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ACCEPTANCE

This dissertation, OPENED EYES, OPENED MINDS: THE STORY OF A COLLABORATIVE INQUIRY INTO ELECTRONIC BOOK USE IN THE PRIMARY READING CLASSROOM, by LISA STONE, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree, Doctor of Philosophy, in the College of Education and Human Development, Georgia State University.

The Dissertation Advisory Committee and the student's Department Chairperson, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty.

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**OPENED EYES, OPENED MINDS: THE STORY OF A COLLABORATIVE
INQUIRY INTO ELECTRONIC BOOK USE IN THE PRIMARY READING CLASSROOM**

by

LISA STONE

Under the Direction of Dr. Teri Holbrook

ABSTRACT

In order to prepare students to be globally competitive, teachers must equip them with the knowledge and skills to be successful in the 21st century. To this aim, school spending on e-books and e-readers is at an all-time high, but evidence indicates teachers are not fully integrating them into the reading classroom. This qualitative study was grounded in sociocultural theory and explored veteran primary teachers' knowledge of and persistent attitudes about using e-books in reading instruction. Within a collaborative inquiry group, five

teachers explored the way to best use e-books in their primary reading classrooms. Through the cyclical process of planning, observing, acting, and reflecting, the teachers explored e-books during the meetings and then took them into the classroom to use with their students. Data sources included semi-structured interviews, participant observation notes, transcribed audio recordings, and reflective journals. Thematic and directed content analyses were used on the data, and findings of both analyses were presented in a pleated text that framed analytical texts with researcher notes. Findings demonstrated that there was an emotionality to reading books in traditional and electronic format, but by experimenting with the e-books in the supportive, dialogic context of the collaborative inquiry meeting, teachers changed both their knowledge of and persistent attitudes about electronic books. Important implications were noted for professional development coordinators, administrators, and policy-makers.

INDEX WORDS: Electronic books, Teacher perceptions, Collaborative inquiry

OPENED EYES, OPENED MINDS: THE STORY OF A COLLABORATIVE
INQUIRY INTO ELECTRONIC BOOK USE IN THE PRIMARY READING CLASSROOM

by

LISA STONE

A Dissertation

Presented in Partial Fulfillment of Requirements for the

Degree of

Doctor of Education

in

Curriculum and Instruction

in

Early Childhood and Elementary Education

in

the College of Education and Human Development

Georgia State University

Atlanta, GA

2017

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DEDICATION

To Daryl

Thank you for believing in me when I didn't believe in myself, for allowing me the time to find myself, even though it meant you had to find time to do everything I couldn't, and for your endless patience. I couldn't have done this without your love and prayers. I'm glad I checked the yes box.

To Mom

You were my first teacher, bought me my first book, and gave me love of the written word.

You are and always will be the smartest woman I know.

To Josh, Sarah, and Maddy

Thank you for your never-ending encouragement and support. I am better for being your mom and I am humbled by what awesome people you turned out to be.

To Hannah and Charlotte

Thank you for sharing me with Georgia State, for always waiting for me to kiss you goodnight, and for all the love notes.

To God, be the glory, great things He has done!

ACKNOWLEDGEMENTS

There are many people that have walked with me along the way during the last three years. First and foremost, I'd like to thank Dr. Teri Holbrook. You didn't even know me when I appeared at your door, and you took a chance on me anyways. Thank you for always being supportive, for always correcting in kindness, and for encouraging me to think outside of the academic box. I have learned so much about teaching and mentoring from working under your direction. I will be forever grateful that my committee fell apart and you ended up with me! To Dr. Laura May and Dr. Mona Matthews, thank you for your direction throughout the years and for the wisdom when I sat in your classes.

To my friends, who are more like family, at Raven's Nest Christian School, thank you. You have prayed for me, encouraged me, supported me, and always given me what I've needed to get this done. I hope that when I'm done, I'll have made you all proud.

To my fellow 2014 cohort members, from you I have learned the most. I am not the same person as I was three years ago and I am better for knowing you.

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Chapter One

Introduction

Background of the Study

My earliest memory is of a turtle, “in a box, under my bed, in the corner of my room” (Bing, 1966) in the raggedy, well-loved pages of a book. From that first book and throughout my childhood, my books were my constant. They were there in the car, in the backseat, keeping my mind occupied while my stomach churned on our yearly drives across country. They were there, on the rusty bleachers at the baseball field, as my brother played game after game of baseball. And they were there, as my only friend, when my family moved around the country as my father climbed the corporate ladder. Reading has been my constant through moves, through children, through a divorce, and even now, through the long and arduous journey which is my mother’s cancer. I love the feel of a book in my hand, the tranquility of wandering the aisles of the bookstore for hours, and the smell of the library. Books are a comfort, an escape, and a kindness to myself.

My love of literature was a common thread throughout my formal education. My teachers often left me to read the books of my choice, as I had already read through the basal readers, the SRAs, and later the classics. It was my sixth-grade reading teacher, though, who challenged me not only to read, but to think about my reading. I loved the way that she shared with us her vast library, yet I also feared her high expectations. She asked questions that she refused to answer. Instead, she encouraged me to find my answers within the literature that she assigned. I left her class having read every Newbery book ever written and knowing I wanted to teach, knowing I wanted to inspire the love of the written word in my own students someday.

As a teacher, I have fulfilled that dream that first took root in middle school. I have taught children to read for twenty-six years. I've been a regular classroom teacher, a special education teacher, an EIP teacher, and a Reading Recovery teacher, and in each position, children's literature has been the vehicle through which I've taught, inspired, and reached my students. I've used books to teach writing, science, math, history, social skills, and of course, reading. Teaching with books has become my strength and passion. I find nothing more personally and professionally fulfilling as watching a child become a reader, falling in love with books.

Known throughout the school as the 'book lady,' I have over 1,000 books in my classroom library. There are a few special ones that I keep in a separate place, but for the most part, it is a raggedy collection: old childhood favorites, books from yard sales and thrift stores, tomes rescued from the trash bins at libraries, and books donated to me by students. However, that is not why most of them are well-worn. It is because they are well-loved and well-read by first graders who run their fingers over the spines until they have found just the right book, who rejoice at finding another book in a favorite series, and who treasure and work for that free time that they get to find a good spot and read. It is because at only six years of age, they have realized the value of a good book.

As computer technology becomes more of a focus in the schools, however, I fear that using books in the classroom is in danger of becoming a teaching practice of the past. Modern technology is becoming a valuable support for the teaching of reading and writing (U.S. Department of Education, 2011). It is changing the way that teachers teach and how students learn. Students are tech-savvy, adept at even a young age, at word processing, computer skills, computer games, and e-books (Maltais, 2015). Textbooks and children's trade books are now being offered in a digital format. Teachers, administrators, parents, and policy-makers alike believe

that exposing young children to technology prepares them for the future in the digital age (Harris, Straker, & Pollock, 2013; Jones & Brown, 2011; LeFever-Davis & Pearman, 2005).

While I recognize the value of using technology in the classroom, I am troubled at the thought of the screen replacing the traditional hard-cover book. When I go to the public library to find solace to write papers and do research, there are no children wandering the aisles of books in the children's section. There are no children engrossed in stories on the big pillows that line the back wall. There are no children excitedly presenting the librarian their new library card. The library is still full of children, but they are waiting for screen time. The waiting list for the newest Eric Carle book is short, but the list for a turn at the computer spans two pages. The air is not rife with the sound of book jackets being opened and the hum of children reading quietly to themselves, but full of the clicks, beeps, and typing that signify the workings of the computer.

And though I accept the changes in literature and the changes in books, I cannot help but wonder what is being lost. Instead of reading traditional books to or with students, teachers are using Smartboards, iPads, or desktop computers to share e-books. Can the interaction with a screen substitute for teacher interaction and a good piece of literature? Does the use of technology in the classroom foster problem solving, cognition, and creativity, or does it hinder it? Is it possible to foster that love of children's literature without a physical book to hold, pictures to run fingers over, the sound, smell, and feel of a book? It has long been my position that although modern technology is a necessary and important part of instruction today, young children benefit more when teachers thoughtfully and intentionally plan meaningful instruction using traditional books.

Or so I thought. The more I read about new literacies and electronic books, the more I reluctantly conceded that there were tangible reasons that students should learn to read electronically. I had to acknowledge that instruction with digital books was perhaps as valid and beneficial, if not more so in some areas, than using traditional books, and moreover that there existed electronic books that stood alone as good literary pieces and not just digital copies of their better, traditional versions.

As a teacher, I have a responsibility to provide my students with relevant and effective instruction. Using electronic books to teach is definitely relevant. We live in a digital world, where students we teach have never known a life without technology.

In order to prepare students to be globally competitive, national standards now include technology integration goals and objectives in almost every subject area (National Governor's Association Center for Best Practices & Council of Chief State School Officers, 2010). Some schools, including my own, have implemented "bring-your-own-device" systems, encouraging teachers and students to use technology in class on a daily basis. Many schools have technology available to all students through computer labs or iPad availability. Even preschool students are interacting with technology in the classroom. Because education has the responsibility to prepare students for success in the 21st century, teaching them to read electronically is particularly important (Rotherham & Willingham, 2009).

However, many teachers are reluctant to include electronic books in their reading instruction because of the lack of best practices available, as well as the hesitancy to depart from the traditional print book in reading children's literature (Roskos & Burstein, 2012). A 2013 study (PBS Learning Media) showed that teachers are increasingly using their interactive whiteboards in large group instruction, but Miller and Ishizuka (2014) found that schools housing electronic

books used them more for free reading than for instructional purposes. Resistance to using digital books in the place of traditional printed books also exists. While 52% of school leaders report that they want to move from traditional to digital books, only 14% of teachers feel strongly enough to make the shift within their classrooms (Miller & Ishizuka, 2014).

I am not among the teachers that have made that shift; nor are any other teachers in my elementary school. While there are iPads available to all teachers and every classroom has a Smartboard, at the beginning of the study, few teachers utilized even the vast sources of free electronic books online, much less the scores of apps and downloads available elsewhere. Personally, my reluctance stemmed from both my love of children's literature in traditional form and my lack of knowledge about using electronic books effectively. As for my colleagues, I assumed that their reasons mirrored my own.

Purpose and Research Questions

The purpose of this research was to collaborate with my fellow primary school colleagues to explore the underlying attitudes about, as well as the present knowledge of, electronic children's books and how these factors contributed to resistance to using electronic books in our instruction. At the start of this study, it was unknown if teacher resistance came from lack of knowledge, lack of resources, or lack of openness to change. I employed the practice of collaborative inquiry within a qualitative study with the goal of developing practices with and shifting attitudes of electronic books among primary reading teachers within my elementary school.

This study addressed the issues of teacher knowledge and teacher resistance by answering the following questions:

1. What can be learned about veteran primary teachers' knowledge of and persistent attitudes about using electronic books in the reading classroom?

2. What can be learned about how collaborative inquiry increases knowledge and shifts persistent attitudes about using electronic books in the reading classroom?

By examining the nature of resistance and working with and among my colleagues to change attitudes and improve expertise, the use of electronic books was increased among this group during the academic school year in which the study took place. In this way, the teachers worked toward integrating digital reading into the curriculum, recommended by researchers and mandated by the Common Core Standards, truly preparing their students for success in the 21st Century.

Theoretical Framework

As a constructivist, I presume that learners actively construct their own knowledge (Crotty, 2012). This knowledge does not so much exist outside the learner but within as the learner interacts with the world; as knowledge is constructed, so is meaning. This knowledge is constructed on a foundation of prior knowledge that varies with the individual. It is acquired through relevant interactions and experiences, not transmitted by the teacher to the students. There are many different constructivist learning theories (Krahenbuhl, 2016), but there is one common thread. In order to construct meaning, there must be social interaction. The role of social interaction and the context in which learning is situated in this construction of knowledge is explored in sociocultural theory (Karpov, 2014). It is this theory that guided my study.

Sociocultural theory. Informed by the work of Vygotsky (1978), sociocultural theory assumes that all learning is social, and as such, cannot be removed from the cultural, social, and historic context in which it takes place. Vygotsky even posited that “the social dimension of consciousness is primary in time and in fact. The individual dimension of consciousness is derivative and secondary” (p. 30). Therefore, much emphasis is placed upon the roles learners assume

during social interaction and how interaction shapes cognitive development. There are four major concepts in Vygotsky's work that are of importance to this study: mediation of thought, the Zone of Proximal Development, intramental and intermental learning, and the role of language in learning. While Vygotsky's work originally focused on children's learning, later scholars have applied his tenets to adult education. For my study, these tenets were important to understand not only the children with whom the participants work daily, but also ourselves as adult learners. In the sections below, I will outline these four major concepts, first as it applies to children and then as it applies to adult learning.

Mediation of thought in children. According to Vygotsky (1978), the mental tools by which children solve problems are not inherent but result from adult mediation. Facilitating cognitive development always requires interaction between a child and an adult or more competent other (Gredler, 2012). In the school setting, this is the teacher. In Vygotskian theory, the teacher does not simply communicate knowledge to the passive student. Instead, the teacher "explains, informs, inquires, corrects, and forces the child to explain" his thinking (Vygotsky, 1978, p. 214). In this way, the student comes to knowledge by himself, though guided by the interaction with someone who has more knowledge or skills.

Mediation of thought in adult education. In adult learning, this Vygotskian principle is demonstrated through teacher agency built through social interaction (Au, 2013). Teachers come together to develop shared understandings and work toward a common goal, and in doing so, come to the common belief that they can affect change. This is not inherent to the individual, but interconnected with "the social context and the cultural tools that shape the development of human beliefs, values, and ways of acting" (Lasky, 2005, p. 900). Teachers, although from different backgrounds and of differing beliefs and values, come together in a created, shared culture to

solve a common problem or achieve a common goal. Together, the community of teacher learners can achieve what may have been impossible individually, especially if there are differing abilities and skill levels. In this current study's collaborative inquiry, teachers of different backgrounds, experiences, and pedagogical strengths came together to solve the problem of how to use electronic books in their reading instruction.

Zone of Proximal Development in children. The role of the more knowledgeable other is of great importance in the child's zone of proximal development (ZPD), the second theoretical concept informing this study. According to Vygotsky (1978), this zone is where learning takes place, as teachers and students use their language to solve problems together. The ZPD is defined by Vygotsky (1978) as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86). Moll (1990) describes the ZPD as a unifying concept in Vygotsky's theory, as it integrates the key elements: the importance of mediation of thought by a more competent other in the psychological development of higher mental processes, the importance of pedagogy in moving development forward, the importance of social activity in the process of thinking, and the concept of scaffolding.

Zone of Proximal Development in adult education. A similar concept can be applied to teacher development. Warford's (2011) Zone of Proximal Teacher Development (ZPTD) describes the space between the present level of teaching knowledge (including skills and pedagogical content knowledge) and the potential level of teaching knowledge that can be attained with mediated assistance from peers, mentors, or more competent others. The teacher moves through distinct stages ranging from self-reflection in the beginning, to internalization and application of

pedagogical concepts as she moves through this zone (Fani & Ghaemi, 2011). Many factors can affect this cognitive growth, including collaboration, the presence of evidence, mediational tools including language and technology, collaborative and individual reflection, and context (Shabani, Khatib, & Ebadi, 2010).

The notion of ZPTD is especially relevant to this study. My own resistance to electronic books was the impetus for this study, and teachers at the research site have resisted, for the most part, using electronic books in their classrooms. Other professional development sessions in this setting that have focused on technology have revealed that teachers have a limited knowledge of how to use technology to enhance literacy. It can be assumed, then, that teacher knowledge of digital literacy is equally limited, though of differing levels. Coming together with these different cognitive abilities, then, we learned from and with each other in collaborative inquiry, with self-reflection at the heart of the process. We came to the study with different strengths, different knowledge sets, and different perceptions. As we explored and discussed using electronic books, we naturally took turns as the more competent other, building upon individual strengths. As the study unfolded, this did not develop quite as expected, as will be discussed in the findings section.

Intermental and intramental learning in children. It is in interaction with others that the student learns socially before internalizing the learning, and this is the third relevant construct of Vygotsky's theory. The "genetic law of cultural development" (Vygotsky, 1978) describes the belief that learning takes place intermentally (between teacher and student) before it takes place intramentally (within the individual student). According to this, any cognitive development occurs "on stage twice, or on two planes. First it appears on the social plane, then on the psycho-

logical, first among people as an interpsychological category and then within the child as an intrapsychological category" (Vygotsky, 1978, p.57). In other words, children make meaning within social interactions first, and then internalize learning within themselves.

Intermental and intramental learning in adult education. The context in which learning takes place, which highlights the importance of situated learning (Lave, 1993), is also informed by sociocultural theory. As learning naturally occurs, according to situated learning theory, it is embedded in the activity, context, or culture in which it takes place. From a situated learning perspective, cognitive development first occurs in social settings through dialogue with others. Professional development that is situated is authentic, meaningful, directly related to the problem that is being investigated, and located within specific communities of learning in which this dialogue can take place (Stein, 1998). Research about adult learning communities emphasizes the importance of situating learning within a continuous, sustained cycle of activity and interaction (Lave, 1993). The collaborative inquiry group at the heart of this study met monthly and engaged in dialogic (intermental) learning. As the teachers went back to their classrooms and used this learning, they internalized it through experience, and learning became intramental.

Semiotic mediation in children. The fourth relevant principle of Vygotskian thought is the role of language in semiotic mediation as it occurs in cognitive development. According to Vygotsky, language mediates thought (Bruner, 1962), and is not simply a tool to put thought into speech. Rather, language is a tool that refines thought over time. According to Diaz, Neal, and Amaya-Williams (1990), children use speech not only to communicate with others in social settings, but also as a tool to guide and plan their activity. Speech occurs in concert with action, which Vygotsky (1978) asserted is "natural and necessary" (p 25), speech and action being part of "one and the same complex psychological function" (p. 25) in problem solving. Vygotsky

cited instances when children, unable to speak during problem solving, were incapable of solving a problem, leading to the conclusion that children “solve problems with the help of their speech, as well as their eyes and hands” (p. 26).

A related practical application of Vygotskian theory is interthinking, first discussed by Neil Mercer (1995) to describe the link between cognitive and social functions during group talk. Simply put, interthinking is using speech and language to think collectively and to engage with others and their ideas through oral language. Oral language is a “window into a child’s representation of the world, knowledge, interpretations, and thought processes” (Pantaleo, 2007, p. 440). However, it can also be a tool through which students form new meanings through interaction with others (Pinnell & Jaggar, 2003). It is an active way for students to take part in their own learning.

Learning, according to Littleton and Mercer (2013), is a highly communicative and social process. Children use language, “thoroughly integrated with cognitive processes” (p. 3), to solve problems and make sense of their world. The researchers posited that for cognitive growth to occur, collective and individual thinking must occur in complement, echoing Vygotskian thought. Collaboratively, language is used as a tool for teaching, learning, constructing knowledge, sharing understanding, and problem solving.

Semiotic mediation in adult learning. According to Littleton and Mercer’s interthinking (2013), dialogic practice mediates thought in both children and adults because language is principal to mediating learner change. It is through dialogue that learning takes place, even in professional development, as teachers move from their initial understandings to mutually constructed meanings (Briggs & Forbes, 2006). Successful professional development provides ample opportunities for teachers to engage in dialogue as a means of inquiry, as speakers and listeners share

in conversation that supports the appropriation and transformation of shared ideas (Bakhtin, 1986).

Littleton and Mercer (2013) did research among teachers and found that the same principles that guide collective thinking among children apply to adults as well. They suggested that solving problems through interthinking is the result of building upon the shared knowledge of the community of learners and is used to investigate and contemplate the unknown. Not only will successful interthinking depend on a shared goal, but a common set of values and shared language. This collaborative inquiry incorporated the dialogic interaction necessary to foster successful interthinking. It also had as one of its main components reflection, one of the factors that Littleton and Mercer (2013) posited was necessary for productive interthinking.

