addressed multiple learning tasks including applying the skills of digital law and digital security.

Students within both the classroom and after-school club became aware of their own rights when using technology via Ms. Fromm's reminders that their work is something they should be proud of because they created it. Consequently, students were encouraged to think about what motivated them and then take that interest to create their own product. The use of copyrighted material was discouraged whenever possible. Ms. Fromm taught the students how to draw unique characters when creating animations and encouraged students not to use the clip art that was provided within the program. Furthermore, students were encouraged to take inspiration from other animations, films, and pictures but not copy them. This teaching was made evident when listening to students' conversation about characters that were being created. Table 17 displays an example of such a conversation.

In the first exemplar in Table 17, one student was starting to create a character that was copied from a Disney/Pixar movie character, but a peer encouraged them to create something else so that the character was not copyrighted. This interaction

demonstrates an understanding of digital law by displaying an understanding of copyright regulations. Finally, by using the word “copyright” in the right contextual situation, the students also demonstrated a shared understanding of the term by all the participants within the conversation.

Ms. Fromm addressed digital security, in both the classroom and after-school club by encouraging students to regulate their own behaviors when getting technology tools and being responsible for putting the tools back in the charging stations. Furthermore, students were given passcodes for accessing various technology programs, to complete academic work within the classroom. These passcodes were available to the teacher and Apple Techs who assisted their peers with technology issues. Furthermore, when digitally collaborating, Ms. Fromm taught students about locations where work could be saved without the sharing of passwords. In the exemplar below, students discussed how to collaborate digitally while still following the guidelines of digital security.

Table 17

*Texas Technology TEKS Display of Digital Citizenship Through Digital Law and Digital Security*

Code	Exemplar
Texas Technology TEKS Five  Digital citizenship-digital law	Student 1: No, don't make it Joy, because that's copyright. Student 2: Do it. Student 3: Do what? Student 2: Make Joy. Student 3: Is that from a TV show? Student 1: From Inside Out. It's Joy. So we can't do it.

(continued)

<p>Texas Technology TEKS Five</p> <p>Digital citizenship- digital law</p>	<p>Student 1: What's your lunch number?  Student 2: Why?  Student 1: So I can share it.  Student 2: Just put it there.  (referring to folder in Google Drive)  Student 1: Just tell me your lunch number.  Student 2: No, that's my password just put it there.  XXXX (<i>teacher's name</i>) said to put in there not to  share numbers.  Student 1: Oh.  Student 2: Did you finish it?  Student 1: Just tell me what the password is.  Student 2: No. I'm not going to do it if you don't put it  there.  Student 1: Okay fine.</p>
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The final Technology TEKS focuses on the appropriate use of technology tools, including the ability to manipulate the various programs and files, troubleshooting problems with the technology, and using resources to assist with these processes as needed (Texas Education Agency, 2012). Ms. Fromm exemplified this Technology TEKS in many ways in the classroom and after-school club. First, with the creation of Apple Techs within the classroom, Ms. Fromm provided resources for students who needed assistance with maneuvering through programs, applications, and the technology tool. In addition, one of Ms. Fromm's technology guidelines within both environments encouraged students first to try to figure out why a problem occurred, then if needed, seek assistance from peers. Through interactions within the classroom and after-school club students thought critically about problems and attempted to resolve their technology challenges, exhibiting Ms. Fromm's guidance.

Table 18

*Students Trouble Shoot Technical Problems*

Code	Exemplar
<p>Texas Technology TEKS 6</p> <p>Troubleshoot technical problems</p>	<p>Student 1: She can't move this. Uhum. Just insert this and then type the text again.</p> <p>Student 2: Wait try to move it out where you want it to be. Oh, that's going to be a problem.</p> <p>Student 3: Yeah.</p> <p>Student 2: Can you try moving your character? And just keeping that there but moving your character to another place?</p> <p>Student 3: I'm trying to.</p> <p>Student 2: Okay, so apparently, you can't move anything. Try saving your progress.</p> <p>Student 1: Try saving the project and then exiting out of it and then we will go back in it. <i>(No students talking but can hear clicking of the mouse.)</i></p> <p>Student 2: Okay, see if you can move that circle that's on it</p> <p><i>(More clicking on the mouse.)</i></p> <p>Student 1: I can see it.</p> <p>Student 3: I can't move it.</p> <p>Student 2: Whatcha thinking?</p> <p>Student 1: Yeah, I'm thinking we're not going to help her out a lot.</p> <p><i>(More clicking of mouse.)</i></p> <p>Student 1: Any second now.</p>

**Summary**

This chapter presented research findings from an ethnographic case study of a third-grade teacher's classroom and the after-school animation club community that she created. My overarching research goal and question focused on learning about the inquiry-based digital communities that were created to encourage learning through the use of technology. I collected data to answer three specific research questions that allowed me

to answer my overarching question and research goal. The use of Wenger's (2001) three aspects of communities of practice which were community participation, development of community, and the extension of learning helped me to frame my ethnographic case study research findings. Additionally, since both the classroom and after-school animation club utilized technology as a learning tool, I also used Ribble's (2011, 2015) digital citizenship elements to describe the activities, interactions, and community development. These elements included digital access, digital literacy, digital commerce, digital etiquette, digital health and wellness, digital law, digital rights and responsibilities, and digital security.

The dissertation research results first presented characteristics of the teacher's pedagogical beliefs and teaching practices that lent created an environment of inquiry. Next, I discussed how the aspects of community of practice occurred within the classroom through interactions from students to students and students to adults. Through these interactions the communities developed and changed throughout the months of data collection. Furthermore, I gave exemplars and descriptions of the interactions that influenced participants' understanding of the academic and technological materials within the communities. Next, I answered the research question about how digital citizenship elements were demonstrated within the classroom by procuring samples of student language and conversations that demonstrate an application and understanding of each of the digital citizenship elements. I then illustrated how the community of practice aspects furthered activities that incorporated technology usage within the environments. Furthermore, by describing the shifts in interactions and the display of the elements of

digital citizenship. I provided a thorough description of the growth and participant development that occurred within the community due to interactions between participants. Finally, I exemplified the ways that technology usage extended students' learning with the Texas Technology TEKS (Texas Education Agency, 2012). Again, exemplars of activities and language samples were used to provide specific examples of data collection results.

In the next chapter, I will synthesize my research findings by making connections between my research results and current research literature. I will expand on the research findings, discuss the themes found within research findings, and provide a comprehensive description of the practices that made Ms. Fromm's digital communities of practice unique. Moreover, based on my synthesis and research discussion, I will suggest practices that teachers can implement when using technology within the classroom. I will also provide recommendations on safeguards that should be implemented and discuss the importance of collaboration when using technology. Lastly, I will provide recommendations for future research on technology usage with elementary school students.

## CHAPTER V

### DISCUSSION AND IMPLICATIONS

Another way of empowering learners is through establishing a community of learners, to enable students not only to learn from the tutor, but also for students to learn from each other. In a collaborative learning environment students not only engage in their own learning, but also assist their team members to learn. Teaching fellow students is a powerful learning tool (Lane, 2015).

I completed an ethnographic case study to exemplify and illustrate the teaching practices and interactions that occurred within a classroom and after-school club that represented a community of practice. The students within the classroom were in third-grade, whereas the students in the after-school club were in third through fifth grade. As a participant observer, I volunteered and collected data in the classroom for approximately five months and in the after-school club for approximately seven months. In this chapter, I present a synthesized discussion of findings connected with current literature, suggested teaching strategies, recommendations on technology safeguards, and future research.

#### **Research Questions**

The goal of this ethnographic research study was to portray and depict the unique teaching practices and interactions within the classroom and after-school animation club.

The overarching research question was:

In what ways does the teacher create an inquiry-based culture through the use of technology in a classroom and after-school club?

More specific research questions were asked to ensure that a comprehensive description of the communities occurred. The specific research questions were:

1. How are components of the community of practice framework (Wenger, 2001) implemented by a teacher within the classroom and after-school club?
2. How are elements of digital citizenship as defined by Ribble (2012) implemented by a teacher within the classroom and after-school club?
3. In what ways does technology usage within the classroom and school club extend students' learning and relate to the Technology TEKS (Texas Education Agency, 2012)?