Deweyan theory of reflection. In *How We Think* (1933), a book written specifically for teachers, John Dewey declared thinking, or concept development, at the heart of education. Furthermore, he posited that without experience, reflection, and activity, concepts cannot become permanent (Lavery, 2016). While it is easy to think of reflection and thinking interchangeably, when Dewey is considered as the pragmatist that he was, it is clear that his definition of reflecting is intricately connected with doing. It is an active process that involves forming hypotheses and trying them out in real world situations (Rolfe, 2014).

Building on Dewey's (1933) definition, Shulman (1987) described teacher reflection as "reviewing, reconstructing, reenacting, and critically analyzing one's own and the class' performance, and grounding explanations in evidence" (p.15). More recently, Black, Sileo, and Prater (2000) discussed teacher reflection in terms of developing new realizations and appreciations in the reality of the classrooms. Reflective activities in teacher professional development have included journals, as well as video and other forms of oral reflection (Lindroth, 2015).

In this study, collective and individual reflection were employed as the teachers shared their experiences, feelings, and perceptions, in both the collaborative meetings and in reflective journals. At times, the reflection occurred naturally in response to something that had happened in the classroom, and at other times, in response to a specific prompt. Reflection became the way that teacher participants talked through their feelings and thinking about what was happening in their classrooms as they and their students explored electronic books.

It is also important to note that another variation of a concept presented by Shulman, pedagogical content knowledge, is important to this study. Technological pedagogical content knowledge, also known as TPACK (Mishra and Koehler, 2006), is the framework for examining the knowledge and skills necessary for successful and effective integration of instructional technology into the classroom. The research pertaining to TPACK is particularly important to consider in understanding and interpreting the data in this study.

In the current study, the theoretical concepts of sociocultural learning and reflection were put into practice through the methodology of collaborative inquiry. As teachers convened as a community of learners, they explored the relatively unknown-to-them practice of using interactive electronic books in their reading instruction. The iterative cycle of reading and discussing evidenced-based research, putting theory into practice in the classroom, and reconvening for individual and collective reflection incorporated tenets of each of these theories. Through this inquiry, teachers constructed their own knowledge of using digital books, which contributed to a common nexus of practice around using interactive electronic books in the classroom and the acquisition of skills necessary to integrate electronic books effectively into instruction, as outlined in TPACK (Mishra & Koehler, 2006). These theories also provided the lens through which data

was collected and analyzed.

Definition of Terms

Electronic books are a learning tool in the relatively recent field of new literacies. New literacies brings with it a host of new concepts, terms, and ideas of what makes a literacy “new” (Knobel & Lankshear, 2007), and what designates it from traditional literacy. For the purpose of this study, I have conceptualized and defined the key terms, both relating to new literacies and to the research at hand, as follows.

Attitudes: For the purposes of this study, the terms perceptions and attitudes are used interchangeably. Attitudes and perceptions refer to the unique way that participants feel and think about things.

Book Apps: Book apps are software programs that are usually highly interactive and integrate written text, visuals, audio, and interactive design (Kleinfeld and McCoy, 2012). In this study, book apps were purchased from the Apple Store and downloaded onto iPads.

Children’s Literature: Children’s literature is any book produced to instruct or entertain children. Children’s literature includes non-fiction, literary, and artistic genres and can embody any physical format, traditional or electronic.

Collaborative Inquiry: Collaborative inquiry is a model of professional development that can be defined as a group of teachers working together in a cyclical process of action and reflection that fosters an ongoing dialogue about classroom practices and their effect on student achievement (Nelson and Slavit, 2008).

Dialogue: Dialogue is linguistic communication as a semiotically mediated joint activity, in which language provides the means for coordinating action and thinking together (Vygotsky, 1981).

Digital texts: In this study, the mention of digital texts will refer to electronic books and other pieces of literature read as static pieces of electronic text. This study is not concerned with Web 2.0 content and the electronic text that it may present to the reader/user.

Electronic book: An electronic book can encompass any software that represents a story in digital form and may be referred to as a CD-ROM storybook, DVD book, computer book, interactive book, or digital book (de Jong & Bus, 2003; Pearman & Chang, 2010). For the purpose of this study, an electronic book is a story that can be displayed on an iPad. Electronic books may also be referred to as e-books.

Facilitator: A facilitator in collaborative inquiry is a member of the inquiry team who provides two types of support: support for the teacher collaborative process through facilitation of the dialogic process and reflection, and support for the inquiry environment through provision of time, resources, and negotiation of the administrative logistics that may impact the inquiry process (Nelson & Slavit, 2008).

Instructional Technology: Instructional technology refers to any technology used to facilitate and enhance instruction, such as computers, tablets, interactive whiteboards, and other sources.

Interactive Electronic Book: Interactive electronic books are types of electronic books that enable the readers to interact with the story through sight, sound, and touch (Itzkovitch, 2012).

Interthinking: Interthinking is a practice defined by Littleton and Mercer (2013) as the process of collective thinking, of engaging with others' ideas through oral language. It can also be thought of as thinking together.

New Literacies: The term “new literacies” has as many definitions as does literacy and varies based on the group of scholars defining it. For the purposes of this study, however, new literacies will refer to “skills, strategies, and dispositions necessary to successfully use and adapt to information presented in electronic medium” (Leu, Kinzer, Coiro, & Cammack, 2004, p. 1570).

Picture Book: A picture book is usually a children’s book in which the pictures are as important, if not more so, than the words in telling the story. It is a text that combines both visual and verbal narrative, or in some cases, just pictures are used to tell the story.

Primary teachers: For the purpose of this research, primary teachers will be defined as teachers of grades kindergarten through 3rd grade.

Professional Development: Professional development is defined by the National Staff Development Council (2009) as “a comprehensive, sustained, and intensive approach to improving teachers’ and principals’ effectiveness in raising student achievement” (Section 9101 of the Elementary and Secondary Education Act).

Reflection: A combination of the theoretical definition of reflection by Dewey (1933) and a more practical definition of reflection by Rodgers (2002) were used to define the term for the purposes of this study. Reflection is an active, deliberate meaning making process in which the learner moves from one experience to another through the careful consideration of the interrelationships with and connection to other experiences and ideas. Reflection can be individual or collective in nature.

Reflective Journal: Reflective journals are written accounts (either handwritten or digital) that allow learners to compare and contrast their observations, their feelings, and their understandings of an experience with existing knowledge, values, and beliefs in order to make sense of practice (Ghaye, 2011; Minott, 2008).

Technology Pedagogical Content knowledge (TPACK): TPACK is a framework for examining the knowledge necessary for teachers to fully integrate instructional technology and combines technological knowledge, pedagogical knowledge, content knowledge, and the interaction of the three (Mishra & Koehler, 2006).

Text: In this age of new literacies, this term can carry many meanings. For this study, however, the meaning of this term is two-fold. A text can refer to a passage of words and related illustrations in either print or digital form. When referencing print or electronic books, text will always refer to the words of a story and not include the pictures or other features.

Understanding: Understanding refers to the knowledge base about what something is and how it works.

Chapter Two

Review of Literature

In this digital age, it is increasingly important that students are equipped with the digital skills necessary for success in the 21st century. It is imperative for teachers to become digitally literate and to be able to effectively integrate these skills into classroom instruction. However, even though more money is being spent on technology for the classroom, teachers are not regularly integrating technology into instruction (Roskos & Burstein, 2012). The purpose of this study was for a group of primary school colleagues to collaborate as they explored the underlying attitudes about, as well as the present knowledge of, electronic books and how these factors contributed to resistance to using electronic books in reading instruction. Before proceeding with the research study, a thorough understanding of new literacies, specifically electronic books, was necessary, as well as the role of such books in reading instruction and the changing role of the reading teacher. The factors and causes of teacher resistance to instructional technology integration were also pertinent to the study. Because of the nature of the study, understanding the collaborative inquiry process was of equal importance. This review of the literature will cover all of these topics.

Peer-reviewed literature was the main source of information for this literature review. Searches for peer-reviewed journal articles were made using the Georgia State University online databases (EBSCO, ProQuest, Academic Search Complete, JSTOR, ScienceDirect, and PsycINFO) in the area of education. The reference lists of the originally searched articles were

rich sources of additional references, as were recommendations from committee members, professors, and even the authors themselves. In addition to peer reviewed articles, scholarly books were also used to garner important information, and monthly publications were hand-searched.

The list of terms used to search for relevant articles has changed and evolved greatly during the process of narrowing the topic, formulating the research design, and even once the study began. At the outset of the study, I searched the terms *electronic books*, *e-books*, and *digital books* most often, alone and in combination with *interactive read-aloud* and *shared reading*. As the dialogic nature of my study became apparent, I searched *dialogic teaching*, *dialogic inquiry*, and *interthinking*. As the study unfolded and it was clear that teacher resistance was real and present, phrases such as *teacher resistance to technology integration*, *teacher resistance to electronic books*, and *teacher perceptions about instructional technology* were searched. In all of these searches, *digital books*, *electronic books*, and *e-books* were used in each search to make insure that the most thorough search was completed. Methodology decisions were supported through sources found upon searching *collaborative inquiry*, *action research*, *sociocultural theory*, and related topics.

In the following sections, I will summarize the definition, the emergence, and the importance of the field of new literacies, with an emphasis on electronic books. I will explore the recent research on the pedagogical and technical skills needed to successfully integrate instructional technology into instruction, and the nature and factors in teacher resistance to integration of instructional technologies in the classroom. Finally, I will outline the characteristics of effective professional development and illustrate, through existing literature, how collaborative inquiry was an effective professional development model with which to explore teacher knowledge of and attitudes about electronic book use in the context of primary reading instruction.

New Literacies

With the advent of new technologies in schools comes the emergence of new forms of literacy. Consequently, students must learn new skills and strategies in order to effectively navigate digitalized learning environments. New literacies, a phrase first coined by David Buckingham (1993), refers to the skills, strategies, and dispositions necessary to successfully adapt to changing technologies impacting everyday life (Lapp, Moss, & Rowsell, 2012). As we move forward “from the dominance of the word to the dominance of the image; from the medium of the book to the medium of the screen” (Kress, 2003, p. 1), these skills will allow students to successfully function in the 21st century with its rapidly changing forms of learning technology (Lapp, Moss, & Rowsell, 2012).

New practices in literacy are not only about the new digital devices, as it may appear, but also about new ways of making meaning. Many of these procedures are alterations and augmentations of practices that have been staples of traditional literacy instruction (Bomer, Zoch, David, & Ok, 2010). Students must shift from understanding a stable print book, where the written word with support of the illustrations is the primary conveyor of meaning, to digital books, in which the traditional relationship between text and image is interrupted and transformed. Instead of relying only on the words and illustrations, students have multiple sources, including sound, animation, and hyperlinks with which to make sense of the text (Dias, 2010). Because of the vast differences in the nature of traditional and digital texts and the processes involved in reading each, Felvegi and Matthew (2012) posited that new literacies instruction must focus on the following skills and strategies in the context of beginning reading instruction: navigation, linearity, source, and content.

In this section, I have presented the emerging definition of new literacies. I will, in the sections below, describe the literacy models associated with new literacies, the changing role of reading instruction and the reading teacher, and finally, the research surrounding the electronic book.

New Literacies Models

Different models have been proposed with the emergence of new literacies. The models that have emerged can be characterized by two distinct theoretical perspectives. The first is informed by cognitive and language theories, with a focus on the cognitive and social processes involved in reading digital texts (Leu et al., 2007). These models assume that new literacies are essential for full participation in all facets of life, require a new skill and strategy set, are multifaceted, and as such, are best approached from multiple points of view. Most importantly, though, is the belief that new literacies change regularly with the emergence of new technology. Therefore, the goal of new literacies instruction should not be to teach a single set of skills, but to teach the skills necessary to continuously learn given new technological developments. There is no set definition of new literacies; rather, the definition is continuously changing.

Another model of new literacies instruction focuses on the social practices surrounding the use of new technologies. Lankshear and Knobel (2008) described new literacies as “new socially recognized ways of generating, communicating and negotiating meaningful content through the medium of encoded texts within contexts of participation in Discourses” (p. 4). In other words, according to these models, digital technologies serve as a means of communicating, sharing, interacting, and accessing meaningful content. Also important is the opportunity to engage in a participatory culture of collaboration, which enables people to work together in a way

not previously possible, developing a “collective intelligence” (p. 526) and co-constructing meaning.

One literacy model that challenges the assumptions and practices of traditional literacy pedagogy and incorporates both of the above theoretical perspectives is Lankshear, Snyder, and Green’s (2000) three-tier model of literacy, called “technoliteracy” (Snyder, 1999, p. 8), that underscores the importance of the operational, cultural, and critical dimensions of reading and writing. While this new term incorporates parts of “literacy” and “technology,” the authors stress that technoliteracy need not refer only to literacy with computerized text, but can refer to making meaning with other kinds of hard-copy modern literature as well. It is the emphasis on the different dimensions, not the presence of a computer, that distinguishes it from the traditional literacy pedagogy.

The operational dimension relates to the way that students make meaning using their understanding of the language. With modern picture books, this may be knowing how to follow along an untraditional text to make meaning. With an electronic book, it includes using the unique features of digital text, with students reading according to the “logic of the image” (Jones & Hafner, 2012, p. 52) on the screen rather than the logic of the word on the page. Students must be able to navigate the digital text effectively to derive meaning. The cultural dimension involves teaching children to consider the identities and relationships that can be forged through the use of technology in different contexts, as well as teaching that reading and writing is always in done for the purpose of authentic communication. Finally, the critical dimension addresses how readers and writers are positioned by the text they read and the power relationships mediated by digital technology, with an emphasis on critical literacy. Because of the added dimensions, this model requires much more from readers than traditional reading and writing, with its emphasis

on making meaning from the written word; it requires much more from teachers than just teaching students the mechanics of literacy.

New Literacies Teachers

Thus, not only have the nature of text and the meaning-making processes associated with texts changed with new literacies, so has the role of the literacy teacher. The literature suggests that teachers are, in general, privileging traditional forms of literacy (reading, writing, and analyzing print media) and applying them to digital texts (Burnett, 2009; Dias, 2010; Felvegi & Matthew, 2012; Lapp, Moss, & Rowsell, 2012). However, with new technologies comes the responsibility of preparing students to use new literacies skills and practices effectively in new ways to support their own learning.

Teaching students to support their own learning with media and other technologies has become a priority, as evidenced in the Common Core Standards (National Governor's Association Center for Best Practices & Council of Chief State School Officers, 2010). McDougall (2010) posited that with the increasing (often competing) pressure to prepare students for standardized assessment, it is becoming difficult to specify the core responsibilities of the elementary teacher. As the definition of literacy changes, teachers face dilemmas in knowing what to teach and how to teach it. A highly-qualified teacher no longer only has an advanced degree, but digital literacy skills as well (Trainin & Friedrich, 2014). In reality, many experienced teachers find themselves lacking expertise to teach the important skills outlined by the standards and simultaneously infuse digital literacy instruction into the curriculum.

There are many adjustments and reconsiderations that must be made in teaching reading with electronic books. One approach recommended for teachers just beginning to understand and teach new literacies is the remixing of instruction, mixing parts of the new literacies model with

traditional activities by using new technologies (Lapp, Fisher, & Frey, 2014). An example of this is teaching critical literacy through the use of electronic books. New literacies teachers must themselves be critically literate, teaching students how to interrogate as they read (Lapp, Moss, & Rowsell, 2012). They must also recognize that new literacies are complex. Many students have a lot of access to technology, but they still have much to learn about using familiar technology in new instructional ways. Assessment must be reconsidered as well, with teachers evaluating not only the traditional aspects of literacy, but how well students operate the technology to formulate responses (Karchmer-Klein, & Shinas, 2012). With the introduction of electronic books, teachers must reconsider their role as they teach students how to read digitally.

New Literacies Reading Instruction

Teaching students to read on a digital device requires the teacher and students to forgo their notion of text as only written down messages or symbols, as well as some traditional processes and practices that focus only on the translation of visual cues. According to James Heap (1977), reading is the cognition that is necessary to make meaning of visual signs and symbols. Because reading on a digital device can require other senses as well, it makes sense that definitions of reading and reading instruction would need to be reformed when referring to the reading of electronic books.

Rowsell (2014), in her phenomenological study of digital reading with touch-screen devices, outlined the skills needed to read on an iPad: processing skills such as reading links, understanding visuals and animations, and making meaning from animated text; embodied practices such as tapping, scrolling, and reformatting text; and selecting the visual stimuli and features that lead to different semiotic outcomes. Not only do students need traditional reading skills to successfully navigate a story digitally, but they also need to be able to adapt their spatial

sense, awareness of color and sign systems, and haptic abilities to the book presented on a dynamic screen instead of in a static paper format. Rowsell argued not for the rejection of traditional reading instruction, but for the addition of skills that allow students to more effectively read digital texts, which “elicit senses that are more prominent than elicited with [traditional] books” (p. 126).

These digital reading skills need to be taught intentionally and systematically (Felgevi & Matthew, 2012). Digital reading is much more student-guided than traditional reading (Rowsell, 2014), and students need to be taught how to navigate digital text to best meet their own learning needs. In particular, students need instruction in the navigation of nonlinear text (Dias, 2010; Felgevi & Matthew, 2012; Rowsell, 2014). This non-linearity may be either liberating or defeating to a student (Dias, 2010), and students should be taught how to constantly evaluate what they are reading and use the available features as needed to aid in making meaning (Javorsky & Trainin, 2014; Karchmer-Klein & Shivas, 2012). Additionally, students need the important skill of being able to determine which visual material is important to comprehension and that which is extraneous (Coiro, Knobel, Lankshear, & Leu, 2008; Labbo & Kuhn, 2000; Rose & Dalton, 2009). A focus on new literacies certainly has the potential to transform reading instruction, just as the advent of the electronic book has the potential to change the reading experience.

Electronic Books

Electronic books can encompass any software that represents a story in digital form and may be referred to as CD-ROM storybooks, DVD books, computer books, interactive books, digital books, or story apps (de Jong & Bus, 2003; Kucirkova, 2013; Pearman & Chang, 2010).

The following sections will define electronic books, as well as outline current theories that undergird the research on electronic books, features of electronic books that distinguish them from traditional books, and recent research regarding electronic books and young readers.

Electronic book definition. In much of the literature, electronic books are defined in relation to printed books, assuming that an electronic book is simply a digital version of a printed book (Vassiliou & Rowley, 2008). Cope and Kalantzis (2006) described the electronic book, not as a simple artifact, but as an “information architecture” (p.192) that supports accepted routines of reading. Howard (2009) defined the electronic book as a step along the path of the evolution of the book, which at any time “represents the peak of technology, giving permanence and format to ideas and knowledge” (p. viii). Later definitions became even more general as the features of the electronic book evolved. In her article defining the e-book, Sargeant (2015) described the e-book as an electronic representation of a book that may or may not contain skeumorphic features, interactive features, and hyperlinks. Regardless of the definition, the general consensus is that there is no consensus. What is clear is that electronic books are changing, and that “further developments are not only likely, but inevitable” (Wilson, 2014, p. 213).

It could be said that a book need not be described as electronic, for “a book is what a book does” (Cope, 2006, p. 6), and what a book does is communicate ideas. Most early and many current electronic books borrowed the format of a traditional book to transmit these ideas, with “clear skeumorphic elements” (Sargeant, 2015, p. 457) which make the electronic book experience much like that of the traditional reading experience. With virtual verso and recto pages, a virtual gutter, and a standard 32-page layout, electronic picture books are often digital replicas of their printed counterparts. However, many more modern electronic books are being published

without the skeumorphic elements and with interactive functionality as the market demands innovation (Sargeant, 2015).

In contrast with the static electronic book described in the preceding paragraph are the picture book “apps,” or “applications.” Apps are software programs that usually are highly interactive and integrate written text, visuals, audio, and interactive design (Kleinfeld and McCoy, 2013). Although these apps originated with Apple products, it is now possible to download storybook apps on most every digital device (Sargeant, 2015). Because of the high level of interactivity in book apps, which often contain game and animated film design, the reader becomes the user; “people read e-books, whereas they *use* book apps” (p. 461, original emphasis). With the introduction of the story book apps, a shift has occurred in the way that children consume literature and the way we think about reading.

Electronic books and theory. As scholars have investigated this new medium of children’s literature, they have done so through various theoretical and conceptual lenses. One of the most prevalent theories used to investigate electronic books is sociocultural theory. The computer, when used by a student to read an electronic book, becomes a mediating agent, electronically scaffolding the decoding process and vocabulary acquisition (McKenna, 1998; Pearman & Chang, 2010; Salomon, Globerson, & Guterman, 1989). Salomon, Globerson, and Guterman (1989) extended this idea of the Vygotskian role of the computer by suggesting that the computer actually simulates human adult interaction, modeling reading, activating cognitive operations, and guiding the reader through the story. Instead of the teacher fading the support based on observation and pedagogical knowledge, however, the child has the ability to control

the fading, relying more on his own skills as reading proficiency increases (Gissell, 2015). Sociocultural theory is also a useful frame in which to examine the interactions between students and computers, as well as among students themselves, as they interact with electronic books.

Some scholars have integrated the Piagetian concepts of assimilation and accommodation into their research on the use of electronic books. While many educators simply assimilate electronic books into existing environments, only minimally disturbing the instructional status quo, Reinking, Labbo, and McKenna (2000) advocated instead for accommodation, a shift in thinking and pedagogical re-orientation with the introduction of new literacies. This requires that educators reconsider and reformulate the content, goals, and activities used in literature-based reading instruction in order to capitalize on the unique features of electronic books (Reinking, Labbo, and McKenna, 2000; Roskos & Burstein, 2012). As the digital landscape in education continues to evolve, it will be necessary to continuously fluctuate between assimilation and accommodation; assimilating new digital knowledge into existing literacy structures, and accommodating this information as new structures are created around the elements of digital text.

Features of electronic books. The elements that distinguish an electronic children's book from a traditional printed book are many. In many electronic books, the reader can choose to read the story, listen to the story, or read the story using interactive features (Ciampa, 2012; de Jong & Bus, 2002; LeFever-Davis & Pearman, 2005). Korat (2010) describes embedded "hot spots" (p. 24) as opportunities for readers to gain additional help in reading the story, accessed by dragging the cursor over the text or animations. Hot spots can activate movement or sound in the animations, provide definitions or pronunciations for unknown words, or access games, puzzles, or videos. Readers can physically interact with the content of the book by tapping or swiping the screen, tilting the mobile device, or even shaking it (Sargeant, 2015).

In a recent study (Parette, Blum, & Luthin, 2015), the following features were present in most electronic books: text, images, animations, audio, text highlighting, and text-to-speech activation. It is theorized that because of these features, instruction of literacy skills is delivered in different modes than in traditional books, thereby automatically differentiating instruction (Roskos, Burstein, You, Brueck, & O'Brien, 2011). Book apps also commonly feature puzzles, play activities, and games, which add extra interactivity and give the reader a degree of influence over the outcome of the book. (Sargeant, 2015). In order to be able to plan effective lessons with technology, the primary literacy teacher must know what features are available on electronic books and book apps, and how they connect with specific instructional strategies (Parette, Blum, & Luthin, 2015). Teachers can use the current and recent research to develop these understandings.

Research about electronic books. The research does show that, perhaps because of these interactive features, using electronic books increases motivation and engagement in young readers. Ciampa (2012), in a qualitative study that included questionnaires, interviews, and observations, studied eight first grade students' reading motivation with electronic books and found that electronic books increased motivation and engagement, especially in those children who were usually inattentive and unmotivated during reading instruction. Another study (Jones & Brown, 2011) compared motivation and engagement of students with traditional and electronic books. Using reading satisfaction surveys and reading comprehension tests, the researchers measured motivation and comprehension during two different reading sessions, one with a traditional book and one with an electronic book. They found that motivation and engagement did increase with the introduction of electronic reading materials, and that students preferred elec-

tronic books to traditional books when given the freedom to choose from a large selection of titles. Both of these studies suggest that electronic books are superior to traditional books in terms of motivation.

However, LeFever-Davis and Pearman (2005) discovered that while students enjoyed reading with electronic books and appeared to be engaged, students spent less time actually involved in the process of reading because of engagement with animation features. The researchers observed 11 first-grade students as they read an electronic book. During the readings, researchers completed a running record and noted behaviors exhibited by the students. They found that although the students were excited about reading the electronic book and used their fingers or the mouse for tracking, that when they used the interactive features of the book, they became distracted from the written text of the story and assumed what the researchers noted as a more passive stance, watching the images of the story instead of actively decoding the words. The researchers credited this focus on the images with negatively impacting comprehension. This study, though dated, suggested that students were motivated to read electronic books, but perhaps for the game aspects instead of the satisfaction of reading.

It should be noted that the electronic books used in the preceding study were CD-ROMs, and as technology has advanced in the last 12 years, so have texts' interactive features. It remains to be seen whether a replication of the study with a modern electronic book would yield the same results; however, recent studies have yielded contrasting results. Ciampa (2012) found that in first graders, the digital format of the e-book was a motivating factor in beginning readers. Barnyak and McNelly (2016), however, found no significant correlation between the format of the book and the level of motivation among high school students. Jones and Brown (2011) found other factors to be more important than book format when considering motivation, but that

the interactive features were commonly cited by students as a motivating factor. Motivation and engagement are important factors in building successful readers, and this advantage of electronic books—as well as possible disadvantage—should be considered when planning instruction of basic reading skills.

Not only can the interactive features engage and motivate readers, but they can also support instruction of reading skills. According to the National Reading Panel (National Institute of Child Health and Human Development, 2000), there are five essential elements of reading instruction: phonemic awareness, phonics, fluency, vocabulary, and text comprehension. The interactive features of electronic books can support development in each of these areas (Pearman & LeFever-Davis, 2006) and are essential in the scaffolding that electronic books can provide (Moody, 2010).

There have been many studies that investigate the impact of these interactive features on the acquisition of the five elements of reading instruction. Littleton, Wood, and Chera (2006) found that boys who activated the read aloud option when encountering decoding difficulties made significant gains in phonological awareness. Multiple scholars have reported increased story comprehension with electronic books (Doty, Popplewell, & Byers, 2001; Grimshaw, Dungworth, McKnight, & Morris, 2007; Korat & Shamir, 2012; Trushell & Maitland, 2005). Korat and Shamir (2012) studied vocabulary acquisition in beginning readers and found that the interactive features in electronic books supported learning of new words. The aforementioned studies demonstrate the effectiveness of using electronic books with beginning readers, especially emergent readers.

However, while the features of electronic books have been shown to enhance the learning process for beginning readers, there are also drawbacks to the inclusion of the interactive features. Labbo and Kuhn (2000) describe these features as falling into one of two categories, considerate and inconsiderate. In a case study designed in part to describe the relation of the interactive features to the electronic book, Labbo and Kuhn built upon Armbruster and Anderson's (1981) definition of a considerate text to characterize features of electronic books. They defined interactive features that related to the story structure to be considerate, and conversely, any features that did not relate to story structure and detracted from the story as inconsiderate. They found that inconsiderate features affected recall ability and encouraged a passive viewing stance.

In their case study, Labbo and Kuhn (2000) used Wittrock's Generative Learning Model (Wittrock, 1974) to examine one kindergarten child's comprehension when reading both a considerate electronic book and an inconsiderate electronic book. As the child interacted with electronic books, the researchers noted actions and reactions, as well as asked informal questions. They found that the student interacted with most of the interactive features, even though many were inconsiderate. They also found that his actions and spontaneous comments indicated that he was passively attending to the written text or cognitively engaged with the features (instead of the written text) much of the time. By using the categories in Wittrock's Generative Learning Model, they found that those books with considerate features fostered complex chains of cognition and thinking, while with books containing inconsiderate features, the opposite was true. Similarly, Trushell and Maitland (2005) and Zucker, Moody, and McKenna (2009) found a significant correlation between inconsiderate features and forgetting in young readers.

Given the literature regarding interactive features, the research is mixed regarding their effectiveness in promoting comprehension. Some scholars cited the interactive features as being

distracting, decreasing reading time, and encouraging a passive listening stance (de Jong & Bus 2002; LeFever-Davis & Pearman, 2005; Trushell & Maitland, 2005). Other researchers found positive correlations between interactive features and comprehension (Grimshaw et al, 2007; Korat & Blau, 2010; Korat, Segal-Drori, & Klein, 2009; Littleton, Wood, & Chera, 2006). However, researchers in these cases were unable to distinguish if students made transferable gains in comprehension or if reading comprehension increased because the burden of decoding was taken away. Two research studies (Labbo & Kuhn, 2000; Shamir, 2009) found positive and negative effects associated with the interactive features of electronic books, dependent on whether the features were considerate or inconsiderate. Therefore, it is imperative that teachers instruct students in how to read an electronic book most efficiently and effectively, taking advantage of the interactive features, as well as the words and pictures, to make meaning.

Electronic books and reading instruction. A number of studies, while focusing on independent reading of electronic books, provide evidence that electronic books are suitable for use in an interactive read-aloud, which is an integral part of the reading program in the primary grades. Korat, Segal-Drori, and Klein (2009), when comparing early literacy development with traditional and electronic books with and without adult support, found that the most effective way of reading was with an electronic book with adult support. Wood, Littleton, and Chera (2005) found that only one-third of children in their sample could effectively collaborate in the reading of an electronic book without adult assistance. Salmon (2014) posited that adult interactive support was one of the major factors during electronic book reading that contributed to literacy development. However, few scholarly articles focusing on teaching beginning readers to read digitally exist.

Many scholars remarked in the implications of their studies that more research was needed regarding the process of electronic book reading, especially in the context of reading instruction (Huang, Liang, Su, & Chen, 2012; Korat, Segal-Drori, & Klein, 2009; Reinking, Labbo, & McKenna, 2000; Roskos & Burstein, 2012; Salmon, 2014; Trushell & Maitland, 2005). There also have been numerous studies in the last fifteen years that extol the virtues of the electronic book as an effective tool with primary readers (Ciampa, 2012; Doty, Popwell, & Byers, 2001; Jones & Brown, 2011; Korat & Shamir, 2012; Trushell & Maitland, 2005). Limited research has been done, however, on how teachers accept, adopt, and use electronic books in the primary classroom, a particularly relevant topic given the discrepancy between the amount of money spent on primary technology resources and the degree to which teachers actually use this technology in the classroom with their students (Lightsail Education, 2015).

Teacher Resistance to Electronic Books in the Primary Classroom

Because of the emphasis on technology in our nation's schools, spending on instructional technology is at an all-time high (Bolkan, 2017). Following global investment trends, the United States spent \$4.7 billion on instructional technology resources, software, and training in 2015, with a record \$522 million spent on tablets and e-readers (McCandless, 2015). However, there is little evidence to show that teachers are fully taking advantage of this classroom technology. In fact, research shows that while many district, state, and school-level leaders support the switch from traditional books to electronic books, teachers have not as vigorously adopted the attitude that electronic is better (Lightsail Education, 2015).

Research shows that there are many factors to consider when examining this "apparent paradox" (Cuban, Kirkpatrick, & Peck, 2001) of why teachers may or may not integrate available electronic books into their reading instruction. Among them is the level of proficiency in

teaching using instructional technology, also known as technological pedagogical and content knowledge (TPACK) (Mishra & Koehler, 2006). Other factors include those variables in Ertmer's (1999) first- and second-order barriers to technology integration; these were the result of expanding Brickner's concept of first- and second-order barriers to change (1995) to apply to the changes that teachers must make when adopting and integrating an innovative technology. All of these factors will be discussed in the following section.

Technological Pedagogical and Content Knowledge (TPACK)

First introduced by Mishra and Koehler (2006), TPACK is a framework for teacher knowledge in the context of technology integration. Built on Shulman's pedagogical content knowledge (1987), TPACK includes technological knowledge as well as pedagogical and content knowledge. Since its inception, it has been considered critical that teachers have a measure of TPACK in order to teach effectively with technology and therefore successfully integrate instructional technology into their teaching.

Arguing that teachers' subject knowledge and pedagogy were not mutually exclusive, Shulman (1987) introduced the concept of pedagogical content knowledge (PCK). PCK states that effective teachers must have three types of knowledge: content knowledge, which is the teacher's knowledge about the subject to be taught; pedagogical knowledge, which is the knowledge of the processes and practices of teaching and learning and the fundamental truths undergirding them; and pedagogical content knowledge, which Shulman describes as the transformation of the subject matter into teaching (Shulman, 1987). According to Shulman, PCK is knowledge that builds on other knowledge: concept formation, pedagogical techniques, prior

student knowledge, different epistemologies, and knowledge of what makes concepts easy or difficult to learn. In short, PCK is a type of practical knowledge, "the ways of representing and formulating the subject that make it comprehensible to others" (Shulman, 1987, p. 9).

TPACK, then, is the interaction among three types of knowledge: content, pedagogy, and technology. Content knowledge and pedagogical knowledge have been defined above; however, technology knowledge is "always in a state of flux" (Koehler & Mishra, 2009, p. 64). It can be best described as the knowledge necessary for teachers to apply technology productively, to recognize when the use of instructional technology can assist or impede in the achievement of educational goals, and to adjust to changes in technology. Technological knowledge is particularly important to recognize as a separate kind of knowledge because it is unique—"protean, unstable, and opaque" (Mishra & Koehler, 2006) —and poses particular challenges to teachers. In addition to the physical characteristics of technology that a teacher must learn, there are also the social and cultural aspects of technology that complicate integration.

While each component in the TPACK model is important in and of itself, however, equally important is the interaction among these forms of knowledge that work together to produce effective instruction with technology and enable integration of technology into instruction. TPACK is an evolving kind of knowledge that goes beyond the three basic components; it is different from the individual knowledge of each concept. Instead, TPACK is

the basis of effective teaching with technology, requiring an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; knowledge of students' prior knowledge and theories of epistemology; and knowledge of

how technologies can be used to build on existing knowledge to develop new epistemologies or strengthen old ones (Koehler & Mishra, 2009, p. 66).

The TPACK framework suggests that content, pedagogy, technology, and consideration of the teaching context all have important roles to play in technology integration, both individually and together. In order to successfully integrate technology, however, teachers must not only gain the knowledge and skills outlined here, but also overcome possible institutional and personal barriers.

Factors in Technology Integration

Having the technology skills necessary to use and integrate technology into the curriculum is only part of the requirements in order to have full integration. Despite teachers having more technology training and knowledge, there are still barriers to the successful integration of instructional technology that exist outside of the confines of the skills outlined by TPACK.

These barriers may lie within the teacher or in the educational institution, and they must be overcome in order for successful integration to occur.

First-order barriers. First-order barriers are those that are extrinsic to the teacher and include lack of technological resources and training, insufficient time to plan, insufficient technical support, and inadequate administrative support. First-order barriers may be eliminated with restructuring of educational priorities, rethinking curricular decisions, and securing additional resources, including personnel, hardware, and software. These barriers have been the basis for much of the professional development that has been offered to teachers in efforts to encourage technology integration (Ertmer, 1999).

Lack of resources. Since the 1980's when technology in education was introduced, public schools have been judged on the ratio of computers to students (Cuban, Kirkpatrick, & Peck,

2001). Since then, there has been a heavy investment in the hardware and software necessary for digital integration in instruction, especially after the 1990's when the internet became commonplace in homes and schools. Obviously, teachers cannot integrate technology into their teaching if the resources are not available. Somekh (2008) suggested that before implementing a technology adoption program that schools should outline their learning goals with technology and supply resources accordingly.

In their 2013 study, Ifenthaler and Schweinbenz investigated teacher perceptions of tablet use in classroom instruction during a tablet implementation phase, using qualitative methods to delve deeper into a subject most often examined quantitatively. During semi-structured interviews with 18 middle school teachers during a pilot project introducing tablets into German schools, all teachers reported that they perceived that a school well-equipped with technology was mandatory for full integration. Teachers also stated that it was the responsibility of the administration to secure funds and resources to make this possible.

However, an abundance of technology is not always necessary for effective implementation and integration of instructional technology. In a study exploring the uses of instructional technology by teachers (Mama & Hennessy, 2013), results suggested that although it is helpful, limited technology does not always hinder effective use of instructional technology in the classroom. In fact, researchers found that despite limited resources, some teachers still managed to fully integrate technology into their instruction, leading them to believe that the teachers' beliefs and perceptions about the role of technology in education were more important factors than resource availability.

Lack of technical support. Along with resource availability, and perhaps even more important is the presence of technological support. In most schools, someone holds the position of

instructional technology coordinator, the “planner, manager, envisions, trainer, and technician with the responsibility for the purchase, maintenance, and support of IT equipment as well as for teaching others how to use it” (Somekh, 2008, p. 512). Several studies have highlighted the importance of having technology support personnel in place during the technology integration phase.

In 2013, Chen and Jang studied the reasons teachers do and do not use e-books in the classroom. They found that one of the main reasons to not use e-books was the fact that technical problems often arose and without immediate support, they remained unsolved. With these technical difficulties, teachers were wary of even trying to integrate e-books. This substantiated an earlier claim that one of the major difficulties teachers experience while trying to use technology in their classrooms is technical problems exacerbated by the lack of a computer technician in the school (Sanchez, Marcos, Gonzalez, & GuanLin, 2012). Even at schools where there is a technology coordinator available, these professionals are often overburdened with teachers wanting immediate assistance and many admit to needing additional assistance if all IT needs are to be met (Cuban, Kirkpatrick, & Peck, 2001).

The lack of support personnel has even hindered the classroom adoption of tablets, a technology resource familiar to most teachers and students. In their qualitative study, Ifenthaler and Schweinbenz (2013) investigated the teacher experiences, as self-reported, during a tablet integration process. All teachers reported that a technology support professional was a requisite for adoption; one participant even stated that she would simply return to traditional teaching practices instead of solving the problems that arose with technology. A technology network administrator reported that without a technical infrastructure (including both hardware and personnel), integration is likely to fail.

Lack of administrative support. Integration is also likely to fail if there is not adequate administrative support. Administrators at the school level need to be change agents, recognizing the autonomy of their teachers, treating their teachers with respect, and increasing relational trust (Knight, 2009). Support at the school level has been shown to have a greater impact on integration than personal demographic characteristics of the teaching faculty (Perrotta, 2013).

In addition, instructional technology integration needs to be a part of the larger process of school change (Wong, 2008). In their examination of the role of instructional technology in affecting changes in student learning, researchers looked at the contextual school-level factors that contributed to the paradigm shift necessary for technology integration. Using six different quantitative measures, they were able to ascertain that leadership intervention was necessary to obtain the pedagogical and organizational changes necessary for successful integration. They found that if leadership promoted collaboration, innovation, and experimentation, that teachers were more likely to integrate. They also posited that in order to affect positive change in the area of technology, leaders must first give more attention to the social and institutional cultures present in their schools. Perrotta (2013) substantiated this claim in a later study that suggested that school leadership was crucial to the use of instructional technology in the classroom. If teachers perceived leadership as supportive of their instructional technology practices and respectful of their time, they were more likely to see technology as positive and make more of an effort to integrate it into their teaching.