Three theoretical lenses were used to code the collected data. These theories were Wenger's community of practice (2001), Bronfenbrenner's bioecological theory (1994), and Ribble's digital citizenship (2011, 2015).

### **Theoretical Lenses**

The community of practice theory as defined by Wenger (2001) was used to describe and exemplify the interactions that occurred between the participants, who were the students, teacher, and researcher. Three aspects of the community of practices were the focus of this study. The first aspect was the community participants and contributions that each participant made to the shared knowledge of the communities. The second aspect was how the community of practice developed and changed over time. I documented these changes to illustrate the growth that occurred within the communities. The reasons influencing the development of the communities were also acknowledged as

a way to explain why changes occurred within the community. Finally, I observed and documented how the third aspect, community knowledge was being used in novel ways. In addition, I adopted Bronfenbrenner's bioecological theory (1994) to further describe the interactions that occurred between the participants within the communities. I documented and described how the interactions between students and peers and students with an adult (the teacher or researcher) occurred on the microsystem level. The microsystem interactions illuminate how the relationship between the community participants influenced the acquisition and display of knowledge within the communities of practice. I also employed the elements of digital citizenship to document and explain technology usage within the communities.

Ribble (2012, 2015) defined the behaviors that should be displayed when using technology as elements of digital citizenship. The element digital literacy was defined as the students' display of his/her knowledge or understanding of a technology tool. By expanding on this element, I addressed three additional components to fully describe the practices and interactions within the communities. The three components were:

- the relationship between the participants,
- the purpose of the interaction, and
- the content or process that occurred within the interaction.

In order to present the equality of each participant's contribution to the community, it was first necessary to understand the microsystem relationship between the participants in the interaction. The possible relationships were (1) student to student, (2) student to adult, or (3) a student displaying his/her digital literacy independently. After I

understood the first component, I could describe the purpose of the interaction which aimed either to (1) acquire knowledge or (2) display knowledge. Finally, I determined the content or process of the digital literacy interaction. The content components describe the topic of the digital literacy interactions. These components included:

- digital commerce, the buying and selling of items digitally;
- digital etiquette, the expected behavioral standards students should demonstrate when using digital tools;
- digital health and wellness, the importance of the technology users physical and mental wellness;
- digital law, the laws that needed to be followed within a digital environment;
- digital rights and responsibilities, the expectations that digital users expected when using technology; and
- digital security, the securing of digital creations, information, and devices.

Sometimes the content of the interaction was not relevant but the actions that occurred during the interaction were. I labeled these actions the process components- digital communication and digital collaboration. The term digital communication component was coined by Ribble (2012, 2015) which I used to describe the communication that occurred digitally between participants. The term digital collaboration was not created by Ribble (2012, 2015); however, I contrived this category to describe the collaboration that occurred digitally between participants. The expansion of the digital literacy code discussed in Chapter III is considered within the discussion of the implementation of this expanded code in the next section.

## **Methodology**

The goal of this research study was to reveal and describe the unique teaching practices and interactions that occurred within two community of practices. I chose to use ethnographic methods and took the stance of a participant observer within the classroom and after-school club communities. When in the classroom and after-school club communities of practice, I assisted students with various tasks to include academic work, facilitating social interactions, and assisting with technology challenges. Ms. Fromm expected me to extend the interactions between the students, and I helped to scaffold students' learning by asking probing questions to promote students' autonomy and self-reliance.

Research data were collected through direct observations, audio recordings, audio transcriptions, interviews, field notes, contact summary sheets, reflexive journals, and emails. Following research methods described by Creswell (2013) I completed a constant comparative analysis of data throughout the research study to evaluate my understanding of the data collected about the practices occurring within the classroom and after-school communities. I also followed ethnographic research methods presented by Maxwell (2013) to ensure trustworthiness of data findings. Multiple data sources and exemplars that described the interactions and techniques used within the communities of practice supported trustworthiness of the data findings. I also coded data multiple times to ensure accuracy of coding and clarity of coding definitions. Finally, I organized three peer review sessions with objective researchers as well as member checking with Ms. Fromm

to confirm that the coding created and used accurately represented the behaviors and interactions that occurred between participants in the communities of practice.

### **Discussion of Findings**

In total, I utilized three components of Wenger's (2001) community of practice framework, two systems from Bronfenbrenner's bioecological theory (1994), nine digital citizenship elements from Ribble (2012, 2015), and two elements related to digital citizenship created during this dissertation research to collectively analyze data. After reviewing data and answering research questions in Chapter IV, I discerned three overarching influences that connected the answers to the research questions. The influences were:

- teacher expectations;
- participant interactions that created changes in the communities; and
- multiple levels of learning.

The findings from each of these influences collectively answered the overarching research question "In what ways does the teacher create an inquiry-based culture through the use of technology in a classroom and after-school club?"

In order to comprehend the research findings it was important to conceptualize how the teacher created and modified learning opportunities. Below in Figure 8 is a graphic representation of these components and the fluid relationship between each one.

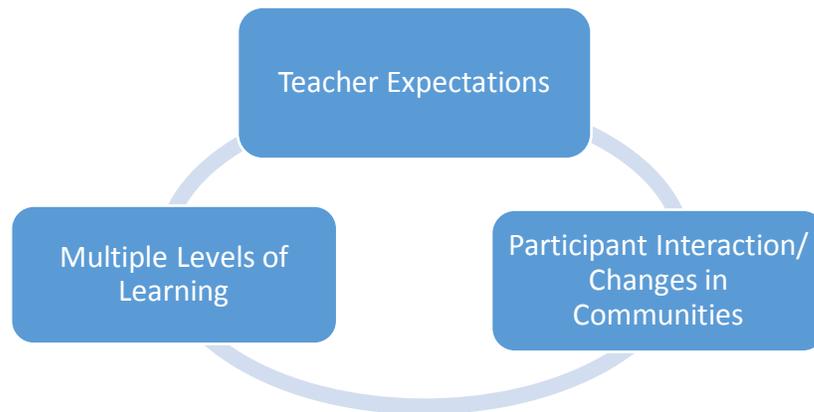


Figure 8. Influences on why and how Ms. Fromm created learning opportunities.

The first and most significant influence I found within the classroom and after-school club communities was Ms. Fromm’s expectations. Her expectations framed the classroom and after-school animation club community of practices. These expectations included (1) her teaching beliefs and practices, (2) classroom/club structure, (3) expectation of student learning and display of their learning.

The second influence was participant interactions that shaped the communities’ development. This included the microsystem interactions between participants within the communities, such as the students, teacher, and researcher who influenced and shaped the learning within the communities of practice. The microsystem interactions of participants also included the use of grouping to influence students’ learning and the expectation and importance of collaboration among all participants. The participant interactions generated changes in the communities due to the development of the shared learning within the communities. Lastly, the influence of multiple levels of learning which enabled students

to extend their lessons and application of skills. The main objective of activities was the application of academic skills, thereby influencing the entire community of practice.

Ms. Fromm’s teaching and learning paradigm allowed for unique practices within the communities that extended academic lessons and provided opportunities for social learning, critical thinking, and problem solving. In addition to illuminating the questions asked in this study, these practices were also exemplified in the supporting literature. The table below presents a visual of the connection between the research questions, the guiding influences found within the data, and the supporting references from current literature.