Lack of time. Respect of teacher time is important due to the large workload of most teachers (Collinson & Cook, 2001). Innovation in the form of technology integration is costly in terms of the time commitment necessary to affect real change. In addition to the technological skills needed to teach with instructional technology, teachers must also learn new pedagogical

skills (Hennessy, Ruthven, & Brindley, 20005). Considering that 82% of teachers consider themselves overworked (Banning-Lover, 2016), asking teachers to “take on board yet another task in an already overcrowded curriculum and extremely busy work day is pushing many teachers to the limit and in some cases beyond” (Neyland, 2011, p. 11).

The preceding quotation can be found among the transcripts of the interviews in the mixed-methods study (Neyland, 2011) that explored the factors influencing the integration of digital learning in secondary schools in Sydney, Australia. The findings suggested that in small schools, technology integration was seen as extra work for those teachers who were not proficient with computer skills. At larger schools, it was not until the fourth quarter that teachers had the time to integrate technology in creative and effective ways. In all schools, regardless of size, lack of time was seen as a serious barrier to integration.

Lack of time to train and plan for technology integration have been cited as reasons for the failure to integrate in other studies as well. Cuban, Kirkpatrick, and Peck (2001) discovered that insufficient time was a repeating idea in interviews, especially those who were “serious” (p. 828) about improving student learning. Abuhmaid (2011) identified time constraints in planning and teaching with instructional technology as impeding both the desire and the ability to integrate technology. Teachers also reported that the time required for training impeded upon personal time.

First-order barriers, as the literature proves, can hinder teachers from fully integrating instructional technology. It is fortunate, however, that first-order barriers are usually easy to remove or surmount. With the forethought, planning, and an investment—both financial and in personnel—the obstacles can be overcome. Second-order barriers, however, are more difficult to address and often take more time and intentionality.

Second-order barriers. Just providing teachers with the technology and the support that they need does not guarantee effective integration, for there are personal, foundational barriers that exist within the teacher. Ertmer (1999) calls these factors second-order barriers to technology integration. These barriers are intrinsic to teachers and include personal factors such as age, gender, years of experience, pedagogical beliefs, perceptions about the role of technology in instruction, and technology self-efficacy. These also include what Mama and Hennesey (2013) call “subversive beliefs,” (p. 383) fear-based beliefs that inhibit change. In recent years, researchers and school leaders have recognized the need to address these barriers in order to help teachers more fully integrate technology into their classrooms.

Personal characteristics. Personal characteristics such as age, gender, and teaching experience and their correlation with instructional technology use have been extensively studied in the last fifteen years. Some literature generally implied that the digital gap between teachers is also a generation gap (Inan & Lowther, 2010) and found that age was negatively related to technological competence, which made integration difficult. Conversely, other studies (Crespo et al., 2011; Hadjerrouit, 2010) have indicated that teachers with more experience (which may or may not correlate with age) were able to more effectively integrate technology due to expertise in creating meaningful interactions around digital learning. Age, therefore, has not been a consistent barrier to technology acceptance and integration, though it is a factor to consider.

Gender has also been studied in relation to technology integration. A 2015 study (Roig-Vila, Mengual-Andres, & Quinto-Medrano) found significant differences between male and female teachers in the rates of technology acceptance and integration. In their descriptive, correlational non-experimental quantitative study, they administered a questionnaire to 224 primary school teachers in Spain in order to examine the technological knowledge level among primary

teachers. Their findings indicated that male teachers had more computer skills than their female counterparts, used instructional technology more frequently in their classrooms, and were generally more likely to integrate technology into their instruction. Among the limitations, however, they suggested that the findings could be the result of females' stronger resistance to integration instead of a substandard skillset.

Other studies have revealed that differences between men and women rest not in their abilities or willingness to integrate, but in how they use the technology once acceptance and adoption has taken place. Chen and Jang (2013), in a quantitative study aimed at examining the reasons teachers do and do not use e-books, analyzed questionnaires given to 825 Taiwanese elementary math and science teachers and found that male teachers did indeed find e-books more motivating and useful than the female teachers, and therefore they used them more often in their classrooms. Male teachers also self-reported a much higher self-efficacy than their female colleagues. Interestingly, however, the female teachers that did integrate e-books into their classroom instruction did so in a much more elaborate manner and with a higher level of thinking involved than their male counterparts.

Despite these two studies, however, the outlook for female teachers and full adoption and integration is encouraging, as the gender gap has decreased over the years. One study (Yukselturk & Bulut, 2009) suggested a higher Internet use by female teachers in digital learning environments as a factor. Kay (2006) has found that males did indeed have more skills at the outset of technology training, but that after training, the difference between men and women was negligible. A more recent study (Gil-Flores, Rodriguez-Santero, & Torres-Gordillo, 2017) reported that instructional technology use transcended gender boundaries, as did confidence levels and

need for support. Given the evidence from recent research, it appears that gender may affect technology integration, but like age, is not a definite indicator.

The last of the personal factors frequently researched in conjunction with technology integration is that of teaching experience. The latest report from the National Centre for Educational Statistics (2009) shows that there is little difference in integration correlated with years of experience, a stark contrast to the 2000 report, in which teachers with three or less years of experience were found to be more likely to integrate computers in their teaching than their colleagues who had been teaching longer. Chen and Jang (2013) substantiated the 2009 claim, as they also found only one significant difference based on years of experience. These studies may suggest that as with gender, the digital gap is shrinking and more experienced teachers are also integrating technology into their instruction.

However, other scholars have discovered that more experienced teachers may have the advantage when integrating instructional technology. In a study of 250 secondary teachers in Malaysia, Lau and Sim (2008) found that those with more teaching experience actually integrated more often and more effectively. The younger teachers had more experience with the technology, but their more seasoned counterparts had more experience teaching and better classroom control. The challenges that most new teachers face seemed to be a deterrent to full and effective integration. It appears that experience, like age and gender, is also not a reliable indicator of integration.

Pedagogical beliefs. Pedagogical beliefs, however, significantly matter. Teachers enter the teaching profession with their own pedagogical beliefs about teaching and learning, beliefs that have been shaped by a lifetime of experiences in classrooms. For the majority of teachers that have been teaching for more than five years, this pedagogy probably does not include the

use of technology in instruction (Prestridge, 2012). Thus, the introduction of instructional technology often leads to the reinforcement of traditional practices rather than the transformation of practices by innovation (Collins & Halverson, 2009; Cuban, 2001; Starkey, 2010). In order for technology integration to be both successful and effective, teachers' pedagogical beliefs must change.

Although it may be logical to assume that newer teachers would have the pedagogical beliefs conducive to effective integration, this may not always be true. Starkey (2010) studied first-year teachers who were self-described as "digitally able" (p. 234) to examine the pedagogical reasoning of beginning educators. In this multiple case study, Starkey interviewed and observed these teachers during their first-year teaching and compared their pedagogical decisions regarding technology with Shulman's (1987) model of pedagogical reasoning. This study revealed that although the teachers were proficient in using technology in the classroom, that their pedagogical decisions were made based on learning theories that predated the digital age. Starkey posited that this hindered their teaching effectiveness, by limiting their innovation.

Mama and Hennessy (2013) also explored the idea of pedagogical beliefs and their relationship to technology integration through a multiple case study. This study, conducted in Cyprus, an area in which instructional technology was still emerging, was built upon the premise that teachers' limited use of technology in the classroom can be explained by the lack of appropriate pedagogical training. Using both within-case and cross-cases analyses, Mama and Hennessy identified four distinct groups, each with certain pedagogical beliefs: integrational users used the diverse functions of technology to meet the individual needs of their students; incremental users were novice technology users and consequently, their limited technology skills prohibited much effective use in the classroom; incidental users did not embrace technology in the

classroom, their pedagogy being unaffected by technology; and inimical users purposefully avoided technology use, often with subversive beliefs about computers. Interestingly, all participants recounted in pre-observation interviews how their pedagogy had been changed by the introduction of instructional technology, revealing an inconsistency between their words and actions. This perhaps indicates that teachers have contradictory beliefs and perceptions about technology in the classroom and that this incongruity may even exist at a subconscious level.

Perceptions and beliefs about technology in the classroom. Perhaps the most powerful indicators of acceptance and integration are teacher perceptions and beliefs, as technological knowledge is not likely to be used in the classroom unless it is consistent with what the teacher believes to be true (Ertmer, 2005; Kanaya, Light, & Culp, 2005). Even in early studies, researchers found that certain teacher beliefs were more conducive to successful integration of instructional technology. Zhao and Cziko (2001), in their Perceptual Control Theory, posited that in order for integration to occur, the teacher must believe that technology can better meet the needs of the task at hand, that it will not cause a disturbance, and that he or she will have sufficient ability to use it effectively. Though dated and not based on any one empirical study, their theory does put forth some ideas that have resonated in the current literature.

In the Technology Acceptance Model (TAM), first introduced by Venkatesh, Morris, Davis, & Davis (2003), over 50% of the variance in acceptance and integration levels can be explained by two factors: the teacher's perception of technology's usefulness and the teacher's perceptions of the ease of use. In other words, the teacher must recognize technology's value as it relates to teaching goals and have confidence that effective use will require minimal effort. MacCallum, Jeffrey, and Kinsuk (2014) extended the TAM when they added three new variables in their new model: digital literacy, anxiety, and self-efficacy. While perceived digital literacy

is associated with a positive response to new technology in the classroom, anxiety and self-efficacy were shown to have strong negative impact on instructional technology use.

Additional studies have substantiated the assertions of the TAM, both in its original and extended form. Hennessy, Ruthven, and Brindley (2005) conducted a series of focus interviews with groups of secondary teachers to investigate teacher perspectives on integrating instructional technology into their subject specific classrooms. They found that only those teachers who held strong beliefs about the value and transformational potential of instructional technology were able to commit to the integration and to working to circumvent the constraints that often come with technology adoptions, such as limited resources and scheduling difficulties. They also found that among those teachers, a “pedagogical evolution” (p. 186) of sorts transpired when teachers had positive perceptions and beliefs. More specifically, Chen and Jang (2013) found that when teachers perceive that electronic books were useful in meeting specific educational goals, motivation for integration increases.

Other researchers (Codrington & Grant-Marshall, 2012) have also found that teacher attitudes and perceptions about 21st century literacy impact confidence and practice in the classroom. They posited that new literacies required a paradigm shift, that resistant teachers must perceive that there is an urgent need for a change to the current educational model, and that pedagogical change is crucially necessary. In a study of student teachers and their supervising teachers, they conducted a qualitative study in which supervising teachers reflected, through interviews and reflective journals, on their teaching praxis, perceptions, and beliefs when using digital technology. The outcome resulted in a model of digital literacy in which the supervisory teacher learns from the student teacher (who is likely to know more about digital practices) and then teaches the student teacher how to integrate the skills pedagogically. This research suggests

that veteran teachers may need extended support, both in training of digital literacy skills and changing perceptions and attitudes about integrating these skills into their classroom in order to feel confident in their teaching with instructional technology.

Self-efficacy. Aside from the teacher's perceptions and beliefs about technology, self-efficacy is the most important factor in instructional technology integration (Ertmer, Ottenbreit, & Leftwich, 2010; McCallum, Jeffrey, & Kinsuk, 2014; Mueller et al., 2008). Bandura (1994) described self-efficacy as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (p. 71). Teachers with high self-efficacy in technology usage will be more likely to integrate it into their instruction.

Mueller et al. (2008) studied the role of self-efficacy (among other variables) in determining teachers' level of integration, specifically between teachers who fully integrate and those with limited integration. Using a shortened version of the Teacher Efficacy Scale (Schwarzer, Schmitz, & Daytner, 1999), they measured the degree to which teachers thought that their actions impacted their students. Findings included the suggestion that teachers can have a strong self-efficacy when it comes to teaching, but that this does not automatically transfer to teaching with instructional technology. Because past experience generally influences self-efficacy (Bandura, 1994), it is important, then, to focus professional development on the creation of positive experiences with instructional technology.

A more recent study (Scherer & Siddiq, 2015) examined the computer self-efficacy of over 1,000 Norwegian teachers taking part in the International Computer and Information Literacy Study. In this quantitative study, teachers completed a self-efficacy questionnaire with instructional technology-related constructs. They discovered that if a teacher has high self-efficacy in basic operational skills, collaborative skills, or instructional skills, the efficacy will transfer to

the other categories of skills. They also found that males did score higher on the self-efficacy measure, and significantly so; however, males are statistically more likely to rate themselves higher on self-reported measures, so it is unclear if the higher scores were a direct result of pedagogical and perceptual differences. The researchers also found that females who were trained in the use of instructional technology scored higher on efficacy scales. This study also presents a strong argument for quality professional development in connection with instructional technology integration.

Professional Development and the Use of Electronic Books

As the literacy landscape rapidly changes, professional development efforts are necessary to equip in-service teachers with the skills they need to facilitate literacy in the 21st century. According to the literature reviewed thus far, despite the influx of new technology in the classroom, Cuban's 2001 comment that technology in most classrooms remains "oversold and underused" remains relevant. Although training is provided upon introduction, it remains that teachers are not integrating technology into instruction on a regular basis. When they are, it is to support traditional instruction (Campbell, Longhurst, Wang, Hsu, & Coster, 2015). Professional development is often implemented to equip and encourage teachers to fully integrate classroom technology into daily instruction.

Professional Development to Increase Use of Classroom Technology

Increasing classroom technology has been the focus of many professional development efforts. Brinkerhoff (2006) implemented a long-term professional development academy intended to address barriers to full utilization of technology in the classroom. In his study, 60 public elementary and middle school teachers from Texas participated in a three-week summer training academy focused on teaching skills and building confidence and self-efficacy. In addition to

the summer session, there were five in-service days in the following school year. The focus of this academy and the subsequent in-service days was development of skills, not as the ultimate goal, but as a stepping stone to new instructional ideas. At the end of one year, Brinkerhoff found that the digital literacy of each participant had increased, but there was no change in the integration of technology in the classroom. Interviews revealed that despite the increased digital literacy, teachers still harbored anxiety regarding their ability to keep up with changing technology and the increasing technological abilities of their students.

One of the reasons that this professional development may not have been successful in changing teacher practice was that the training was not contextual. Upon learning the skills, the teachers did not have the opportunity to examine what they learned in the context of their own classrooms. A study that allows for the formation of ideas, provides opportunities for classroom implementation, and allows teachers to discuss and reflect upon their experiences may have yielded different results, and it was this premise that I considered when designing the professional development at the center of my study.

Campbell et al. (2015) studied the impact of a professional development course focused on enhancing both teacher and student learning by using reform-based science instruction and integrating technology into classroom activities. Sixth- and eighth-grade teachers from two geographically distinct states participated in two nine-day professional development sessions and monthly meetings over the course of a year. The professional development modules provided opportunities for the teachers to enact the reformed-based, technology-infused curriculum into their classrooms after skills were developed. Results showed that teachers regularly implemented reformed-based science instruction, but rarely integrated the use of technology into these lessons. Perhaps the dual focus of the study allowed for full development of only the reform-

based instructional skills among the teachers. This is not surprising, given that research supports focused professional development as most effective (Gulamhussein, 2013), and it is because of this that my study focuses only on electronic books and not on other forms of digital text.

Both of these studies were ambitious in design and goals; however, both failed to achieve the desired result of increasing integration of technology into classroom instruction. While these studies did not specifically involve teachers using electronic books, one can assume that it was in the planning and execution of the professional development, and not in the content, that the shortcomings lie. Had the above studies included all of the components of effective professional development, outcomes could have been different. I looked to the literature in the design of my study and took note of things that did and didn't prove to be effective. In the sections below, I will outline the components of effective professional development, as found in the literature.

Common Characteristics of Effective Professional Development

Research proves that the most powerful tool to execute school reform is professional development (Darling-Hammond & Laughlin, 2011; Pugach & Johnson, 2002). Such is the case with classroom reform as well. Effective professional development has been the focus of much research in the last two decades, as the large-scale workshops typical of professional development have been proven to be ineffective (Flint, Zisook, & Fisher, 2011). This section will outline the findings regarding the common characteristics of effective professional development.

Duration. There are several common characteristics of effective professional development, but perhaps the most important is that it is an on-going, continuous cycle of improvement (Abdall-Haqq, 1996; Feiman Nemster, 2001; Garet, Porter, Desimone, Birman & Yoon, 2001; National Staff Development Council, 2009; & Watson, 2014). The challenge is to “overcome the episodic, decontextualized professional development” (Watson, 2014, p. 18) and to improve

student achievement through sustained teacher learning. When teachers and administrators seek and share information on a continual basis and plan their actions accordingly, student achievement can be maximized.

According to research (Garet et al., 2001), there are two distinct advantages to professional development that is sustained over time. First, it is only through longer sessions or sessions over time that in-depth discussions and pedagogical planning and transformation can take place. Secondly, extending the time of professional development gives teachers time to learn about new strategies and concepts, try them out in their classrooms, and reflect upon their effectiveness. While there is no definite time limit recommended for professional development, it is thought that only through sustained professional development, ideally lasting a year (Flint, Zisook, & Fisher, 2011), that teachers can build relationships and collaborate in their own learning.

Collaboration. Collaboration, building a learning community of professionals around a common goal, is key in effective professional development (Abdal-Haqq, 1996; Garet et al., 2001; & National Staff Development Council, 2009). Collective participation in collaborative sessions develops shared goals, shared knowledge, and a shared professional culture. Collaborative learning communities have the potential to transform teaching practices to bring about higher rates of student achievement (Riveros, Newton, & Burgess, 2012).

Collaborative learning, if done effectively, has the potential to transform teachers and teaching through the processes of social participation (Gutierrez, 2015). Teaching is traditionally an isolated profession with problem solving that is highly individualistic, as context demands. Too often, collaboration is limited and professional development is transmitted through an out-

side source (Burbank & Kauchak, 2003). As the educational community and educators themselves search for ways to involve teachers in their own learning, several models of collaboration have emerged: peer collaboration, professional learning communities, collaborative action research, and collaborative inquiry.

Although these terms are often used interchangeably, they are not the same. Peer collaboration, long used under the guise of cooperative learning, and before that group work, is teachers (or students) working in small groups to accomplish a shared goal or task (Davis, 2009). Professional Learning Communities (PLCs), germane to education, are groups of teachers who meet regularly to collaborate and share expertise with the sole intention of improving student achievement (DuFour, 2004). Collaborative action research builds upon the concepts of collaboration and improved student achievement to include thoughtful, cyclical iterations of action and reflection, and is usually taken up by a smaller group of teachers (Reason & Bradbury, 2008), where PLCs are more likely to involve all faculty members (DuFour, 2004). In collaborative inquiry, a group of teachers work collaboratively in a cycle of action and reflection to engage teachers as learners, build disciplinary and pedagogical knowledge, and co-construct new visions of practice in context (Donohoo, 2013). While student learning is always the desired outcome, the focus is on the inquiry that the teachers make into their own practice to achieve this end.

Context. Teachers have long identified direct classroom experience as one of the most effective learning tools (Smylie, 1989), and it has been found that the most effective professional development is embedded in the teacher's daily work (Abdal-Haqq, 1996). Instructional change is dependent on being able to learn about new ideas and then adapt them to the local environment (Dutro, Fisk, Koch, Roop, & Wixson, 2012), learning what works in the classrooms through regular, contextual experience. Unless teachers are given the opportunity to practice what they are

learning in their classrooms, professional development will be ineffective and irrelevant.

Job-embedded professional development, because it takes place within the teacher's school, is authentic and relevant. Teachers report that job-embedded professional learning is relevant because there is a connection between what they are learning and their daily classroom life (Flores, 2005; Tate, 2009). The most effective professional development, then, takes place through teachers' daily routine, as they try out new ideas, reflect upon them, and alter teaching practices. This reflection, whether done in the teaching moment or afterwards with a colleague or in a journal, is an integral part of any effective professional development (National Staff Development Council, 2009; Tate, 2009).

Reflection. A final characteristic of effective professional development is reflection. Not only do teachers enjoy talking about their work (Smylie, 1989), but being actively involved in meaningful discussion and analysis of teaching and learning has been shown to improve teaching practices (Garet et al., 2001). Dewey (1933) described reflective teaching as the active, careful, and persistent analysis of teaching practices in response to a difficult classroom situation, long before Zeichner (1996) discussed reflective teaching as the posing and solving of problems related to practice. Teachers, when involved in intentional, collective reflective professional inquiry, are better equipped to solve these difficult classroom problems.

Research (Nelson & Slavit, 2008) has recognized the importance of reflection in teacher development, but found that most reflection occurs in isolation instead of in collaboration, thus the inclusion of a reflective component in most contemporary inquiry processes. It is particularly important for teachers, in reflecting on classroom practice, to consider their perceptions, beliefs, and attitudes in order to position themselves as change agents in their own classrooms, and

in larger educational contexts (Pellerin & Nogues, 2015). This reflection is more effective and productive when done in collaboration with other teaching professionals.

In developing new skills in their classrooms, teachers proceed through an iterative cycle of learning, doing, reflecting. One model of professional development that is based on this cycle, collaborative in nature, and specifically problem-based is that of collaborative inquiry. It is upon this process of collaborative inquiry that this study is based.

Collaborative Inquiry

Literature provides evidence that the process of collaborative inquiry is a highly effective professional development model (Banegas, 2012; Donohoo, 2013; Dyer & Loytonen, 2011) and will be described in the following sections. The first section will provide a broad overview and background of the practice of collaborative inquiry. Sections that describe the more specific practices of supported collaborative inquiry and evidenced-based collaborative inquiry will follow. A look at reflection within the process of inquiry will highlight the importance of this element. Finally, recent research detailing the use of collaborative inquiry to alter digital literacy practices will be reviewed.

Definition and background. Collaborative inquiry is a professional development model in which teams of teachers work together to systematically examine and evaluate their classroom practices and the impact of these practices on student achievement. Collaborative inquiry is a cyclical process, most often consisting of the following stages: developing an inquiry focus, developing a plan of action, carrying out the plan of action in the classroom, analyzing and reflecting on the results of the action, and determining the implications of the results (Donohoo, 2013). This process allows and encourages teachers to engage as learners, build disciplinary and pedagogical knowledge, and co-construct new visions of practice in context (Nelson & Slavit, 2008).

Collaborative inquiry is most effective when teachers are in search of solutions to “adaptive challenges” (Vander Ark, 2006, p.10), those problems to which teachers do not, at the time of inquiry, possess the knowledge, skills, or resources to solve. These problems often develop when the current attitudes, perceptions, and beliefs perpetuate practices and patterns of behavior that are ineffective or insufficient for growth (Donohoo, 2013). Fullan (2000) calls this change in collective norms of behavior, beliefs, and perceptions “reculturing” (p. 582), and this can only happen with the restructuring of teacher development so that teachers feel empowered to affect change within their immediate and extended environment (Fullan, 2000; Nelson & Slavit, 2008). Often, teachers lack the supports to affect these changes on their own (Nelson & Slavit, 2008).

Supported collaborative inquiry. Supported collaborative inquiry is a concept defined by Nelson and Slavit (2008) as “a model of professional development that enacts varied, explicit means of support for teachers co-investigating a commonly agreed-upon element of teaching and learning” (p. 103). There are many supports necessary for the construction of high-functioning, effective collaborative inquiry. This support often exists in the form of a facilitator or critical other, who may or may not be a part of the collaborative inquiry team. This role may include facilitating the dialogic process among the teachers, analyzing data in relation to practice, as well as providing the structural support that allows teachers to more easily do research, observe in each other’s classrooms, and meet during the school day. Without this facilitation, the collaborative inquiry process may stall because of the stress of the extra demands placed upon the teachers involved or because of the lack of structured support for dialogue and reflection. In the context of the elementary school, where common planning is rare and demands on teachers are many, the facilitator is critical to its effectiveness.

Evidence-Based Collaborative Inquiry. In addition to being supported, collaborative inquiry must also be evidenced-based in order to be effectual (Moghaddam, Arani, & Kuno, 2015; Sinnema, Sewell, & Milligan, 2011). At its core, collaborative inquiry is concerned with bridging the gap between research and practice. In order for the inquiry process to yield results, it must be focused purposefully on both content and pedagogical knowledge, as well as informed by research at every stage (Jao & McDougall, 2015; Nelson & Slavit, 2008). Therefore, one of the integral roles of the facilitator is to maximize the impact of research on teacher practice, choosing the research that is specifically outcome-based (Sinnema, Sewell, & Milligan, 2011).

Outcome-based evidence exists in a dual form, both in the form of teacher experience and published research studies (Sinnema, Sewell, & Milligan, 2011). Published research should be chosen carefully, as to ensure that the research is applicable, relevant, and accessible (Vanderlinde & van Braak, 2009). But even then, the research should not be used as a source of teaching strategies or to determine practice. Instead, it should be used to inform the inquiry of the concepts in practice (Sinnema, Sewell, & Milligan, 2011), for there is no one solution to every teaching problem, but only a solution in the context of the individual classroom.

Evidence from the classroom exists in the form of teacher recollections, videotapes or observations, student artifacts, and student voice (Sinnema, Sewell, & Milligan, 2011). This evidence is considered as important as the published research studies, because it presents a contextualized picture of classroom practice. It also provides the data by which the inquiry group will determine the degree of effectiveness of the intervention.

Reflection in Collaborative Inquiry. The literature shows that the research aspect of inquiry is not sufficient by itself to support improvement in teaching practices (Sinnema, Sewell, & Milligan, 2011). Teachers must also be reflective. Reflecting on specific classroom practice

within the cycle of inquiry provides teachers with the knowledge and information with which to make changes going forward. Zeichner and Liston (1996) believed that reflection is essential for complete understanding of the nature of the classroom.

It is this reflection that is at the core of the collaborative inquiry process, as it is through reflection that teachers “participate consciously, and creatively in their own growth and development” (Freese, 2006, p. 102). Reflection in the inquiry process may take many forms, including individual reflection, group reflection, and reflective journals. Connelly and Clandinin (1994) maintain that reading and writing reflectively about one’s practice helps teachers to more deeply understand their practice.

It is Schön’s (1987) reflection-on-action that is the focus of collaborative inquiry. This is when teachers remember or recognize instances during their teaching or even during their reflection-in-action and use these instances and the reflections upon them to create resources for new learning for their students (Rodgers, 2002). This reflection may be technical (what students did or said), interpretive (what students’ actions and words meant), or critical (what the incident meant in the greater context) (Lin, Hong, Yang & Lee, 2013). As reflection has been described as the problem-solving process (Dewey, 1933), all three of these types of reflection are necessary in collaborative inquiry, so to address the scope of the problem, question, or inquiry focus.

However, reflection in collaborative inquiry must also be collaborative. Collaborative reflection happens when teachers work together through interactive discussions to promote learning and change (Lin, Hong, Yang & Lee, 2013). The purpose of collaborative reflection is to bring to the surface ideas, conceptions and misconceptions, beliefs and attitudes, and reactions that teachers may or may not have previously acknowledged. Through this collaborative reflec-

tion, teachers co-construct meaning. Although this is an essential part of the collaborative inquiry process, maybe even the essential component, it can be lost in the details of the study unless relational trust is built between members of the inquiry group. Special attention must be given to creating a safe place in which teachers feel safe reflecting on their individual, personal experiences within their “team-within-a-school” (Lin, Hong, Yang, & Lee, 2013).

Collaborative inquiry to alter digital literacy practices. Collaborative inquiry has been used at the secondary and collegiate level to affect change in teacher perceptions and practice with technology. Collaborative inquiry proved to be an effective professional development tool in the training of secondary teachers in the effective use of educational technology in the classroom (King & Moore, 2013; Mor & Mogilevsky, 2013). It has also been used as an effective instrument for training pre-service teachers to integrate technology in to the curriculum (Henderson, Cerovac, Bellis, & Lancaster, 2013; Pierson, Shepard, & Leneway, 2009). There are multiple sources documenting the usefulness and effectiveness of web-supported collaborative inquiry in changing teacher practice (Urhahne, Schanze, Bell, Mansfield, & Holmes, 2010; Viilo, Seitamaa-Hakkarainen, & Hakkarainen, 2011; Windschitl, Thompson, & Braaten, 2011), most of them targeting science educators and science educators in training. There is, however, limited research into using collaborative inquiry to explore teacher perceptions about integration of electronic books into primary reading instruction. It is in this way that this research fills the gap in the literature

Conclusion

The purpose of the preceding review of the literature was to establish the need for research-based literature pertaining to teacher resistance to use of electronic books in reading in-

struction in the primary grades. Research shows that electronic books have the potential to increase the motivation, engagement, and even comprehension of young readers. Yet despite the developing technology, the established need to teach these skills in the early grades, and the availability of resources, teachers are not integrating electronic books into reading instruction with any regularity. Studies have shown that a variety of factors contribute to the resistance that many teachers have to using electronic books in the classroom, and that while professional development has been successful in improving digital literacy skills, it has been less successful in changing teacher attitudes to the point where practice is altered.

A promising model of professional development, one that embodies all of the components of effective professional development and is effective in solving adaptive challenges, is collaborative inquiry. Teacher resistance to technology is one such adaptive challenge, and this research sought to identify those adaptive challenges that teachers experienced when integrating electronic books into their reading instruction and to develop teacher understandings, perceptions and beliefs about their ability to use electronic books effectively in their classrooms. The next chapter will outline the study design, in which collaborative inquiry was used to explore and develop knowledge and perceptions, and therefore practice, of primary teachers using electronic books in reading instruction.

Chapter Three

Methodology and Methods

Introduction

The purpose of this research was to investigate veteran primary teachers' knowledge or and persistent attitudes about using electronic books in the reading classroom. In addition, this study investigated how collaborative inquiry could be used to increase knowledge and shift and attitudes about using interactive electronic books. It also examined how the sociocultural nature of collaborative inquiry was used to develop effective practices for using electronic texts with beginning readers. This research was qualitative in nature and addressed the following questions:

1. What can be learned about veteran primary teachers' knowledge of and persistent attitudes about using interactive electronic books in the reading classroom?
2. What can be learned about how collaborative inquiry increases knowledge and shifts persistent attitudes about using interactive electronic books in the reading classroom?

Creswell (2013) defined qualitative research as research that explores the perceptions and meaning-making of individuals in their natural setting. In qualitative research, the researcher typically plays an important, often integrated, role in the data collection process. Multiple sources of data are collected, and the product of the data analysis is a rich, complex picture of the phenomenon being studied. These features of qualitative research make it an appropriate research design for my study, as demonstrated below.

In my study, a collaborative inquiry into the use of interactive electronic books among veteran teachers, I studied a small group of teachers as they worked together to create understanding of, and the best practices surrounding, electronic books in their own classrooms. I played an in-

tegral, integrated role in the study, acting as a learner, a facilitator, and a researcher, in the tradition of supported collaborative inquiry (Nelson & Slavit, 2008). Data was collected from multiple sources, in the form of individual interviews, field notes from participant observation, and reflective journals. The following sections will outline in more detail the research design.

First, I will describe the purpose and process of collaborative inquiry, and by presenting empirical literature, argue the effectiveness of this methodology. I will then describe the study in terms of the participants, data collection, data analysis, and verification of trustworthiness.

Research Design

Research has proven that effective professional development is contextual, on-going, focused, collaborative, and reflective (Darling-Hammond & McLaughlin, 2011). Collaborative inquiry is a type of professional development that embodies all of these characteristics and is most useful in solving adaptive challenges (Vander Ark, 2006). For these reasons, it was determined that collaborative inquiry would be an appropriate methodology for this research.

Collaborative Inquiry

Within a cyclic, reflective framework of collaborative inquiry, a small group of teachers and I adopted “inquiry as a stance” (Cochran-Smith & Lytle, 2009), critically inquiring into our own practices of using (or not using) electronic books. We did this as a part of a collaborative inquiry group, formed with the purpose of examining our own practices and building our own knowledge base about using electronic books with beginning readers. In the previous chapter, I have defined collaborative inquiry and created an argument for why it was appropriate for my research. In this section, I will explain the process of collaborative inquiry and how it operates and describe in detail how our group used its “collective intellectual capacity” (p. 118) to transform our teaching.

Many consider collaborative inquiry to be an adaptation of action research (Adams & Townsend, 2014), but this is not always so. Collaborative inquiry, like action research, is cyclical, reflective, and focused on improving teaching for student achievement; however, not all action research is inquiry based, and that is where the distinction lies. The purpose of collaborative inquiry is not to produce findings, but to gain a closer understanding of one's own practice by identifying and self-critiquing experiences, assumptions, and beliefs (Cochran-Smith & Lytle, 2014). It is not easy to change teachers' ideas about how things work because of each teacher's lifelong history of teaching and learning (Yero, 2010). The inward reflection of collaborative inquiry is conducive to the reconstruction of teacher attitudes and beliefs and to upsetting past ways of doing things (Donohoo, 2013). The investigation of our attitudes and expertise around electronic book use was a focus of collaborative inquiry group; the process by which this discovery and subsequent shifts occurred was the focus of my research study and did produce significant findings.

Collaborative inquiry is a self-directed, participatory process of learning characterized by recurring cycles of planning, action, and reflection (Palmisano, 2013). Figure 1 illustrates the cyclical nature of the collaborative inquiry process. Within this cyclical process of collaboration, action, and reflection, I provided the support necessary for the group to successfully engage in inquiry. In our supported collaborative inquiry (Nelson & Slavit, 2008), I provided the administrative assistance the teachers needed to be able to participate in the inquiry, as well as the dialogic support essential for meaningful conversation and reflection. In the following sections, I will outline what the research reports should happen within each cycle, as well as what did happen at each stage within the inquiry.

Stage one: Question formation. The first step of a collaborative inquiry is to establish a purpose for the research, most always through the formulation of a question (Donohoo, 2013). Crafting a good question can be difficult. It must be inclusive and yet succinct. There must be agreement among all group members so that the question reflects the perspectives, beliefs, and values of all participants. Perhaps most importantly, all members must view the question as worthy of the time commitment necessary for a successful collaborative inquiry (Adams & Townsend, 2014). Question formulation sets the tone and the purpose for the inquiry.

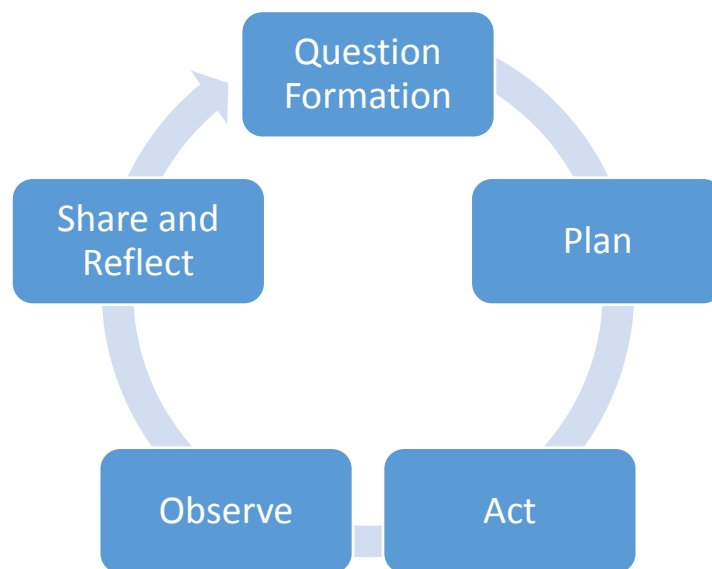


Figure 1. Collaborative inquiry cycle as it occurred in the study. Adapted from *Collaborative Inquiry For Educators: A Facilitator's Guide* by J. Donohoo, 2013.

As a new collaborative inquiry (CI) group, we came together and discussed our perceptions, our beliefs, and our assumptions about using electronic books in the classroom with our beginning readers. As I had interviewed each participant, I was privy to some of this information and was able to facilitate the conversation during our question formation process. Coming up with a question was not easy. Because we had very little knowledge of electronic books, we had

very few ideas about what we wanted to know. After much discussion, we decided upon our question: “How can we use electronic books on iPads most efficiently (given our limited supply) and effectively with our students within the already established curriculum?”

It was important to the teacher participants that they be able to easily assimilate the electronic books into their already busy days. Having recently adopted standards-based teaching, differentiated instruction, and depth of knowledge questioning into their instruction, as mandated by administration, teachers already felt overburdened. If it was too difficult to integrate the electronic books into their instruction, they would be less likely to fully participate. They needed the electronic books to be an additional tool to use within the context of their existing instruction. It was this question that guided the rest of the inquiry process. This step in the cycle was only completed once, but the following three stages were iterative over the tenure of the study.

Stage Two: Planning. It is in this stage that a collaborative inquiry group puts their thoughts and theories into action by planning for the next stage (Donohoo, 2013). With each cycle of gathering data, teachers develop new interventions together. Because the inquiry is situated in the teachers’ classrooms, the plan of action is automatically differentiated (Adams & Townsend, 2014), positioning the inquiry for success.

During our first cycle of inquiry, this stage of our process was largely directed by me, as I was the facilitator for the group and the only participant that had experience with interactive e-books. However, teacher participants had equal input into how we were going to best investigate their use in the classroom. We discussed what we thought about how we would use them, I interjected when necessary to make suggestions or to answer questions, and then together we formulated an action plan. At the end of our first meeting, it was decided that we would each take an iPad loaded with three interactive e-books back to our classrooms. We would each use them

with small groups of students at least one time per week. During and after using them with our students, we would write in our journals our thoughts, reactions, surprises, challenges, and how our children interacted with the e-books.

In the second, third, and fourth meetings, this stage of the inquiry occurred at the end of each CI meeting. After discussing our experiences and the article that we had read and reflecting on them both, we investigated the new electronic books I had loaded on the iPads. Each teacher explored each of the new books with a partner until both were confident that they could use the book proficiently. After the time of exploration with the new books, as a group, we discussed how we could use the books in our classrooms and any relevant strategies in light of recent learning. Figure 2 outlines the basic agenda of the second collaborative inquiry meeting as the model for each session.

Stage Three: Action. It is during this stage in an inquiry that teachers go back into the classroom, armed with their question, new knowledge, and focus, more aware of what they think and feel (Cochran-Smith & Lytle, 1992). Because of this new awareness, teachers tend to go back to their classrooms with more intentionality. They are empowered and feel a greater responsibility to confront the challenges of their classrooms (Adams & Townsend, 2014). It is during this stage in CI that teachers implement changes in their practice based on the guiding question and what they have learned about their own assumptions and beliefs. Data collection can take the form of student learning data, perceptual data, demographic data, and school process data (Donohoo, 2013).

Time	Activity
3:15-3:30	Welcome Beginning Reflection: What was your biggest surprise/challenge as you worked with the e-books over the last month?
3:30-3:50	Discussion/Reflection of Experiences
3:50-4:05	Discussion of assigned article: Teaching with Interactive Picture E-Books in Grades K-6
4:05-4:35	Introduction and exploration of new books: <i>Magnus the Magnetic Dog</i> <i>Bats</i> <i>Arthur's Birthday</i>
4:35-4:45	Discuss next steps Assign article: Watch Ted Talk https://www.ted.com/talks/mike_matas

Figure 2. Second collaborative inquiry meeting agenda

In our inquiry, teacher participants used electronic books in small group read-alouds, using the information from the articles read or the strategies co-constructed in the group meeting. The teachers collected their data (in the form of observations and written reflections) when they took the iPads back to their classrooms and observed and interacted with students as they shared the loaded electronic books and then reflected upon the read-alouds.