Table 19

*Connection Between Research Questions, Influences on Learning, and Connection to Literature*

Research Question	Theme	Supporting References
One: How are components of the community of practice framework implemented by a teacher within the classroom and school club?	Teacher expectations Participant interactions/ Changes in communities	Al-Shalabi, 2011 Bernard, 2015 Couldry et al., 2014 Duffy et al., 2014 Freiberg, 1996 Holzweiss, 2014 Lindfors, 1999 Muis, et al., 2016 Ohler, 2012 Rufo, 2014 Weselby, 2016

continued

Two: How are elements of digital citizenship as defined by Ribble (2012) implemented by a teacher within the classroom and school club?	Teacher expectations  Participant interactions/Changes in communities  Multiple levels of learning	Al-Shalabi, 2011 Gill, 2016 Muis et al., 2016; Ribble, 2015 Rufo, 2014
Three: In what ways does technology usage within the classroom and school club extend students' learning and relate to the Technology TEKS (Texas Education Agency, 2012)?	Participant interactions  Multiple levels of learning	Bernard, 2015 Gill, 2016 Ile & Logofatu, 2015 Lane, 2015 Ribble, 2015 Rufo, 2014 Texas Education Agency, 2012 Weselby, 2016

A synthesis of the research findings and current literature are presented below.

The synthesis further exemplifies and confirms the nature of the (1) teacher expectations, (2) participant interaction and changes in the communities, and (3) multiple levels of learning.

### **Teacher Expectations**

The connection between my research questions that focused on Ms. Fromm's use of community of practice components and digital citizenship elements is shown through a framework to better understand the classroom and after-school club environments and events that occurred within the communities. I asked questions to ascertain background information on Ms. Fromm's teaching practices, experiences, and paradigm. Ms. Fromm's interview answers provided me with information to contextualize what I observed and heard when I volunteered and collected data. I viewed Ms. Fromm's actions

as a participant within the community of practice and as someone who shaped the development of the classroom and after-school animation club communities of practice.

First, Ms. Fromm instituted constructive teaching techniques that required reflection and active student learning from students (Duffy et al., 2016; Weselby, 2016). The learning environments provided for both new and repeated learning activities for students. These provisions allowed the students to review their current learning as they expanded and built on previously learned skills. As a reflective teacher, Ms. Fromm believed strongly in the importance of having technology as a tool within the classroom and volunteered to be part of a Project Launch Program within the Franks-Grove School District as described in previous chapters. Through this program, Ms. Fromm received the necessary tools to use within her classroom. Brown, Englehardt, and Mathers (2016) found in their research that technology as an enrichment tool can provide students and teachers opportunities to extend activities in new ways. Ms. Fromm also believed in the importance of technology and wanted to provide the students in her classroom and club more enhanced opportunities to learn. She applied and received funding to purchase the Frames program for the after-school animation club. This program allowed students to become animators and provided opportunities to practice skills such as writing, researching, collaborating, and taking the perspective of others in a creative environment. Ms. Fromm's actions to access the technology demonstrate not only her teaching paradigm, but also her influence on the community of practices as discussed in Wenger's work (2001). After acquiring the technology tools, Ms. Fromm continued to expand academic skills by shaping the community of practice and by incorporating tasks such as

coding and skills practice through websites and applications that extended the community technology knowledge. Ms. Fromm's reflective teaching practices included a constant analysis of both the academic skills needed to complete a task and the higher-level skills needed, such as critical thinking and the ability to work collaboratively with others (Lane, 2015).

Ms. Fromm views the usage of technology as a tool similar to a pencil. She believes that students should be able to explore new tools while learning, and she used technology to enrich her curriculum. At the beginning of the year, Ms. Fromm started a parent email list and explained her technology usage to parents within an email:

I view iPads like a pencil. It is another tool we are able to use to produce a product, to practice a skill, to show what we know. It isn't a toy or a babysitter. We do not use iPads ALL the time - just when we need them. We still have things like glue, crayons, and construction paper. When I teach I pick the best tool for the lesson and teach (L. Fromm, personal communication, August 2016).

Just as students readily had access to pencils and paper within the classroom, students also had access to technology. The technology access that Ms. Fromm instituted within the classroom and after-school club influenced the community routines and behaviors and ultimately the community development.

Digital citizenship elements, such as digital literacy and digital etiquette, were implemented to guide the use of technology within the classroom and provided a clear expectation of student usage. These expectations exemplified practices that the research

question on digital citizenship implementation and communities of practice sought to answer. During the day, students used the iPads when required or suggested for a specific activity and then put their iPads away when transitioning. This was the same way that other classroom tools were handled. In addition, Ms. Fromm also used the school's laptops for classroom activities when appropriate. Sometimes the laptops were used to allow the students to share projects on platforms such as Google Drive, for students to go to websites to complete research, or to go to websites for additional practice of academic skills. By doing so Ms. Fromm created situations for the students, who were participants within the community, to influence the learning of the entire community. Through the use of some programs such as Education Galaxy, Ms. Fromm had students complete tasks online, and she viewed their academic progress in areas such as math and language arts. These activities provided Ms. Fromm with information needed to guide her lessons and construct activities to meet the needs of the students within the classroom (Gill, 2016; Rufo, 2014).

Another factor that influenced Ms. Fromm's technology usage was her awareness of the unique abilities and needs of each student within the community. Ms. Fromm was also aware of how the students learned in comparison to previous year classes and also how each student learned differently as an individual. She modified her teaching practices to meet the needs of the students, which is a part of constructive teaching practices as detailed by Lane (2015) and Rufo (2014). When asked about her classroom and the creation of the class community this year, Ms. Fromm stated, "Last year the kids talked to learn, this year the kids are just talking." Therefore, new activities, resources,

and expectations were created to further the development of each student and the classroom community as a whole. I also observed how the activities and expectations that were implemented within the classroom and after-school club at the beginning of the year changed by the end of the year. Ms. Fromm altered her teaching practices, learning activities, and tools based on the needs of the students, and the development of the community changed throughout the year in both the classroom and after-school club.

In both the classroom and after-school environments, students could explore new methods to find an answer, find new ways to use an approved program, and to choose how they would display their knowledge. This flexibility within the classroom also fostered student leaders who shaped the learning of their peers (Lane, 2015; Rufo, 2014). Even with the flexibility to display learning, there were still digital citizenship technology guidelines that she expected to be followed. She explained that the guidelines implemented were there for the students' safety. The inquiry that Ms. Fromm fostered within the classroom and after-school animation club demonstrated the importance of the teacher's expectations on a classroom culture and, ultimately, a community of practice.

### **Participant Interactions and Changes in Community**

In conjunction with the reflective teaching practices of Ms. Fromm, the students were active learners within the community of practice. Even with the best design and implementation of a lesson the students would not have learned as much if they were not active learners within the classroom or after-school club environments (Lane, 2015). Actively participating in one's own learning allowed students to find purpose in the classroom teaching and activities (Al-Shalabi, 2011; Muis et al., 2016; Rufo, 2014).

During both classroom rotations and the after-school club activities, students were given options to work with peers or independently, to use various technology devices, or to complete a task without technology at all. This allowed students to control portions of their learning increasing self-sufficiency and self-agency among the students (Muis et al., 2016; Rufo, 2014). These practices demonstrated the importance of each student's actions within the community of practice, which connects to research question one.

The ability to work collectively, collaboratively, and effectively was valued within the classroom and after-school environment. Through the use of small-group and peer share Ms. Fromm helped to develop the social skills that students need to be successful in school (Couldry et al., 2014; Ohler, 2012). Through the use of technology, which Couldry et al. (2014) claim is sometimes viewed as a solitary activity the importance of being able to listen to other's ideas, to comprise, and the ability to work collaboratively was promoted, required, and valued. The implementation of these expectations could be seen when the students were asked to work together on coding, animations, or simply to assist a peer with a technical challenge that occurred. The significance of the individual and communal expectations (Duffy et al., 2016), set forth by Ms. Fromm, truly influenced the learning and growth of the communities in both the classroom and after-school animation club demonstrating the importance of mesosystem interactions in shaping the community development.

At the beginning of the year, Ms. Fromm created small-groups within the classroom as a way for students to work together to accomplish individual tasks and told the students which technology tool and application to use to complete a task. However, as

the school year progressed, Ms. Fromm allowed the students to choose the technology tool and the application to accomplish a given task. Within the animation club, Ms. Fromm's direct teaching led the students in creating their animations. She believed that each student could be an illustrator; and with the use of the technology, each student could become an animator. She provided teacher-directed guided lessons on how to use the technology program including specific features of the program that allowed the students to draw unique shapes and characters. Ms. Fromm encouraged students' innate inquiry, creativity, and individualism (Lindfors, 1999) using statements such as

Make your own. That's the biggest thing this year. Make your own. You are the animator. What else? Don't be afraid to change the angles of your character. Use the other characters and move it around. See it from all different angles. I'm taking my character, and I'm changing the way it looks. Don't be afraid to have your character in different perspectives (L. Fromm, personal communication, October 2016).

Watching students become more confident in their own understanding of the academic material and the technology tools implemented within the classroom and after-school club communities was extremely rewarding. I was part of the communities for a short time each week and I still felt proud knowing that I had a part in the students' newly found learning. Ms. Fromm rejoiced in each student's achievements and learning by encouraging students to explain their ways of thinking and thought processes and sharing their accomplishments with others. Each student's achievement, no matter how small, was rejoiced and each student was reminded to reflect on the process they took to achieve

the accomplishment (Lane, 2015; Paolini, 2015). These practices demonstrated the influence of each participant in shaping the community.

Many initial discussions and lessons were teacher-directed at the beginning of the year. However, as the year progressed, students began to take ownership of their learning and asked questions to extend what was presented, demonstrating change within the community knowledge which connected to research question one. Ms. Fromm understood her students' needs and personalities and designed lessons that allowed for teachable moments (Rufo, 2014) The students in turn followed classroom/club guidelines, expectations and extended their own learning through microsystem social interactions. One challenge that occurred in both the classroom and after-school club was students not being able to work collaboratively due to a lack of communication between the students. When Ms. Fromm noticed students were having a difficult time working together, and following directions, I observed several consequences. First, Ms. Fromm reorganized the small-groups that were originally created to provide opportunities for microsystem interactions were reorganized. This change allowed students to work with new peers and extended the communities' development. Ms. Fromm also changed the size of the small-groups, encouraged peer sharing in pairs when needed, and allowed students to decide if they needed or wanted to work independently. The choices provided empowered the students by allowing them to regulate their learning and behaviors (Lane, 2015; Rufo, 2014). The importance of individual determination and ingenuity was frequently stressed when Ms. Fromm reminded students to think through their problems. Students were taught multiple strategies to solve a problem (Weselby, 2016) and the first

task was to determine what strategies were known, and foster their self-regulatory skills and reflective thinking (Muis et al., 2016). These practices extended an individual student's learning and the community's knowledge as a whole demonstrating the component of community development.

To assist in the task of implementing technology tools, Ms. Fromm created student jobs within the classroom community. Due to the student jobs, each student contributed to the classroom community learning, was responsible for assisting their peers, and was given a purpose within the classroom (Freiberg, 1996; Rufo, 2014). Student jobs also empowered the students and allowed them to help guide the community activities (Rufo, 2014) including the securing of technology devices and expanding the learning of others when using technology. The teacher and researcher frequently reminded students to go to the Apple Tech when they needed assistance to solve a technical problem. The empowering of students via microsystem interactions extended the community learning, student inquiry and guided future class discussions and activities (Lindfors, 1999; Muis et al., 2016). The use of technology added another dimension to the classroom environment because of the varied technical skills of the students and the extension of class activities implemented by Ms. Fromm. To describe the influence of technology on the communities' development, the guidelines instituted for technology usage set by the school district, the principal, and Ms. Fromm needed to be addressed. These guidelines were both implicitly and explicitly taught to the students to guide their technology usage and behaviors in school-appropriate ways. These guidelines also helped

to stimulate new learning while students used the technology tools, which all tied to the final research question of how technology extend learning in novel ways.

### **Multiple Levels of Learning**

When reviewing the findings for my dissertation questions that focused on the expansion of learning through the community of practice and usage of technology, several actions that occurred within the communities became evident. First, Ms. Fromm used elements of digital citizenship to guide the technology and social interactions of students. These technology guidelines connected with the school's behavioral and citizenship expectations, which deepened the development of skills (Ohler, 2012). For example, the importance of securing one's creations on the technology tools, as well as the tools themselves, connected with the social and behavioral expectations of being responsible for one's work and actions.

Ms. Fromm believed the acquisition of a new skill, such as multiplication facts, was important, as well as the understanding of how one acquired the skill. Ms. Fromm empowered students to think critically about assignments or animation tasks, consider their options, and then to proceed in the completion of the task. She encouraged metacognition of her students to help them understand their own thinking and the processes they used (Bernard, 2015; Gill, 2016) as a way to deepen their learning. She also encouraged microsystem interactions when using technology tools. When coding data, I realized the importance of expanding the digital citizenship element of digital literacy and the need for creating the code of digital collaboration.

The digital literacy code originally created by Ribble (2011, 2015) did not fully explain the various aspects of learning within Ms. Fromm's communities of practices. The importance of microsystem and mesosystem interactions of participants was not addressed. The goal of the interaction and content were also not addressed. Consequently, I defined features of the digital literacy element, described in Chapters III and IV, as a way to exemplify and illuminate the practices in the classroom and after-school club communities. By expanding the element of digital literacy the idiosyncrasies that occurred within the classroom and animation club were described in detail. Another characteristic of Ms. Fromm's classroom not fully defined or described with the original digital citizenship codes was the collaboration that occurred while using technology. To label the microsystem interactions that occurred using digital tools, I created the code of digital collaboration. The additions of digital citizenship elements provided me with a method to describe the learning that occurred on multiple levels within the classroom and animation club communities of practice.

Another extension of learning was also described when connecting exemplars to the Technology TEKS (Texas Education Agency, 2012). The Technology TEKS provided guidelines that Texas teachers were required to institute within the classroom when using technology tools. Ms. Fromm's implementation of these Technology TEKS occurred simultaneously within classroom and animation activities. By planning academic activities that were extended through the use of technology, instead of planning activities to learn how to use the technology separately, Ms. Fromm allowed for multiple levels of learning within her lessons. I would not have known that she was addressing the

Technology TEKS if I did not know to look for the connections. Ms. Fromm's practices of using technology as a tool to enhance learning activities (Holzweiss, 2014) occurred seamlessly which connected to the final research question that focused on extensions of activities via technology devices.

I gained a comprehensive understanding of the ways that Ms. Fromm created and maintained communities of practice through observations, interviews, and being a participant observer within the classroom and after-school club. I learned that in order to have a community that creates and allows inquiry the teacher has to be comfortable enough to allow students to control and influence some of the learning (Ilie & Logofatu, 2015; Weselby, 2016). Ms. Fromm demonstrated this practice by allowing students to use multiple methods to solve a problem, encouraging reflexive thinking skills, and empowering her students to feel confident enough to assist his/her peers when needed. Ms. Fromm had academic lessons to teach but she also allowed the students to guide discussions and took advantage of teachable moments as they occurred (Bernard, 2015). The use of technology extended her lessons by providing a tool for the students to use instead of being the focus of the lesson. This practice demonstrated Ms. Fromm's belief that a student is not an empty vessel that she must fill with knowledge; rather, her job was to provide the structure and foundation that encouraged active learning and questioning (Weselby, 2016). A similar pedagogical belief and practices are necessary to create and maintain an inquiry-based community of practice within the classroom (Lane, 2015; Muis et al., 2016).

### **Implications and Recommendations for Practice**

After collecting data, analyzing the results, and synthesizing findings with current literature, it became evident that two important aspects of Ms. Fromm’s classroom made the community of practice possible. The first aspect was her constructivist teaching practices and the technology available to her and the students. In Table 20 has a summarized list of the practices that are necessary to create a digital community of practice.