Stage Four: Observation. It is in this stage of the collaborative inquiry that teachers come back together and examine their experiences in relation to the inquiry question (Donohoo, 2013), relaying what happened in their classrooms and noting what other teachers have experienced in theirs; teachers are observing the results of their action in their classrooms. Teachers consider not only evidence of student learning, but of their own changing practice and the results

of these changes. One of the underlying assumptions of inquiry is that teachers become active constructors of their own practice as they collectively and collaboratively recount, discuss, and deliberate. This becomes the method of analysis as teachers look for similarities, differences, and recurring themes.

It was during this stage of our inquiry that we reconvened each month to review and discuss evidenced-based data. This data included real-life evidence in the form of recollections, both written and oral, of classroom experiences with electronic books, and also research-based evidence in the form of empirical literature. I facilitated a conversation in which teachers took turns sharing their successes, their challenges, and their thoughts about using the electronic books with their students. At the first two meetings, I was central in the facilitation of conversation. In the remainder of the meetings, however, the teacher participants got progressively bolder in initiating conversation and in responding to others' comments. Further commentary regarding teacher participant roles in collective dialogue can be found in the findings section.

Stage Five: Reflection. Reflection is central to the process of collaborative inquiry, and while it is delineated as a separate stage, it is often intertwined with the preceding observation stage. However, it is the reflection, and not the relating of experiences, that is “fundamental to provoking learning that will change practice” (DeLuca et al., 2015, p. 644). Reflection can occur at an individual or collective level. Individual reflection often happens through continuous use of a reflective journal or learning log in which participants reflect upon experiences of their own volition or guided by a given prompt. Collective reflection occurs when participants come together for dialogic sharing of their thoughts, feelings, and perceptions surrounding common experiences.

In our study, reflection occurred in individual and collective form. Individually, teachers

used a reflective journal to reflect on classroom experience after using e-books with their students. These were unique to each participant, as each teacher recorded thoughts and feelings about each session with the e-book, about each assigned article, and in response to prompts given during the second, third, and fourth meetings. Collectively, teachers reflected through dialogic practice in which they discussed challenges, difficulties, surprises, and successes.

Stage six: Sharing and celebrating. This stage is not recorded in Figure 1, nor is it a defined stage in all collaborative inquiries. According to some sources (Donohoo, 2013; Adams & Townsend, 2014) this stage is comprised of the dissemination of results and celebration. Dissemination is often in the form of an informal report to faculty, staff, and administration of the school in which the inquiry took place. It may also be in the form of a publication or conference presentation. Donohoo (2013) suggests that the celebration of a job well-done motivates participants to continue the inquiry process. Cochran-Smith and Lytle (2010), however, contend that the inquiry process, if implemented effectively, will never end, but create lifelong learners that see every situation as an opportunity for inquiry.

Although my formal study ended after six months, the participants continued their inquiry, as this collaborative venture was a year-long professional development offering. A summary of this report has been drafted and will be distributed to the school's administrative board, including school administration and the school board members, along with a proposal to include in the budget a provision for iPads for the elementary teachers so that more teachers could participate in using electronic books. The timeline for the collaborative inquiry is noted in Appendix A.

The Researcher's Role

Consistent with the nature of qualitative research and the definition of collaborative inquiry (Creswell, 2014), I assumed a primary role in the study. The impetus for this research was when I, as a classroom teacher, needed guidance in how to use electronic books with my students. I found myself reluctant to even attempt to use this new technology, both because of my love for traditional children's literature and my lack of knowledge of how to use an electronic book to best benefit my students. In need of a changed perspective and best practices to guide me, I looked to the research for help. Two years into my research into the existing literature, I had a much better understanding of electronic books, both through my reading of the professional literature and the e-books themselves. I also had an appreciation of the effectiveness of electronic books in motivating and engaging readers and a conviction that in order to prepare my students for reading in the 21st century, I needed to be able to use these books in my reading instruction. I did not, however, have a good grasp of how to use these books effectively in my classroom. Thus, the idea for my study came to fruition.

In designing this research, I assumed that I would be planning, facilitating and participating in a collaborative inquiry with a small group of teachers at my school. I envisioned my role as a co-learner, exploring electronic books alongside my colleagues and that my knowledge and experience would be commensurate with that of the others in the group. However, once I began, I soon realized that not only did the participating teachers have little to no experience with electronic books, they also had limited experience with iPads, the vehicle through which I had planned the delivery. While I had begun the process of learning how to read e-books on an iPad two years earlier, they had no such preparation.

Because I had overestimated my participants' level of familiarity with and knowledge of electronic books, my role in the collaborative inquiry appeared to be, in the beginning stages, quite different than what I had expected. In addition to being a fellow learner and co-explorer, I found myself in more of a teaching and mentoring role. The teacher participants needed assistance in operating an iPad and navigating the features of the electronic books. While I did find myself learning about these things as well, there was a definite discrepancy in our knowledge levels that resulted in an unanticipated power dynamic. More often than not, in those early weeks, I found myself the definitive "more knowledgeable other" (Vygotsky, 1978), with an emphasis on my role as a teacher over that of a researcher or learner. As result of this, my role in the research changed and evolved over the course of the study. This will be discussed more in the findings section. In addition to the role of facilitator, researcher, and learner, I also had the responsibility for choosing the e-books that I loaded on the iPads for participants to use in their classrooms, as well as the articles that served as the impetus for some of our conversations and reflections.

Choosing articles. As discussed earlier, participants were given a supplemental reading or viewing assignment for each month that we met as a group. This additional reading gave us empirical research to support our practical learning, as well as some additional information on which to think and reflect. There were five sources that we read or watched prior to the meetings. I supplied participants with copies of the written articles and blog post, and with the link to watch the Ted Talk.

In choosing these supplemental learning opportunities, I wanted to stretch our thinking about electronic books and how we could utilize them in the classroom. In addition, I wanted to make sure that the articles were research-based and reader-friendly. The teacher participants

were often busy after school, and I wanted the readings to be both informative and relatively effortless.

I first looked through the articles that I had accumulated throughout the last three years of my research. I found two of the articles in this manner. I found the other three sources—an article, a blog post, and a Ted Talk—by searching using the Google search engine. Topics searched were chosen due to conversations in previous meetings. A list of articles, along with the rationale for choosing each can be found in Appendix B.

Choosing e-books. Two days before each meeting, the participants returned their iPads to me so that I could load new e-books for them to use in the subsequent observation phase. Before we began meeting, I chose books to load on the iPads, based on the grade level of the participants' students, availability, and cost. After our first meeting, however, choosing the three e-books that I loaded each month became more intentional.

As mentioned earlier, my participants were unfamiliar with e-books. Because of this, I scaffolded the book choices, starting with e-books that had fewer interactive features, and adding more and different features as the study progressed and participants became more comfortable. In the beginning, I chose books with a traditional structure that adhered more closely to a linear storyline. As the study progressed, I included stories that were nonlinear in nature, included hyperlinks, and required participants to suspend their traditional notion of story and literature.

I also wanted the participants to incorporate the books into their teaching as seamlessly as possible. Therefore, at every meeting, I asked for feedback about what kind of books they would like to have loaded on the iPads. For example, the participants focused on non-fiction in late winter and early spring. Therefore, in February, I loaded some non-fiction books that they could use as part of their reading instruction.

In keeping with choosing books that the participants could use in their classrooms, books were chosen with the school's mission and teachers' beliefs in mind. Non-fiction books were chosen based not only on the ease of use in the established curriculum, but also for their content as it related to the school's biblical worldview. A complete list of e-books that were used during the study and their interactive features can be found in Appendix C.

Population and Setting

Consistent with the design of qualitative research, the study was conducted in the teachers' and students' natural learning environment, a private, Christian school in the southern suburbs of a major metropolitan area in the southeastern United States. While the school, Raven's Nest Christian School (RNCS) currently serves students from preschool to 12th grade, the study focused on the elementary school. This subsection of the school's 1,200 student population is racially and ethnically diverse, with an ethnicity makeup of 49% Caucasian, 36% African-American, 5% Asian, 6% Multi-Racial and 2% Hispanic (RNCS registrar, personal communication, January 30, 2017).

The population of elementary teachers at the school is exclusively female, except for one male, first-year teacher. Among the other 27 women, 23 are White, 3 are African-American, and 1 is Hispanic. The majority of teachers have been teaching at the school for three years or longer, with the exception of three new hires. Teaching experience, excluding the first-year teacher, ranges from three years to 27 years.

In this school, each elementary teacher is required to choose a professional development focus for the academic school year, and this study was an option for those choosing technology as their concentration area. All elementary teachers were extended an invitation by email to attend an informational session that explained the purpose, requirements, and time constraints of

the study. Nine teachers attended this meeting, which was held on the afternoon of the last day of pre-planning. All teachers were presented with the oral information and were given letters of informed consent, which contained all pertinent information. While I left the room, teachers at the meeting read and signed the informed consent letter, which included a space for all teachers to sign, regardless of intent to participate in the study in order to ensure privacy. An assigned teacher volunteer collected the letters and returned them to my box in an unmarked envelope. All nine teachers signed the letter, agreeing to participate in the study. By the time the study began three weeks later, five of the teachers had decided that the time constraints of the study conflicted with their schedules.

The four teachers that remained in the study share several similarities. All four teachers were married white females in their early to mid-fifties. All identified as conservative Christians, though of different denominations, and had been at the school for longer than 10 years. In addition, the minimum amount of teaching experience was 13 years, qualifying all of the teachers in the study as veteran teachers (Rich & Amozlino, 1999).

Despite these similarities, there were differences as well. Each participant is described below in terms of teaching experience, teacher preparation, and background. Information for these descriptions was collected during individual interviews that were conducted approximately one week after teachers returned informed consent letters. Pseudonyms of the participants' own choosing were used in reporting this data.

Delta. Delta is a 53-year-old white female with 27 years of teaching experience. She began her teaching career in the South in a compensatory first grade class and taught for four more years in a second-grade classroom. Upon moving to her current state, she again taught second

grade for four years before accepting a position at RNCS teaching kindergarten. She has presently been teaching at the school for 18 years. Delta's teacher preparation program could be considered traditional, as she graduated with a degree in early childhood education. She went on to earn her master's degree shortly thereafter. She continues to pursue professional learning through various webcasts and opportunities at her school. Delta identifies herself as a "big time reader" (personal communication, August 4, 2016).

Inga. Inga is a 55-year-old white female with 13 years of teaching experience. She began teaching as a second career, leaving the field of engineering in order to work a schedule more conducive for raising children. The entirety of her teaching career has been at RNCS. She spent her first two years teaching fifth grade before moving to second grade, where she has taught for eleven years. Although the state-sponsored alternative teacher preparation program is a popular means of obtaining certification, Inga chose to attend classes at a local university to earn her master's degree in early childhood education. Inga reports that she enjoys learning and continues her professional learning through relevant courses at the local teacher resource center and within her school's professional learning program. She describes herself as a reader with a penchant for nonfiction.

Lois. Lois is a 55-year-old white female with 15 years of teaching experience. She began her teaching career in the public-school system teaching special education with a specialty in autism and related disorders. After four years at a local public school, Lois accepted a position as a kindergarten teacher at RNCS. She has worked the last 11 years in the kindergarten classroom, with a two-year tenure in second grade. Lois has a background in human development and psychology with an emphasis in developmental disabilities. This led to her first career as a

supervisor for a residential facility housing adults with developmental disabilities. As her children became old enough to go to school, Lois entered into the state supported alternative teacher preparation program to earn teaching certification. While completing the program, she worked in the public school, and upon completion, was hired at RNCS. Lois often searches for online courses to help her improve her teaching and participates in her school's professional learning program on a weekly basis. She is a self-professed reader, but comments that she came to love reading late in life.

Lucy. Lucy is a 52-year-old white female with 15 years of teaching experience. She began teaching as a second career in order to have a schedule compatible with her children as they entered school. Her first career was in banking, and when she made the decision to enter teaching, she chose to do so through the traditional route, taking courses at a local university. She earned a bachelor's degree in elementary education and began teaching at RNCS in the first-grade classroom. After one year, she moved to third grade and has been teaching there since. She has recently become exclusively a math teacher, as her grade level has departmentalized. She participates in her school's professional learning program on a regular basis, but has not sought out other learning opportunities outside of the school. She is a self-described non-reader.

Data Collection

All data was collected during the fall semester of 2016 and early spring semester 2017 with written permission from participants and in compliance with the requirements of the Institutional Review Board (IRB). One feature of qualitative research, and specifically collaborative inquiry, is that data is collected from multiple data sources (Creswell, 2014; Love, 2008). Data was collected from interviews, field notes from collaborative inquiry meetings, and reflective journals.

Interviews. Interviews with teachers were conducted twice, once at the beginning the study in August of 2016, and again at the end of the study, in February 2017. The interviews were semi-structured, providing consistent focus across interviews, but allowing for naturally occurring conversation to gain deeper insight (Creswell, 2014). Initial interviews took approximately thirty minutes to complete. All interviews took place in my classroom at the school, immediately after school on a date of the participant's choosing. Only the teacher participant and I were present during the interviews, and the door remained closed to ensure privacy. Each interview was audio-recorded and transcribed, and then presented to the interviewee for verification and member checking within one week of the completion of the interview.

The nature of the questions was loosely based upon a questionnaire developed by Oz (2014) to study teacher perceptions about the implementation of interactive white boards, and initial interview questions explored teacher perceptions of using electronic books in reading instruction in the following categories: general attitudes, perceived instructional effectiveness, perceived motivational effectiveness, perceived challenges, need for professional development, and other emerging categories. Final interview questions were written based on the conversations that took place within the meetings and consisted of some basic common questions regarding participants' perceptions and how they had changed from the beginning of the study, as well as questions specific to each participant based on their responses.

Observations. Participant observation took place during each monthly inquiry meeting. Each meeting began with individual teacher reflection and response to the article or video that was assigned at the previous meeting. As facilitator and participant, I asked questions during this time to help group members relate new learning to their experiences with the electronic

books the previous month. Following this discussion, general observations and experiences during their time sharing the books with their student were discussed. Each meeting ended with a review of the new books that I had placed on the iPads and discussion of how we might apply our new knowledge in our e-book lessons. A sample schedule for a meeting can be found in a previous section.

Sessions were audiotaped to assure accuracy in data collection, as I was a “complete participant” (DeWalt & DeWalt, 2011, p. 24), becoming a member of the group that I was observing. I took jot notes during the monthly collaborative inquiry sessions, in keeping with DeWalt and DeWalt’s concept of participant observation, to note any ideas I wanted to highlight as important or anything that I felt would not be captured with the audio recording. These notes were converted into field notes, using both the jot notes and the audio-tape, as soon as possible following the meeting. In most cases, transcription began the evening of the meeting and continued on consecutive nights until complete. Field notes were typed, and a narrative rendering of the meeting was written in the form of analytic memos (Saldana, 2015). These memos were summative, in that I used them to write a brief overview of the happenings of the meetings, and interpretive, as I recorded my “noticings” (Braun & Clarke, 2013) of possible themes.

Reflective journals. The inquiry process depends on alternating periods of reflection and action (Donohoo, 2013). The rationale for using the reflective journals was to give participants an opportunity to not only develop meaningful learning (Dewey, 1938), but also personal and professional growth. Participants were asked to keep reflective journals for the duration of the study to record observations, perceptions, and evaluation of their evolving teaching skill using electronic books. They were also asked to reflect upon the monthly research articles. Format for journals was decided by the participants, and all journals were collected at the end of the study,

photocopied, and returned to the participants. The purpose of the journals was to corroborate what was observed in the group sessions and to provide a narrative account of professional learning.

Teachers brought their journals to each meeting. At the first meeting, journals were not used during the meeting time. This is because becoming familiar and proficient with the iPads was a priority. Beginning with the second meeting, however, each meeting began with a short five-minute time of reflective response to a prompt. This ensured that journals were indeed utilized for reflection; it also gave each member a reference and opportunity to share with the group. Each month, teachers reflected (outside of the meeting) on an article, video, or blog post assigned for viewing, and we discussed our thoughts during the meeting. Having the journals with them at the meeting aided in recall of the article and reflection, as participants were observed reading over reflections during conversations. As a member of the inquiry group, I kept a reflective journal as well. However, my reflections served two purposes, both as a record of my own thoughts as I shared the e-books with my students and as a model of reflection to the teacher participants.

Researcher reflective journal. As the facilitator of the inquiry as well as a participant, I kept a reflective journal, separate from that used for reflection as a participant. Banegas (2012) investigated the identity of teacher-researcher in collaborative action research and suggested that it is vital to keep a journal to “reflect the natural history” (p. 40) of the project, serving as a reflection of learning, a valuable “supporting tool” (p. 34), an additional data source, and as a way to express concerns. I used this separate journal after the conclusion of every meeting to write analytic memos, as well as during the data collection for jot notes, and at any other time that I had thoughts or ideas pertaining to the study. The journal was also used in planning for future

meetings, as I reflected on successes, challenges, and questions that arose during our previous time together.

Data Analysis

The analysis of this data takes two forms. The primary analysis of the data was done through thematic analysis according to Braun and Clarke (2013). While they concede that theory is “vital” (p. 9) to understanding data analysis process, they “prioritize practice over theory” (p. 9), emphasizing that the practical process of doing analysis allows for the development and refinement of analytical skills and interpretation of theory; through the acts of analyzing, a deeper understanding of the meaning of the data develops. Braun and Clarke emphasize the recursive nature of thematic analysis, which is particularly relevant to my study, as I conducted data collection and data analysis regularly over the course of a six-month period. Thematic analysis was used to answer my first research question: What can be learned about veteran primary teachers’ knowledge of and persistent attitudes about using interactive electronic books in the reading classroom?

During this time period, I became fascinated with the way sociocultural theory played out in our meetings. While not apparent at first, over the course of the four months of meetings with my participants, I observed the power dynamic shift and change through dialogic mediation. I observed as dialogue and discussion guided our learning, when different participants assumed the role of the more knowledgeable other, and how intramental learning became intermental as the teachers took our shared knowledge back into their classroom. At the end of the study, I felt strongly that the process we went through during this collaborative inquiry was, as a finding, just as important as the shifts in knowledge and perceptions. I felt that how we used the structure of

collaborative inquiry to build shared knowledge and shift attitudes was just as important a finding as the change itself. In addition, I felt that another examination of the data was necessary to answer the second research question: What can be learned about how collaborative inquiry increases knowledge and shifts persistent attitudes about using electronic books in the reading classroom?

To use the data to demonstrate sociocultural theory at work within our collaborative inquiry group, I used qualitative content analysis according to Hsieh and Shannon (2005). They define qualitative content analysis as a “research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (p. 1278). I specifically used their “directed content analysis” (p. 1281), as I looked for evidence from the data to support my theoretical claims and to answer my second research question. In the following sections, I will describe the coding and analysis processes I used when working with my data through both thematic and content analysis.

Thematic analysis. In my thematic analysis, I focused on a “pattern-based analysis” (Braun & Clarke, 2013, p. 13) in order to develop a detailed description of the events in our collaborative inquiry and to develop themes. According to Braun and Clarke, a theme is “patterned meaning across a data set that captures something important about the data in relation to the research question...” (p. 337). In this case, thematic analysis was used to detect and develop themes related to attitudes and perceptions around electronic books in the conversation and reflection of the participants during the interviews and our inquiry meetings. In the following sections, I will outline the steps I took in thematically analyzing the data, as summarized in Figure 3. Transcription, step one according to Braun and Clarke, was described in the preceding section.