Table 20

#### *Recommendations for Practice Within Schools*

Implications	Recommendations for Practice	Connections to Literature
Teaching paradigm-  Constructivist	Combination of direct teaching and active student learning  Reflective teaching practices  Student-centered activities  Students influence lessons through inquiry  Empowerment of students through class community responsibilities	Al-Shalabi, 2011 Bernard, 2015 Paolini, 2015 Rufo, 2014 Tudor, 2014 Wenger, 2001
Technology usage	Purchasing of technology  Maintaining of technology tools  Use of technology guidelines  Connection to academic lessons  Equitable access to technology tools based on individual/class needs  Infrastructure needs addressed	Cook & Ellaway, 2015 Holzweiss, 2014 Illie & Logofatu, 2015 McManis & Gunnewig, 2012 Meeks, 2012 Pittman & Gaines, 2015 Ribble, 2012, 2015 Texas Education Agency, 2012

Ms. Fromm's constructive teaching paradigm and behaviors provided the foundation for the development of a classroom and after-school club that was a community of practice. The teacher who solely uses direct teaching practices and expects his/her students to demonstrate knowledge in one particular way may not find the methods used by Ms. Fromm conducive to their teaching practices. Constructivist practices empower students to be active learners within the classroom and take an active role in the learning process and discussions (Al-Shalabi, 2011; Bernard, 2015) in order for a community of practice to occur. Consequently, a teacher must be reflective and open to questions and discussions that were not planned to occur so student's inquiry while learning new materials can provide opportunities for learning to become evident through social interactions, conversations, and application of skills (Paolini, 2015; Tudor, 2014). Each person within the community must be valued and the knowledge that each person brings to the community development should be recognized (Al-Shalabi, 2011; Bernard, 2015; Wenger, 2001). The teacher is the creator of the community, but each student helps guide the development of the community and can assist their peers, and the teacher, in understanding and applying the skills needed to achieve the common goal. For this research study, the common goal was to gain an understanding of technology and the application of technology in educational situations. The participant's access to technology was necessary to creating a technological community of practice.

Students' access to technology within educational settings has been researched for numerous years (Ilie & Logofatu, 2015; Mariola, 2012). To have a technological community of practice, technology must be readily available for participant use. Within

Ms. Fromm's classroom and after-school club community technology access was not an issue but it must be considered for educators who want to create a technological community. Key questions that need to be asked and answered include (1) how will the technology be purchased? (2) how will the technology be maintained? and (3) what technology guidelines will be implemented? (Meeks, 2012). In addition, the need for equitable access to technology based on the individual/classroom needs should be addressed (Ribble, 2015). Having a technology device is not enough if that device is not the tool needed.

Once these questions are answered, the technology should be implemented in conjunction with the academic content that is focused on within the classroom (Mariola, 2012; McManis & Gunnewig, 2012). Finally, the implementation of the technology tool is also important to consider (McManis & Gunnewig, 2012; Pittman & Gaines, 2015). When students learn how to use technology tools in conjunction with new material, their learning is deepened (Holzweiss, 2014). Teachers need to consider what technology skills their students already possess and then decide from there what technology lessons need to occur. If academic guidelines for technology usage is directed by state guidelines, such as the Texas Technology then the implementation of technology can be guided based on the outcomes that need to occur. In addition to these technology lessons, technology guidelines also need to be implemented for the students' safety (Holzweiss, 2014).

Ms. Fromm implemented the use of technology within her classroom and club communities which allowed students to practice academic skills in addition to meeting numerous Texas Technology TEKS. By meeting these standards in addition to practicing

the academic skills, the teacher extended the use of the technology tool from the original purpose of the tool. The use of the Technology TEKS also guided some of the technological behaviors that Ms. Fromm expected from her students such as becoming a digital citizen. Furthermore, Ms. Fromm had district, school, and classroom guidelines that students followed to become digital citizens. It is crucial that there be a standard of technology guidelines that students are expected to follow when using technology. These guidelines should be based on providing ways for students to not only to be protected when using the technology but also to learn from the guidelines too (Holzweiss, 2014; Ribble, 2015; Texas Education Agency, 2012). Such guidelines may include expected technology etiquette, guidelines for sharing of information, techniques for evaluating sources, and ways to protect one's personal information and the technology tool itself (Holzweiss, 2014). Each of the implications above have been researched in previous studies, but there is still a need for further technology research since technology tools are constantly evolving and changing while being implemented with students throughout school districts worldwide (Cook & Ellaway, 2015; Ribble, 2015).

### **Recommendations for Future Research**

The technological practices and expectations implemented by Ms. Fromm were possible due the availability of resources, including technology guidelines and devices that were implemented to extend her academic lessons. These resources are not always available to educators based on varying reasons, and additional research needs to address technology guidelines and technology accessibility challenges (Brown et al., 2016).

Future research focuses are summarized in Table 21 and then narratively presented with additional details.

Table 21

*Recommendations for Future Research*

Overarching Research Focus	Subtopic Research Focus	Connections to Literature
Guidelines	Digital citizenship expectations Influences on student learning	Brown et al., 2016 Cook & Ellaway, 2015 Mariola, 2012 McManis & Gunnewig, 2012
Accessibly challenges	Funding to purchase technology tools Evaluation of technology tools usage in classroom to increase learning Equitable access to technology tools Quality training for learning to use technology tool, maintaining the tool, and implementing tool	Brown et al., 2016 Holzweiss, 2015 Pittman & Gaines, 2015

With no standardized, nationally accepted guidelines to evaluate technology implementation and usage within schools, there is a need for further research to determine some type of quality standards and/or guidelines (Cook & Ellaway, 2015; Mariola, 2012). These standards/guidelines should be based on peer-reviewed research and meta-analysis of smaller peer-reviewed research studies. Furthermore, the connection between state and federal educational standards in conjunction with

technology usage should also be researched more extensively. Technology tools influenced the way students learn, communicate, and socialize (Brown et al., 2016; McManis & Gunnewig, 2012). The lasting influences on students' educational development should be considered, documented, and presented to administrators, educators, and parents to ensure the highest educational achievement through the implementation of technology tool usage.

With the high cost of technology tools, there is also a need for additional research on ways to fund the purchasing of technology tools. It is not enough to purchase a few technology tools, adequate access to the technology tools must also occur in conjunction with necessary training needed to help teachers, administrators, parents and even students feel comfortable exploring the technology devices (Brown et al., 2016; Holzweiss, 2014; Pittman & Gaines, 2015). Accessibility to tools and the use of tools to complete multiple tasks needs to be assessed and used as a deciding factor to implementing technology (Brown et al., 2016; Pittman & Gaines, 2015) The purchasing, maintaining, and support to use technology devices must be considered, and additional research on ways to help eliminate the costs of increasing technology usage should be considered and further addressed in research and in academic literature.

Finally, once technology is accessible, the seamless implementation to compliment and extend skills already taught within the classroom also needs to be addressed and researched. There is a lack of guidelines for evaluating technology usage within schools (Pittman & Gaines, 2015) and evaluating how technology usage extends students' learning. Connections between best teaching practices and implementation of

technology usage should be explored in order to merge effective teaching practices with technology usage (Pittman & Gaines, 2015). Individuality of teachers, the uniqueness of school resources and needs, and classroom and student needs will make such research challenging but it is still necessary.

### **Conclusion**

The overarching goal of this ethnographic case study was to illustrate and exemplify the unique teaching practices and interactions that occurred within a classroom and after-school club community. These practices included

- the use of constructive teaching methods (Duffy et al., 2016; Paolini, 2015);
- student empowerment through encouragement to become active learners within the communities (Lane, 2015);
- student centered activities (Lane, 2015); and
- implementation of technology to extend academic lessons (Cook & Ellaway, 2015).

This research could not have been achieved without Ms. Fromm's willingness to allow me to learn more about her teaching pedagogy and paradigm. First, her reflective teaching philosophy allowed for the creation of communities of practice. This philosophical perspective sparked my interest in her teaching paradigm. Then Ms. Fromm allowed me to be part of her classroom and after-school club communities, and she verbalized her teaching practices and reflective teaching, which allowed me to better understand the decisions she made. Finally, her model of verbalizing her thoughts encouraged the students to do the same and provided me with the necessary information to understand how the

students were active participants in their own learning. Without each of these crucial practices, this dissertation research would not have been successful.

By using the theoretical lenses of Wenger's community of practice (2001), parts of Bronfenbrenner's bioecological theory (1994) and Ribble's digital citizenship (2012, 2015), I was able to create a framework that encompassed both Ms. Fromm's teaching pedagogy and her usage of technology. Ms. Fromm believed her job was to not only teach the students academic skills, but also teach them strategies for leaning. This was evident in her teaching practices that allowed students to complete work in different ways using various tools. Although there was one right answer, the process of getting that answer could vary, and the process was just as important to Ms. Fromm as the students learning the correct answers. The classroom and after-school animation club community developed throughout the months I collected data due to both Ms. Fromm's instruction and the students' questioning.

To describe the classroom and club environments, I had to understand the roles that each person held not only as an individual within the environments, but also as an active participant who helped shape the development and changes that occurred within the environment. In addition, I had to clarify how the use of technology provided students and Ms. Fromm with a helpful learning tool to acquire new skills, practice the use of skills, and demonstrate knowledge in order to describe the practices and behaviors within the classroom and after-school club. Repeatedly, Ms. Fromm told me she was humbled by being chosen as the focus of my dissertation research. She was also humbled when reading the research findings, analysis, and reflections on the unique practices she implemented.

One desire I have is that by reading the findings of this ethnographic case study administrators and educators will find an action, practice, or belief that will inspire them to create a change in his/her schools and classroom environments. Furthermore, the findings of this study may help other Texas schools meet TEKS standards by providing information on successful teaching practices that can be used when incorporating technology within classrooms and after-school programs. As Ms. Fromm frequently said, “We can all learn from each other” and I hope this will occur.

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APPENDIX A

IRB Approval



**Institutional Review Board**  
Office of Research and Sponsored Programs  
P.O. Box 425619, Denton, TX 76204-5619  
940-898-3378  
email: IRB@twu.edu  
<http://www.twu.edu/irb.html>

DATE: September 17, 2015  
TO: Ms. Lisa Taylor Cook  
Family Sciences  
FROM: Institutional Review Board - Denton

Re: *Approval for Technology as a Tool: The Use of Technology in the Classroom and After School Clubs (Protocol #: 18452)*

The above referenced study has been reviewed and approved at a fully convened meeting of the Denton Institutional Review Board (IRB) on 8/7/2015. This approval is valid for one year and expires on 8/6/2016. The IRB will send an email notification 45 days prior to the expiration date with instructions to extend or close the study. It is your responsibility to request an extension for the study if it is not yet complete, to close the protocol file when the study is complete, and to make certain that the study is not conducted beyond the expiration date.

If applicable, agency approval letters must be submitted to the IRB upon receipt prior to any data collection at that agency. A copy of the approved consent form with the IRB approval stamp is enclosed. Please use the consent form with the most recent approval date stamp when obtaining consent from your participants. A copy of the signed consent forms must be submitted with the request to close the study file at the completion of the study.

Any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any adverse events or unanticipated problems. All forms are located on the IRB website. If you have any questions, please contact the TWU IRB.

cc. Dr. Karen Petty, Family Sciences  
Dr. Sharla Snider, Family Sciences  
Graduate School

APPENDIX B

Interview Guide

## Interview Guide

The follow up interviews for this proposed study will be completed as a way to gain a deeper understanding of what the researcher has observed or heard while collecting data in the classroom or after-school club. The beginning of the questions below will be asked of the teacher during a semi structured interview.

\*Probing Questions: These questions will be used to gain a better understanding of what was observed or heard within the classroom or club. This type of question will be used to gain more factual data about an occurrence.

\* (1) Can you explain...

\* (2) What occurred prior to/after...

Explanatory questions will be asked when I need to understand a choice that was made within the classroom or after-school club. This may also include gaining a deeper understanding of the teacher's feelings/beliefs/perspective on what occurred. This type of question will be used to gain some factual information and also some subjective information from the teacher.

\* (1) What prompted you to ....

\* (2) What did you think about...

\* (3) What prompted you to...

APPENDIX C

Classroom and After-school Club Contact Summary Sheet

Classroom and After-school Club Contact Summary Sheet

**Contact type:**

Classroom                      Masters of Animation Club Robotics Club

**Date & Time:**

**1. Brief summary of event:**

**2. Connection(s) to framework:**

Brief description or salient activity/event/actio n	Participant s	Connection to Microsyste m or Mesosystem	Connection to Communit y Practice	Connectio n to Digital Citizenshi p	Note s

**3. Necessary follow up:**

## APPENDIX D

### Detailed Data Collection Timeline and Methods

### Detailed Data Collection Timeline and Methods

Week & Location	My role & activities	Data source(s)	Data format(s)	Participant(s)	Data topic(s)	Coding strategy(ies)
Oct 22 Class	Observer, leader in small-group	Direct observation, interactions with students	Audio files, contact summary, field notes	Teacher with whole group, me with small-groups	Teacher- discussion about coding, me working with students on iPad on math skills	Cop (interactions) Digital citizenship Micro-interactions of students in small-group
Nov 5 Class	Leader in small- group	Interactions with students	Audio files, field notes, contact summary sheets	Me with groups of kids	Working with students on iPad on math skills	Digital citizenship Mico- interactions of students
Nov 5 MAC	Observer, assisting students as needed	Direct observations, interactions with students	Audio files, field notes	Teacher explaining program, me helping indiv. Students	Students learning how to use program and goal- create Christmas card	Cop Digital citizenship Interactions- micro and meso
Nov 12 Class	Observer, assisting students as needed	Direct observations, interactions of students, students working alone	Audio	Teacher, students, me with students	Working with students on math problems using ipad, students working on technology on program	Cop Digital citizenship interactions
Nov 12 MAC	Observer, helping students as needed	Direct observation, interaction with students	Audio files, field notes	Teacher with whole group, me working with students and students	Working on Christmas animation	Cop- students' audio files of them working alone Micro- same as above Digital

						citizenship
Nov 19 Class	Working with students in groups	Interactions with students	Audio files, field notes	Me working with students	Working on math with kids using ipad	Cop
Nov 19 MAC	Observer, helping students as needed	Direct observation, interactions with students	Audio files, field notes	Teacher whole group, me working with students and students working together	Working on Christmas animation	Cop Digital citizenship Micro and maybe meso
Dec 3 MAC	Observer, helping students as needed	Direct observations, interactions with students	Audio files, field notes	Teacher whole group, me working with students, students helping each other	Working on Christmas animation	Cop Miro& meso interactions Digital citizenship
Dec 10 Class	Assisting small-group of students	Direct observations, interactions with students	Audio files, field notes	Me with students, student working in groups without adult	Students working on iPad for math problems, students doing hour of code	Cop Digital citizenship Micro& meso interactions
Dec 10 MAC	Assisting individual students	Direct observations, interactions with students	Audio files	Teacher, students, me	Students working on Christmas animation	Cop Micro& meso interactions Digital citizenship
Jan 14 Class	Observer	Direct observations of teacher	Audio files, observation notes with field notes, contact summary	Teacher in small-groups (grp. Rotated)  Students in small-	Teacher in small-groups with students math	Cop---Teacher actions

			sheets	groups (grps. Rotated)		
Jan 14 MAC	Observer, interacting with kids	Direct observations of teacher, interacting with students	Audio files, field notes	Teacher, students	Important person/event animation	Digital citizenship
Jan 21 Class	Observer	Direct observations of teacher	Audio files, observation notes, field notes, contact summary sheets	Teacher in small- groups (grp. Rotated)  Students in small- groups (grps. Rotated)	Teacher in small- groups with students completing math	Cop---Teacher interactions & community aspects
Jan 21 MAC	Observer, assisting students	Direct observation and interactions	Observation notes, field notes	Teacher explaining task, me helping students	Students working on important person/event	Cop
Jan 28 Class	Observer	Direct observations	Audio files, observation notes, field notes, contact summary sheets	Teacher in small- groups (grp. Rotated)  Students in small- groups (grps. Rotated)	Teacher in small- groups with math and large-group language	Cop—teacher interactions and community aspects
Jan 28 MAC	Observer, assisting students	Direct observations, interactions with student	Observation notes, field notes	Teacher explaining, me helping indiv. Students	Students working on important person/event	Cop Micro/meso interactions
Feb 11 Class	Observer	Direct observations	Audio files, observation notes, field	Teacher in small- groups (grp. Rotated)	Teacher- fractions  Students- various	Teacher- teaching styles (description of