Reading and familiarization. The goal of this stage in thematic analysis, according to Braun and Clarke (2013), is to become “intimately familiar” (p. 204) with the data. This should include repeated reading of transcribed data, repeated listening to audio data, or both. Listening should not be considered a passive process, however. The purpose of this initial repeated reviewing of the data is to start to “read the data as data” (p. 205). This means to read and listen actively and analytically, ascribing meaning to the data. Writing down these “noticings” (p. 204) is the beginning of analysis. This step is often intertwined with the transcription process. In my analysis, this intermingling of stages certainly occurred. On the afternoons of my meetings or interviews, while I drove home from work, I would listen to the audio recording of the meeting. Once home, I would listen in a more focused manner one more time before starting the transcription process, noting my initial thoughts in my researcher journal. During the transcription

Stage	Thematic Analysis (Braun & Clarke, 2013)	Actions Taken During My Study
1	Transcription	Transcribed all data into written form
2	Reading and familiarization	Repeated readings; analytic memos
3	Coding	Descriptive coding (Saldana, 2016) across data set
4	Searching for (generating) themes	Categorized codes into central organizing concepts
5	Reviewing themes	Themes confirmed, revised, rejected
6	Defining and naming themes	Named themes and wrote narrative descriptions
7	Writing – finalizing analysis	Created written report of findings; re-fined themes

Figure 3. Data analysis stages in the current study and as described in *Successful Qualitative Research: A Practical Guide for Beginners*, by V. Braun and V. Clarke. Copyright 2013 by Sage Publications.

process, I would continue to record my overall impressions. Finally, as I simultaneously listened to the audio-recordings and read my transcripts to check for accuracy, I wrote down any final thoughts. After the transcription of each meeting was finished, I usually had at least a page of handwritten notes for later reference.

In addition to the time I spent noting my thoughts immediately after each meeting, I returned to the transcriptions several times during the study. After the second, third, and final meetings and the final interviews, I revisited each of the previous data sets. This way, I could look with fresh eyes and often new perceptions based on the interaction I had just transcribed. Each time I revisited a meeting or an interview transcript, I would continue to write on the same page I had begun with the initial thoughts, dating my entries accordingly. This was done repeatedly and thoroughly before any coding was completed.

Coding. Coding, the “process of identifying aspects of the data that relates to [the] research question” (Braun & Clarke, 2013, p. 206), is the next stage in thematic analysis. Coding is the systematic assigning of a word or brief phrase to any feature of the data that is potentially relevant to answering the research question. In the process of thematic analysis, Braun and Clarke use the metaphor of a house to illustrate codes as the building blocks of analysis; the themes are the walls and the roof, while the codes are the bricks.

Braun and Clarke (2013) identify two types of coding: selective coding and complete coding. While selective coding involves identifying chunks of data to later analyze and is often seen as a “pre-analytic process” (p. 206), complete coding is the process of identifying “anything and everything” (p. 206) that appears to be relevant to answering the research question. Within this process, codes may be data-derived or researcher-derived. With data-derived codes, codes mirror the participant’s language and codes focus on the explicit meaning of the transcribed

words. Conversely, researcher-derived or latent codes invoke researcher interpretation. A single thematic analysis can include both data-derived and researcher-derived codes.

Complete coding, according to Braun and Clarke (p. 213), begins with the first data item, and can focus on a chunk of data or a single line. Every time something relevant is found, it is coded. This type of coding can be done on hard copy or with data analysis software, but is always “inclusive, thorough, and systematic” (p. 210). The goal of this kind of coding is to generate enough codes to be able to identify both patterns and diversity. After coding is completed, it is important to collate the data, collecting all of the similarly coded data together.

Coding within my study was done by hand on the hard copy of my data, in two stages. After transcribing and familiarizing myself with the data, I did initial complete coding. I started with the first line of data and coded anything I thought was important or relevant, using descriptive coding (Saldana, 2016). Each data piece was assigned a label in order to develop an inventory of topics and each label (code) expressed the nature of the importance of the piece of data. I worked my way through the data, line by line, assigning existing codes or generating new ones while I read. After reading through one time, I noted all of my codes on a single sheet of paper and went back through a second time with these codes in mind. If two codes were similar, I sometimes changed the wording of both to apply the same code to both data pieces, and if I was unsure if a particular data piece was relevant, I coded it to reflect content. This process occurred across the entire data set after each of the four monthly meetings, as well as after each of the final interviews.

Once I had my complete data set coded, I went back and coded again. This time I used the entire set of codes as a guide, applying later generated codes to earlier data pieces, as well as assigning new codes when appropriate. This was also the point in which I referred back to my

analytic memos I had written in my researcher journal when familiarizing myself with the data. I re-examined my original thinking from the analytic memos, added codes if necessary, and expanded my original memos to include new thinking.

Collating the codes was the last step in my coding process. I combined the codes from each meeting and interview into one exhaustive list. I went through the data, cutting and pasting any and all instances of identically-coded data under a common heading, making sure to note the exact location of the excerpt. I also color-coded each excerpt according to participant in order to be able to see if each piece of data was universal or unique. After this was complete, I combined all of the similar code lists together on a large piece of different colored poster board. I also created a chart identifying all of my codes and where throughout the study they occurred in order to help with the development of my themes. This complete list of codes can be found in Appendix D.

Generating themes. Braun and Clarke (2013) define a theme as “patterned meaning across a data set that captures something important about the data in relation to the research question...” (p. 337). Broader than a code, a theme has a “central organizing concept” (p. 224) around which there are several related ideas. It is possible that the central organizing concept could evolve into a theme, but at this stage, final themes are not developed. Although they label this section in their book *Searching for Themes*, Braun and Clarke are very specific about the way that themes do and do not come about; they do not emerge, they do not already exist, and they are not discovered. Rather, themes are created by the researcher, a point that they reiterate when they compare a researcher to a sculptor who actively forms existing material into shapes and works of art. Because of this, and because it more accurately describes my process of data analysis, I have chosen to refer to this stage as *Generating Themes*.

Braun and Clarke (2013) also emphasize that at this point, themes are provisional, identifying them as “candidate themes” (p. 224). Themes are not analyzed quantitatively by considering the frequency across the data, but a good theme does appear proportionally across the data and relates to the research question. A good theme also is distinctive and meaningful on its own; yet, themes should fit together to present an overall pattern to organize the data. Themes can be hierarchal, with the presence of overarching themes, themes, and subthemes, or they can be lateral. While overarching themes, themes, and subthemes all bear relation to one another, lateral themes can stand independently.

To generate a theme, first there must be a return to the data. The first step of theme creation is one in which the researcher goes back and reviews all of the codes and collated data related to each code (Braun & Clarke, 2013). From this information, a central organizing concept could be identified for a theme, or the central organizing concept could be “promoted” (p. 225) to theme itself. With this information, the next step is to identify themes that “capture the most salient patterns in the data relevant to [the] research question” (p. 225). Finally, the authors suggest making a visual map of the themes that have been created.

In my study, I began to generate my central organizing concepts as I was collating my codes. As I studied the different posters that I had created for similar codes, I was able to see that there were several that fit together. Each of my poster boards represented a concept around which there were several features. For example, on one poster board, I had listed the following codes: the book/reading as a memory, the smell of a book, the feel of a book, the book as something to share with future generations, the book as a keepsake, fear of the book disappearing, and love of reading. To me, this was a central organizing concept. This represented the emotional

attachment that my participants had to the idea of a traditional book. I also had placed codes relating to fear of the electronic book together, as well as those pertaining to change. These became my provisional themes: emotional attachment to traditional books, fear of the electronic book, perceptions of the electronic book, and changing teacher roles. Table 1 outlines my provisional themes and the codes that I had associated with each.

Reviewing themes. This is the stage of thematic analysis that Braun and Clarke (2013) refer to as “quality control” (p. 233). In this stage, the researcher goes back into the data to make sure that the theme candidates are a “good fit” (p. 233) for the collected data – both coded and collated data and the uncoded data. This stage represents the recursive nature of thematic analysis, and it is often naturally built in to the preceding theme development stage.

According to Braun and Clarke (2013), the first step is to go back into the coded and collated data to see if each candidate theme fits in response to the data. It is imperative that the candidate themes cover most of the data and is relevant to answering the research question. At this point, it may be necessary to revise the candidate theme or reorient or shift the coded data. It is equally important to go back to the un-coded data. This stage ensures that the candidate themes capture the meaning of the data set. Looking at the whole data set free from the codes that have been created helps to make sure that the theme candidates are true to the story that is being told. It is at this stage that themes are confirmed, revised, and even rejected.

This stage in my research naturally flowed from the preceding stage. After looking at my table, I went back and looked at my coded and collated data and then read a clean copy of my data set from beginning to end. I started with the initial interviews, read through the transcripts of each meeting, and finished by reading the final interviews. It wasn't until I read the un-coded

data set that I realized that I needed to make some changes in the way that I had created the themes in order to reflect the entire data set. To better visualize my thinking, I created visual maps.

Table 1.
Provisional Themes with Initial Codes

Provisional Theme	Emotional Attachment to Traditional Books	Fear of the Electronic Book	Perceptions	Teacher Roles
Codes	Reading/faith “Love reading more than living” Books as friends Books as memories Desire to pass down Smell of books Love of storytime Books are joy Obsessed with books A book in my hand Not willing to relinquish	Tech issues Take more time More e-books means fewer traditional books Not know what to do Nervous Not friendly enough Worsen behavior Interactivity means less immersion Less thinking Playing Age	Increased information Increased motivation Increased engagement Increased enjoyment E-book ≠ book Reading same on both formats Playing vs. reading Improved behavior Positive experience Desire for more iPads Learning tool	Student independence Role of teacher Student knowledge > teacher knowledge Teaching is different Facilitator Spectator Stance

Defining and naming themes. It is in this stage that the analysis is more fully developed, as patterns are interpreted (Braun & Clarke, 2013). In doing this, the themes are “crucially molded” (p. 248) through the writing process. Each theme should be clearly defined in terms of

what is unique and specific.

Writing a narrative definition is often helpful in defining the focus, boundaries, and purpose of each theme. This allows for the confirmation of the clarity of the themes as well as providing evidence that the different themes fit together to create a “rich, coherent, and meaningful picture” (p. 249) of the data in order to answer the research question. It is important, based on the definition, to choose a thoughtful, creative name for the theme that signals both the content and the researchers’ interpretation of the data. The definition and the name of the theme together capture “the essence of the analysis” (p. 260).

It was during this stage of my analysis that I finalized the names of my overarching themes. After a month of analysis, I wasn’t happy with the theme I had originally entitled *Emotionality of Books*, and upon working to define my themes, I realized that it did not capture the scope of the theme as reflected in the data. There was not always an actual emotional response, and when there was, it was not always to a book, but sometimes to reading. Therefore, I changed the name of this theme to *Emotionality of Reading*. I also realized that the theme name, *Change*, was too broad; I changed this theme name to *Changes in Understanding and Perceptions*. Unlike the overarching themes, the subthemes were not named until after I had written my first draft of my findings section, as writing clarified these for me. The visual maps for the themes can be found in Figure 4 and Figure 5.

It was also during this stage that I defined my themes. Braun and Clarke (2013) suggest writing out a definition of themes; these definitions can be found in Appendix E. In doing this, however, I looked at my coded and collated data to make sure that I had a clear idea and had communicated that idea effectively and completely in the name and definition. I went through

and chose relevant and interesting excerpts from the data to include in the findings section. I created a rough outline of the themes and subthemes with relevant excerpts below. Those that didn't fit into my outline were "let go" (p. 254). I was now ready to begin writing my findings section.

During this writing process, my themes and subthemes were revised for the last time. As I wrote, I found that the themes and subthemes to be more delineated and focused. Through a more thorough analysis of the data as I wrote, I developed my two final overarching themes: The Emotionality of Reading and Changes in Understanding and Perceptions.

Themes describing the relation of these overarching ideas to both traditional and electronic books were generated, as well as subthemes under each. It should be noted that while the themes may not be equally dense in terms of the amount of findings, each theme is included because of its importance to answering the research questions. The final findings of the thematic analysis in terms of overarching themes, themes, and subthemes can be found in Table 2 in Chapter 4.

In writing up my findings section, I developed a code with which to designate participants and data source of the quotations. In parentheses after the quotation, I noted the data source, the participant, and the line number. Data sources were as first interview (FI), second interview (SI), meeting (M followed by the meeting number), or reflective journal entry (JE). For example, a quotation from Inga during the second meeting would be cited as follows: M2, Inga, 14-15.

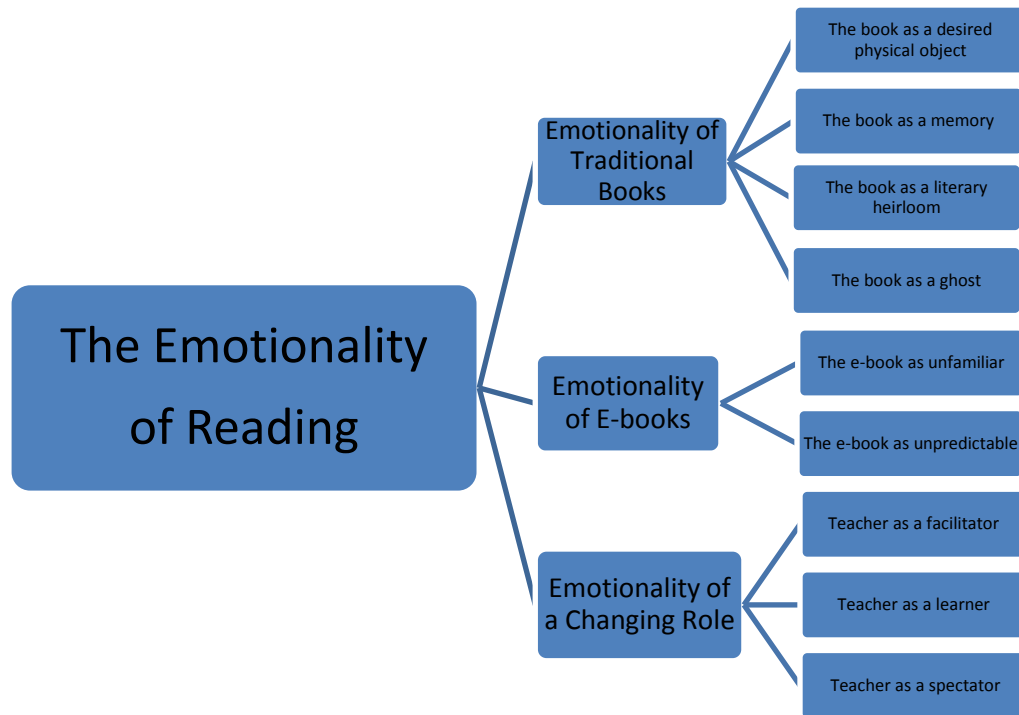


Figure 4. Visual map of theme 1: The emotionality of reading

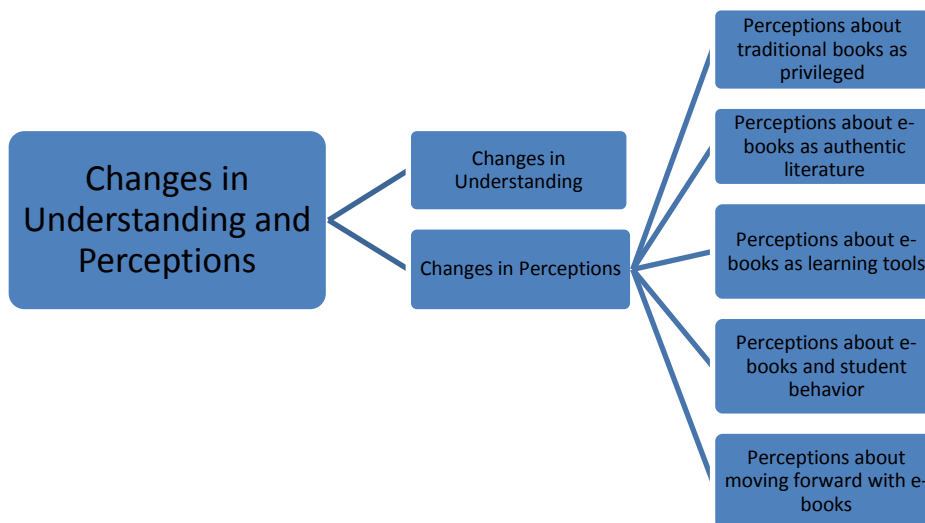


Figure 5. Visual map of theme 2: Changes in understanding and perceptions

Directed content analysis. In order to demonstrate how sociocultural theory was manifested within the monthly inquiry meetings and to answer the second research question about how the social interactions within the meetings led to change in understanding and perceptions, I

used directed content analysis, as described by Hsieh and Shannon (2005). Directed content analysis is an appropriate method to use in my study due to the naturalistic, contextual nature of the data.

Described as a “deductive use of theory” (Hsieh and Shannon, 2005, p. 1281), directed content analysis uses theory as a basis for initial code generation and is generally used to validate a theoretical framework for a study. Based on the purpose of the study, directed content analysis calls upon one of two methods to generate codes. Either the researcher will first identify passages of text that illustrate a particular phenomenon by highlighting and then assign predetermined codes, or the researcher will begin coding immediately using predetermined codes. Regardless, codes are determined and operationally defined based on the key concepts of the theory. Data that is not coded is saved and given a new code. These new categories of codes may further explain the use of theory in the study, or it may further refine, extend, or enrich the existing theory.

In my study, I determined and defined the codes according to the tenets of sociocultural theory: semiotic mediation of thought, zone of proximal teacher development (ZPTD), the more knowledgeable other, and intramental and intermental learning (Vygotsky, 1978). Before coding, however, I reread the transcripts of the inquiry meetings in order and wrote analytic memos about how I saw the tenets exhibited in our conversations. After I had read and written about each meeting, I wrote a final analytic memo discussing the changes that I saw over the duration of the study. It should be noted that these memos, just as they were with thematic analysis, were my initial thoughts and “noticings” (Braun & Clark, 2013, p. 204) and were not used in the formal analysis of the data.

Once I had determined and operationally defined my codes according to Hsieh & Shannon (2005) (Appendix F), I used different colored highlighters to highlight the text according to which tenet I saw being exhibited. I read through the data three times doing this, with one day between the second and third readings in order to be able to see the data with fresh eyes. Then, just as I had with thematic analysis, I created a word document for each of the four different codes and digitally cut and pasted excerpts, collating them according to tenet. I was careful to note the exact location of the excerpt so that I would be able to locate the interaction later, should I need to remember context. Once again, I color coded the dialogue according to participant in order to more easily see patterns of how the group worked together.

From these documents, I was able to create a rough outline for writing my findings section. Under each point on the outline, I placed relevant excerpts from my data set. I made sure that the excerpt location and participation color code were still included so that I could show the universality or the specificity of my claims. These would later serve to illustrate the tenets as I wrote the findings section.

Measures of Verification

In order to ensure that this study was internally valid, there were several processes in place at different points in the study. One of the distinguishing features of collaborative inquiry is the involvement of all participants in the research process (Nelson & Slavit, 2008). The participants were involved in most phases of the research, adding an element of validity to the study. Researcher bias, which is present in any qualitative research study, was verbalized to participants in the opening collaborative inquiry session when I explained my role in the inquiry process. Outside of this, however, steps were taken to ensure validity and reliability by confirming Herr

and Anderson's (2015) five types of validity that are unique to practitioner research. These five types of validity are discussed below, as well as the measures taken to ensure trustworthiness.

Outcome validity. Outcome validity is the extent to which the actions occurring lead to a resolution of the problem at hand; that is, making sure that the actions lead to a successful outcome, and if not, actions are changed accordingly (Herr & Anderson, 2015). Outcome validity has many other names among scholars, such as workability (Greenwood & Levin, 2006), skillfulness (Watkins & Brooks, 1994), and integrity (Jacobson, 1998). Outcome validity was confirmed through the reflection and discussion that took place within the collaborative inquiry following each action cycle. Within each cycle, we decided upon actions to focus upon in the upcoming action cycle, according to the outcome of the previous actions. The reflection of the previous cycle always determined the action in the next. In the analytic memo that followed the completion of each observation transcription, I indicated how outcome validity was addressed. This data can be found in a master table in Appendix G, to document the sources of validity throughout the duration of the study.