			notes, contact summary sheets	Students in small- groups (grps. Rotated)	tasks- education galaxy, hour of coding, working in one drive on valentine cards	her methods)  Students- micro system interactions COP?  Teacher- students- meso system interactions- teacher encouraging students to work together
Feb 11 MAC	Observer/ Assisting students	Direct observations & interacting	Audio files, observation notes, field notes, contact summary sheets	Teacher large- group, teacher- student (one on one) interactions, me one on one interactions with students	Completing animation on historical person or event	Cop? Meso- teacher encouraging kids to work together
Feb 18 Class	Observer- assisting one student	Direct observations	Audio files, observation notes, field notes, contact summary sheets	Teacher small- groups, student conversations	Working on comparing fractions, education galaxy working on reading skills	Cop? Student chosen micro interactions Digital citizenship aspects
March 3 <sup>rd</sup> MAC	Observer/ Assisting students	Direct observations & interacting	Observation notes, field notes, contact	Teacher large- group, teacher- student (one on	Completing animation on historical person or event	Cop? Meso- teacher encouraging

			summary sheets	one) interactions, me one on one interactions with students		kids to work together
March 24 <sup>th</sup> MAC	Guest Speaker	Direct observation	Observation notes, field notes	Guest speak, students interacting	Explanation of animation outside of school- connection to writing stories	COP-extension from community
April 7 <sup>th</sup> MAC	Observer/ Assisting students	Direct observations & interacting	observation notes, field notes, contact summary sheets	Teacher large-group, teacher-student (one on one) interactions, me one on one interactions with students	Completing animation on historical person or event	Cop? Meso- teacher encouraging kids to work together
April 21 <sup>st</sup> MAC	Observer/ Assisting students	Direct observations & interacting  **Started saving files for red carpet event	observation notes, field notes, contact summary sheets	Teacher large-group, teacher-student (one on one) interactions, me one on one interactions with students	Completing animation on historical person or event	Cop? Meso- teacher encouraging kids to work together
April 28 <sup>th</sup> MAC	Observer/ Assisting Students/ Saving files	Direct observations & interacting  **Continuing to save files for red carpet event	Observation notes, field notes, contact summary sheets	Teacher large-group, teacher student (one on one) interactions, me one on one interactions with students	Completing animation on historical person or event	Cop? Meso- teacher and I encouraging kids to work together to finish and find information if needed
May 5 <sup>th</sup>	Observer/	Direct	Observation	Teacher large-	Completing animation	Cop?

MAC	Assisting Students/ Saving files	observations & interacting **Continuing to save files for red carpet event	notes, field notes, contact summary sheets	group, teacher student (one on one) interactions, me one on one interactions with students	on historical person or event	Meso- teacher and I encouraging kids to work together to finish and find information if needed
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APPENDIX E

Recruitment Email

September 1, 2015

Dear Teacher,

My name is Lisa Cook, and I am a Ph.D. student at Texas Woman's University (Denton, Texas). I am conducting a dissertation research study that seeks to understand how technology is being used in the school and classroom. This study seeks to capture, as the primary data source, teacher's choices in technology usage, digital citizenship practices, and community of practice techniques.

For the purpose of this study technology is defined as an electronic device or platform (Ribble, 2011, 2012). Furthermore, digital citizenship practices will focus on digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights & responsibilities, digital health & wellness, and digital security (Ribble, 2011, 2012).

General observations will be made of how you, the teacher, guides the use of technology during normally scheduled classroom and after school club activities which will include observing the interactions of you, the teacher, and students in the classroom and after school clubs. Additional measures such as interviews and documentation are detailed in the attached consent letter.

All data will be kept confidential, and your name will not be attached to any information. There are no penalties for not participating. The risks involved and how these are reduced are included in the consent letter that follows. There is a potential risk of loss of confidentiality in all email, downloading, and internet transactions. Participation is voluntary and if you want to withdraw at any time I will comply with your right to not participate without penalty.

If you are interested, please read and sign the enclosed informed consent form and contact me via email or phone number (both provided below).

Also, if you are interested, when the study is finished you can send me your contact information, and I will send you a copy of the results. You can also contact my Research Advisor or myself at any time if you have questions. My Research Advisor is Dr. Sharla Snider and she can be reached by calling (xxx-xxx-xxxx) or emailing (xxxx). I can be reached by calling (xxx-xxx-xxxx) or by emailing (xxxx).

Thank you,

Lisa Cook

APPENDIX F

Cover Letter/Script for Recruitment

Dear Principal,

My name is Lisa Cook, and I am a Ph.D. student at Texas Woman's University (Denton, Texas). I am conducting a dissertation research study that seeks to understand how technology is being used in the school and classroom. This study seeks to capture, as the primary data source, teacher's choices in technology usage, digital citizenship practices, and community of practice techniques.

For the purpose of this study technology is defined as an electronic device or platform (Ribble, 2011, 2012). Furthermore, digital citizenship practices will focus on digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights & responsibilities, digital health & wellness, and digital security (Ribble, 2011, 2012).

General observations will be made of how the teacher guides the use of technology during normally scheduled classroom and after school club activities which will include observing the interactions of teachers and students in the classroom and after school clubs. Additional measures such as interviews and documentation are detailed in the attached consent letter.

All data will be kept confidential, and your name will not be attached to any information. There are no penalties for not participating. The risks involved and how these are reduced are included in the consent letter that follows. There is a potential risk of loss of confidentiality in all email, downloading, and internet transactions. Participation is voluntary and if you want to withdraw at any time I will comply with your right to not participate without penalty.

If you are interested, please read and sign the enclosed informed consent form and contact me via email or phone number (both provided below).

Also, if you are interested, when the study is finished you can send me your contact information, and I will send you a copy of the results. You can also contact my Research Advisor or myself at any time if you have questions. My Research Advisor is Dr. Sharla Snider and she can be reached by calling (xxx-xxx-xxxx) or emailing (xxxx). I can be reached by calling (xxx-xxx-xxxx) or by emailing (xxxx).

Thank you,

Lisa Cook

Appendix G  
Principal Consent Form

TEXAS WOMAN'S UNIVERSITY  
 CONSENT TO PARTICIPATE IN RESEARCH  
 School Principal

Title: Technology as a tool: The use of technology in the classroom and after school clubs  
 Investigator: Lisa Taylor Cook Phone number: [REDACTED]  
 Research Advisor: Dr. Sharla Snider Phone number: [REDACTED]

Explanation and Purpose of Research. This study will be used as my dissertation research project. The purpose of this dissertation study. This study seeks to capture, as the primary data source, teacher's choices in technology usage, community of practice techniques and digital citizenship practices. General observations will be made of how you guide the use of technology in the classroom and during a school activity clubs. Additionally, interviews will be conducted to learn more about classroom and school clubs. The research question is explored through two components of the study: (1) **general observation** of teacher's implementation and teaching of technology which will include observing the regularly scheduled interactions of teachers and students in the classroom and after school clubs (2) **focused interviews** with teacher, that will **explore perspectives** of technology use with and by young children.

Specific Procedures to be Used: Upon return of the signed consent form, you will be provided with a copy. If you have further questions, the principal investigator will contact you to address your questions by phone or to arrange for a meeting date and time at the Center per your convenience. Field notes and audio will capture your answers to the interview questions.

Duration of Participation: Time commitment when participating in the interview aspect of the focused study is a maximum of 30 minutes per interview. The classroom observations of normally scheduled activities within the selected classroom will occur approximately twice a week for 3 hours each. The after school club observations will occur at each scheduled meeting (once a week for each club) for approximately 1 hour and 15 minutes.

Benefits to the Participant: There are no direct benefits to participants.

Risks to the Participant:

RISK	STEPS TO MINIMIZE RISK
Loss of confidentiality	<p>All identifiable data will be coded and a master list maintained. The principal investigator and advisor will be the only investigators to have access to the audio tapes, interview notes, the master list, the computer software program and coded data.</p> <p>When transcriptions of audio are made the principal and teacher participant names will not be transcribed. The teacher and principal participants will be given code names that will be used within all transcriptions.</p> <p>Consent forms will be stored separately from the data. When not in use, these materials will be kept in a secure locked filing cabinet in the principal investigator's home. The participant's names will not be used in the event that the study findings are published.</p> <p>The interviewer will avoid the use of names during the interview process to ensure a higher degree of confidentiality.</p> <p>There is potential risk of loss of confidentiality in all email, downloading, and internet transactions.</p>

Please initial here \_\_ p. 1 of 2

Approved by the  
 Texas Woman's University  
 Institutional Review Board  
 Date: 8/7/2015

RISK Loss of time for classroom activities for interview process.	STEPS TO MINIMIZE RISK The interview process for each participant will take a maximum of 30 minutes with most interviews ranging from 10-20 minutes. Participants will have a choice as to when or if they would like to participate in the interview process. In addition, participants can stop the interview at any time and remaining questions, if any, will be asked at another agreed upon time. It is estimated that 5 principal interviews will occur.
RISK Fatigue or physical discomfort during the interview process.	STEPS TO MINIMIZE RISK The interviews will be held in a comfortable and familiar location. The participant may take a break during the interview as needed and may stop the interview at any time. Not all questions will be asked depending on the interactions with the participant and their interest level. The interview is deemed complete when the participant shows a lack of interest or fatigue and/or the answers extend beyond the cognitive knowledge sought from the guiding research questions.
RISK Coercion	STEPS TO MINIMIZE RISK Administrators and the teacher will be informed that there will be no penalty should they decline to participate in the study.

Problems: The researchers will try to prevent any problem that could happen because of this research. You should let the researchers know at once if there is a problem and they will help you. However, TWU does not provide medical services or financial assistance for injuries that might happen because you are taking part in this research.

Voluntary Nature of Participation: Participation in this research project is voluntary. If you agree to participate, you can withdraw your participation at any time without penalty.

Results of the Study: The principal investigator will provide you with a detailed summary of the study's findings if requested. You will also have the option of contacting the investigator via the phone number on this consent form or by email on the cover letter. Also, you will be notified of educational seminars held to share the results and join in an opportunity for discussion related to the study.

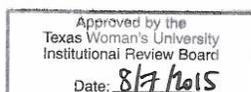
#### Human Participant Statement

You will be given a copy of this signed and dated consent form to keep. If you have any questions about the research study you should ask the researcher; her phone number is at the top of this form. If you have questions about your rights as a participant in this research or the way this study has been conducted, you may contact the *Texas Woman's University Office of Research and Sponsored Programs* at 940-898-3378 or via e-mail at IRB@twu.edu.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

If you would like a summary of the study results, please provide an address to which this summary should be sent:



Appendix H  
Teacher Consent Form

TEXAS WOMAN'S UNIVERSITY  
CONSENT TO PARTICIPATE IN RESEARCH  
Classroom Teacher

Title: Technology as a tool: The use of technology in the classroom and after school clubs  
Investigator: Lisa Taylor Cook Phone number: [REDACTED]  
Research Advisor: Dr. Sharla Snider Phone number: [REDACTED]

Explanation and Purpose of Research. This study will be used as my dissertation research project. The purpose of this dissertation study is to investigate how technology is being used in the classroom and after school clubs. This study seeks to capture, as the primary data source, teacher's choices in technology usage, community of practice techniques and digital citizenship practices. General observations will be made of how you guide the use of technology in the classroom and during a school activity clubs. Additionally, interviews will be conducted to learn more about classroom and school clubs. The research question is explored through two components of the study: (1) **general observation** of teacher's implementation and teaching of technology which will include observing the regularly scheduled interactions of you, the teacher, and students in the classroom and after school clubs; (2) **focused interviews** with teacher, that will **explore perspectives** of technology use with and by young children.

Specific Procedures to be Used: Upon return of the signed consent form, you will be provided with a copy. If you have further questions, the principal investigator will contact you to address your questions by phone or to arrange for a meeting date and time at the Center per your convenience. Field notes and audio will capture the language and activities of you in your natural school environment for analysis purposes.

Duration of Participation: No additional time commitment is required of you in the school/classroom during the general observation of project work time as it is part of the normal after school/classroom activities. Time commitment when participating in the interview aspect of is a maximum of 30 minutes per interview. The classroom observations of normally scheduled activities within the selected classroom will occur approximately twice a week for 3 hours each. The after school club observations will occur at each scheduled meeting (once a week for each club) for approximately 1 hour and 15 minutes.

Benefits to the Participant: There are no direct benefits to participants.

Risks to the Participant:

RISK	STEPS TO MINIMIZE RISK
Loss of confidentiality	All identifiable data will be coded and a master list maintained. The principal investigator and advisor will be the only investigators to have access to the audio tapes, interview notes, the master list, the computer software program and coded data. When transcriptions of audio are made the principal and teacher participant names will not be transcribed. The teacher and principal participants will be given code names that will be used within all transcriptions. Consent forms will be stored separately from the data. When not in use, these materials will be kept in a secure locked filing cabinet in the principal investigator's home. The participant's names will not be used in the event that the study findings are published. The interviewer will avoid the use of names during the interview process to ensure a higher degree of confidentiality. There is potential risk of loss of confidentiality in all email, downloading, and internet transactions.

Please initial here \_\_\_ p. 1 of 2

Approved by the  
Texas Woman's University  
Institutional Review Board  
Date: 8/7/2015

RISK Loss of time for classroom activities for interview process.	STEPS TO MINIMIZE RISK The interview process for the participant will take a maximum of 30 minutes with most interviews ranging from 10-20 minutes. Participant will have a choice as to when or if they would like to participate in the interview process. In addition, participant can stop the interview at any time and remaining questions, if any, will be asked at another agreed upon time. It is estimated that 10 teacher interviews will occur.
RISK Fatigue or physical discomfort during the interview process.	STEPS TO MINIMIZE RISK The interviews will be held in a comfortable and familiar location. The participant may take a break during the interview as needed and may stop the interview at any time. Not all questions will be asked depending on the interactions with the participant and their interest level. The interview is deemed complete when the participant shows a lack of interest or fatigue and/or the answers extend beyond the cognitive knowledge sought from the guiding research questions.
RISK Coercion	STEPS TO MINIMIZE RISK The teacher participant will be informed that there will be no penalty should they decline to participate in the study.

**Problems:** The researchers will try to prevent any problem that could happen because of this research. You should let the researchers know at once if there is a problem and they will help you. However, TWU does not provide medical services or financial assistance for injuries that might happen because you are taking part in this research.

**Voluntary Nature of Participation:** Participation in this research project is voluntary. If you agree to participate, you can withdraw your participation at any time without penalty.

**Results of the Study:** The principal investigator will provide you with a detailed summary of the study's findings if requested. You will also have the option of contacting the investigator via the phone number on this consent form or by email on the cover letter. Also, you will be notified of educational seminars held to share the results and join in an opportunity for discussion related to the study.

**Human Participant Statement**

You will be given a copy of this signed and dated consent form to keep. If you have any questions about the research study you should ask the researcher; her phone number is at the top of this form. If you have questions about your rights as a participant in this research or the way this study has been conducted, you may contact the *Texas Woman's University Office of Research and Sponsored Programs* at 940-898-3378 or via e-mail at IRB@twu.edu.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

If you would like a summary of the study results, please provide an address to which this summary should be sent:

Approved by the  
Texas Woman's University  
Institutional Review Board  
Date: 8/9/2015

\_\_\_\_\_  
\_\_\_\_\_