Process validity. Process validity can be viewed as the extent to which problems are framed and solved in a manner that supports learning (Herr & Anderson, 2015). To confirm process validity, all findings in the study must be a product of a series of reflective cycles. Each cycle should include an examination of underlying assumptions that may be affecting action and problem-solving. As reflection is naturally built into the collaborative inquiry process, participants collectively reflected during our inquiry meetings and individually in written journals.

A study that is procedurally valid also includes multiple data sources (Herr & Anderson, 2015). Multiple data sources included individual interviews at the beginning and end of the study, participant observation during monthly inquiry meetings, and participant and researcher

reflective journals. The researcher reflective journal and observation field notes were also sources of process validity, as they were used as event reminders to verify that the study was done in a procedurally valid manner. After the completion of each observation analysis, information regarding the procedural validity of the cycle was added to the master table in Appendix G.

Democratic validity. Democratic validity is the assurance that all parties that have a stake in the problem are collaboratively working together (Herr & Anderson, 2015). Considered somewhat of a social justice issue, it is also called local validity (Cunningham, 1983), relevancy (Watkins, 1991), and ecological validity (Kelly, Mock, & Tandon, 2001). The very nature of our collaborative inquiry was cooperative, as teachers worked, learned, and reflected together. Even though I was the researcher and I acted as the facilitator of the group, for two out of the four meetings, we met together as equals, with no one person being the more knowledgeable other (Vygotsky, 1978). Each participant had an equal opportunity to share and each member's opinion and beliefs were valued.

The development of group norms at the first meeting helped to assure democratic validity. I presented Garmston and Wellman's (2016) seven collaborative norms and we discussed each of them. We considered each norm, discussed how it could be applied to our group, and adopted them as our own. In addition, after each observation, I confirmed that each teacher participant had equal opportunity to participate in any decision making of the group. I did this by both listening to the audio recording of the meeting and reading over the transcript to make sure that each participant had opportunity (either by direct question or by pauses in the conversation) to participate. This information was also entered into the master validity table in Appendix G.

Catalytic validity. Catalytic validity is the degree to which the research “reorients, refocuses, and energizes participants toward known reality in order to change it” (Lather, 1986, p. 272). The entire purpose of this study was to educate and encourage change in the way that my fellow primary teachers and I taught reading. Every decision made within the study was done so with regard to this goal, and every effort was made to make meetings an enjoyable, valuable learning time. While I assessed this type of validity constantly, as we met and learned together, the final individual reflection of the participants and the findings of the study spoke to the catalytic validity of the study.

Dialogic validity. It is this type of validity that was perhaps most easily achieved. Dialogic validity is realized when participant researchers are participating in critical and reflective dialogue with other researchers (Herr & Anderson, 2015). This can be, in individual practitioner research, dialogue with a critical friend who is familiar with the research. Some scholars consider collaborative inquiry to be the only way to achieve dialogic validity (Carr & Kemmis, 1986; Torbert, 1981), and to this end, this study certainly has attained goal. The field notes and transcripts provided the evidence that dialogic validity was indeed achieved.

Trustworthiness. According to Lincoln and Guba (1985), trustworthiness is the extent to which the researcher’s interpretations of the data is credible and consistent with those of the participants. In practitioner research, and specifically collaborative inquiry, building trust is both a part and a product of the process (Hilsen, 2006). Participants already knew each other as professionals. Development of a deeper rapport among participants established additional trust and facilitated the co-construction of meaning, adding to the trustworthiness of the study.

The multiple data sources provided crystallization of the data. More specifically, the data sources were the teachers themselves, each with different backgrounds, experiences, and perspectives. The collecting of data from different points of view helped to ensure that the data was comprehensive and well-developed. Member checking after interviews, observations, and writing of the analysis helped to confirm the credibility of the field notes, transcriptions, and interpretations of dialogue, further lending to the trustworthiness.

Conclusion

In this chapter, I have outlined the methodology and methods I used when designing my study, collected data, and analyzed the data. Sociocultural theory informed every area of this study, and this is evident through the way data was collected and analyzed through both thematic analysis and qualitative content analysis to answer the following research questions:

1. What can be learned about veteran primary teachers' knowledge of and persistent attitudes about using interactive electronic books in the reading classroom? (analyzed using thematic analysis)
2. What can be learned about how collaborative inquiry increases knowledge and shifts persistent attitudes about using interactive electronic books in the reading classroom? (analyzed using qualitative content analysis)

However, even though I extensively analyzed my data, when I wrote the findings chapter, I felt as if the data did not tell the whole story of our time together. In order to more completely tell the story of our collaborative inquiry and my personal transformation as a researcher and a book lover, I will present my findings in a series of "pleated texts" (Richardson, 1997), framing my academic writing of my findings section among more contextually situated, personal writings that simultaneously interrupt, extend, and contour the findings. The personal writings consist of

journal entries and a narrative story of our journey together. While some may consider these more creative writing endeavors to be a departure from the 'truth,' I find them necessary to the process of developing the layered meaning of the authentic experience.

Chapter Four

Findings

Reflections on an Inquiry: Looking Back

As I sit here deciding how to start this chapter, I find myself with quite the conundrum. Do I tell the tale of the inquiry itself, the story of five teachers who came together each month and how they grew as learners, teachers, and collaborators, or do I document the changes in attitudes that led to open minds and new intentions in practice? I would be remiss to share only one part of the story, for this study is as much about our meetings as it is about the altered mindsets; it is about the product, as much as it is about the process. And quite honestly, I can't imagine recounting the remarkable ending without describing the mundane, often messy, process that led up to it.

Because really, if I think back on it all, I wasn't sure in the least little bit that we were accomplishing anything. I knew that we were meeting, and I knew that they were using the books in their classrooms. But beyond that, I doubted whether it had made any difference at all. On my good days, I knew it had. There had been remarkable changes in their ability to use the e-books. There had been some changes in their perceptions. On my bad days, I struggled with insecurity and self-doubt. I wondered if I really knew what I was doing, whether I would discover anything new at all.

And just as I felt I was getting my footing, here it is...over. And I know it's made a difference. I know, without a doubt, that I have learned something about myself, my fellow inquiry team members, and the complicated relationship we have with books. And I know what I want to say, need to say. It's just how to say it. How can I put down in words what has happened, what

I've learned over the last six months? The messy, imperfect process...or the lovely, still imperfect product? Or...both? (Researcher Journal, March 31, 2017).

A Story of a Collaborative Inquiry

“Knowledge is a process, not a product.” (Jerome Bruner, 1966)

“All change is hard at first, messy in the middle, and gorgeous at the end.” (Robin Sharma, 2014)

The purpose of this study was to investigate the attitudes of a small group of veteran primary school reading teachers toward electronic books and how these dispositions contributed to the low level of use in one private elementary school. Collaborative inquiry, along with individual interviews conducted at the beginning and the end of the study, were used as vehicles through which to identify and discover conscious and unspoken mindsets and to improve participants’ understanding of these books, the way they worked, and how to use them most effectively in our classrooms. Using participant observation (DeWalt & DeWalt, 2011) and subsequent thematic analysis (Braun & Clarke, 2014) and qualitative content analysis (Hsieh & Shannon, 2013), I explored two research questions:

1. What can be learned about veteran primary teachers’ knowledge of and persistent attitudes about using interactive electronic books in the reading classroom?
2. What can be learned about how collaborative inquiry increases knowledge and shifts persistent attitudes about using interactive electronic books in the reading classroom?

My analyses developed two overarching themes: the emotionality of reading and changes in the knowledge and perceptions about e-books. Through content analysis, the sociocultural nature of our time together developed.

In the sections that follow, I will outline my findings. I will begin with a brief description of each teacher participant. While a demographic depiction of each participant is included

in my methodology section, this delineation will focus on the role that each assumed in our inquiry group. I will then outline the findings of the thematic analysis itself in terms of themes and subthemes, which is outlined in Table 2.

Table 2
Thematic Findings

OVERARCHING THEME The Emotionality of Reading	OVERARCHING THEME Changes in Understanding and Perceptions
<p style="text-align: center;">THEME 1 Emotionality of a Traditional Book</p> <p style="text-align: center;">Subthemes Traditional Book as a Desired Physical Object Traditional Book as a Memory Traditional Book as a Literary Heirloom Traditional Book as a Ghost</p> <p style="text-align: center;">THEME 2 Emotionality of an E-book</p> <p style="text-align: center;">Subthemes E-book as Unfamiliar E-book as Unpredictable</p> <p style="text-align: center;">THEME 3 Emotionality of a Changing Role</p> <p style="text-align: center;">Subthemes Teacher as a Facilitator Teacher as a Learner Teacher as a Spectator</p>	<p style="text-align: center;">THEME 4 Changes in Knowledge and Understanding of E-books</p> <p style="text-align: center;">THEME 5 Changes in Perceptions about E-books</p> <p style="text-align: center;">Subthemes Perceptions about traditional books as Privileged Perceptions about E-books as authentic literature Perceptions about E-books as learning tools Perceptions about E-books and student behavior Perceptions about Moving Forward with E-books</p>

This section will be followed by a discussion of how the tenets of sociocultural theory played out in our work together and how this contributed to individual and collective learning. Interwoven with the academic descriptions will be personal journal entries that relate to each theme, concluding with a narrative rendering of our time together, in order to present a more rich, layered representation of the study within the pages of a pleated text (Richardson, 1997).

Participants

As I mentioned in Chapter Three, all of the participants shared common demographic characteristics. As veteran female teachers, the 50-something women had similar backgrounds in regard to race, gender, marital status, religion, and status as veteran teachers. However, they also manifested differences. Each came from a different educational and career background, and each brought different life and technology experiences to our metaphorical table around which we met. These differences, combined with the stark differences in personality and interactive tendencies, led to the adoption of different roles within our inquiry group. While by no means static, distinctive dynamics emerged. I shared the following descriptions with each participant, and they agreed that what follows is a fair and accurate representation of themselves and their role in our inquiry.

Delta. As the most experienced of us all, Delta came to the study with a strong conviction that it was her responsibility to “know how to use [technology] to reach these kids in their world” (M1, 35). She unequivocally recognized her need to learn about electronic books, despite never reading one. The owner of a Nook, given to her by her husband and son because of her love for reading, she had yet to even turn it on. Yet, she repeatedly and vehemently declared that she knew her participation in the study was a way that she could better reach and teach her students.

Delta was often a woman of few words during our meetings, but the comments she did make during our discussions revealed her romanticized notion of the traditional book, as she often referred to traditional books as “dreamy to her” (M4, 10). A colorful speaker, her use of figurative language added an emotional component that was often the catalyst for conversations

about the benefits of one format of book over the other. While she was the first and an enthusiastic user of our first story app, and she found “joy” (SI, Delta, 154) in watching her students enjoy the books, at the end of the study, she reported that she remained a traditional book devotee.

Inga. Of the other teacher participants, Inga is the only one who had ever read digitally. Though she didn’t have a tablet or e-reader, she received recipes and other articles digitally and frequently read those on her desktop computer. Although she witnessed her teenage children and husband using the iPad for reading, she had never experienced it herself. Citing that she liked the physicality of a book, she conceded reading digitally was fine for short texts, but that she couldn’t imagine reading a longer text digitally.

Inga came to teaching from a career in engineering. Perhaps because of her background, Inga frequently took a leadership role among the other participants. She often questioned others’ statements and experiences and gave suggestions when others found that time proved to be a constraint limiting their full participation. Reflective journal responses were often concise and to the point, as were her comments.

Lois. An enthusiastic and eager participant, Lois also came to the study with no experience with iPads or electronic books. Reading mostly for spiritual growth, she claimed not being able to write in or highlight electronic books as a major deterrent. Even though she is reluctant to read digitally for pleasure, she embraced using the e-books in her classroom.

Lois was quiet during our sessions. She did respond when asked questions or when spoken to directly, but did not initiate conversation. She did, however, seek help from others when exploring the story apps during the meetings. Her demeanor during the meetings would best be described as observant.

Lucy. Lucy began the study with an attitude of resistance. Self-described as “old-fashioned” (FI, Lucy, 185), Lucy expressed a preference for traditional books. Not only was she not ready to embrace the electronic book, but she was wary of technology altogether, citing technical difficulties as the reason she has “decided to use [technology] as little as possible” (M1, 103-104). She did cite this reluctance, along with keeping up with her students, as a reason for wanting to participate in the study.

It was Lucy who used the electronic books the least of the participants. Despite this, however, she had plenty to add to our discussions. Lucy played an integral part in our dialogues and deliberations. She was quick to answer and seemed to talk her way through her thoughts, often changing directions as she spoke. She replied to others’ comments and took suggestions when offered to her, responding in turn. Her comments often opened up new avenues of discourse.

Throughout the duration of the study, teacher participants assumed roles of teacher, learner, and co-creator of knowledge. Through thematic analysis, I recognized patterns that led to the creation of two overarching themes: the emotionality of reading and changes in understanding and perceptions about e-books. The preceding chapter outlined in detail the steps that I took to generate these themes, which answer the first research question: What can be learned about veteran primary teachers’ knowledge of and persistent attitudes about using interactive electronic books in the reading classroom?

Reflections on an Inquiry: Looking Away

Today, I chose a book, and my heart broke just a little bit. I've chosen books every teaching day for the last 26 years, but today was different. I had two versions of the same book: my old trusty copy of Peter Rabbit with well-worn pages and a marker doodle on page 11 where my daughter got a little too carried away with an art project and the interactive digital copy in my iTunes account. I wanted to choose my book, my paper book that I had bought when my first child was born. I wanted to tell the story of how my son would toddle up, sit on my lap, and beg for me to read again. I wanted to share it the way that I had shared with all my children, voices and all. But in the end, I chose the e-book. In the end, I knew that for this purpose, for this group of kids, for this class period, the e-book was a better choice.

In the end, they LOVED it and did beg to read it again. I had tried, without much success, to read to this group every single week, and every single week, my efforts have been met with little enthusiasm. After all, it's the gifted class, and they've been used to doing so much more. Do I expect excitement over a story when the week before we'd made exploding volcanoes? But you know what? With this book, the e-book, I got just as many smiles and just as much excitement as I did as when we do our experiment last week. It should have thrilled me, but it didn't.

It felt almost like a betrayal. A departure. A goodbye. I don't think I was bothered by the fact that they loved the book, or even that it was the e-book that they loved. It was that I had chosen it. My books have been there on the shelves, waiting like a long-lost friend. And I passed right on by for the newer, shinier version. Almost like leaving them behind.

(Researcher Journal, March 7, 2016)

Overarching Theme: The Emotionality of Reading

“A book is a memory, spun into a cocoon of thought and image and individual impulse.”

(Shanthi Sekaran, 2017)

“I cannot remember a time when I was not in love with them – with the books themselves, cover and binding and the paper they were printed on, with their smell and their weight and with their possession in my arms, captured and carried off unto myself.” (Eudora Welty, 1983)

“Am I a reader? Big time. I love reading better than living.” (Delta, First Interview, 26)

As I immersed myself in my data, one thing became clear: it wasn't that my participants lacked initiative or the desire to use the latest technology in their classrooms. In fact, all of the participants recognized the need to integrate electronic books into their teaching as a way to better meet the needs of their students. They all were aware of the technology check-out process and capable of doing so. However, there was still something that prevented them from doing so. And that was the emotional response, the emotional connection that they shared about reading and the reading experience.

Theme 1: Emotionality of the Traditional Book

Upon examination of the data, it was clear that each teacher participant harbored an emotional attachment of some sort to the traditional book. Whether it was that traditional books were associated with special memories, that teachers wanted to pass down their favorite books, or the fear that traditional books would be replaced, this emotional attachment was part of the reason why the participants had yet to use electronic books in their classrooms even though they were available. In the following sections, I will present and explore the emotional connection presented in the data, through the patterns and subthemes that became apparent in my analysis.

“The book thing”: **The traditional book as a desired physical object.** At the outset of this study, over and over again I heard my participants say that they “just like the feel of a book in hand” (FI, Lucy, 45). I wondered just what it was about traditional books that made me, and others like me, prefer them to electronic books. In this age of easy access and portability, what made a bound book more attractive? The analysis of the data showed that the mere physicality of a book was mentioned repeatedly as something desirable, something to be enjoyed, something tied to memories, emotions, and security.

The tactile feel of a book seems to be one of the biggest attractors to the traditional book. This makes sense, as touch is the way that we first make sense of the world, and the way all of us first made sense of stories. They were often associated with a mother’s lap, a goodnight embrace, or the childhood space carved out just for reading. They were bound up in the spines, the pages, the folds of paper that gave the story its physical form. E-books were not even imagined when we, the participants, were young children.

Delta reminisced often during our times together that she has always loved the physical presence of books, stating that books on a shelf in a library were “dreamy” (M4, 10), and that furthermore, she hadn’t even touched the Nook that had been given to her for her recent birthday because she wasn’t ready to “relinquish the feel of a book in her hand” (FI, Delta, 45). Lucy also expressed a “book thing” (M1, 186), citing she gets a sense of satisfaction when she sees “a child laying on the floor with a book in their hand reading” (M4, 49-50). Inga felt that the loss of books would be “sad, because once in a while it’s good to sit down and relax and take a book and read it and smell it and feel it” (SI, Inga, 143-144).

Along with the feel of the book in the hand, one of the things that participants liked about traditional books was the way that they could make them their own through highlighting, dog-

earing the pages, and writing in the margins. When asked why she preferred “100% hard copy books,” (FI, Lois, 43) Lois replied that

“Well, I can’t turn the page gently and just go back. I have to do a separate highlighter and not the one on my pen. I like to mark my place and dog-ear the page and put a bookmark. I just like the feel of a book” (FI, Lois, 50).

Inga concurred, saying “You can’t tab the pages, and then flip quickly to where you left off. You can’t write little notes on the side to remind you of what you thought” (JE, Inga, 9/3, 8-10). Lucy cited the ability to use a physical bookmark as “one more reason to support paper books.” (M1, 256).

For Inga, though, it appeared that the smell of a traditional book was most important to her, as several times throughout the interviews and the meetings she referred to loving the smell of a traditional book. She explained that with

books you can smell the print, the ink, and if it’s a new book, they have that crisp odor. If it’s an older book, it may have that musty smell to it where it’s been around a long time and you can smell where the pages have started to turn brown and lost their crispness. I just love the smell of a book. (SI, Inga, 19-21)

When asked about this later, Inga reflected for a while before answering,

Well, I guess it was like a treat when we were young to get a new book. And it was always Nancy Drew, and they do smell. They have a certain scent to them. And the older ones have a musty smell and you think of whoever gave it to you and whose it was before you and the story behind it and who handed it down.(SI, Inga, 146-149).

This suggests that for Inga, the smell is attached to a memory, which is a second subtheme identified in the data.

“The beginning of it all”: The traditional book as a memory. For the participants of this study, the physicality of books is tied to the remembered experience of reading. Just the feel, the smell, the sight of an old book brings back memories, takes them back to another time and place. It is clear that among the participants, the physicality of a traditional book was much more than liking to feel the weight of a book or the touch of a page. Traditional books were attached to memories of significant times in their lives.

Delta exhibited a deep emotional attachment to her books. She spoke of books almost wistfully, describing books as her friends. She attributed her love of books to the joy that they brought her as a child.

I was obsessed with books. I loved the summer reading program at the library. Because we moved around, that was my joy. My momma would go find the library and we would read and I can't imagine my life without that. When I didn't know my friends in the summer, books were my friends because I loved them so much. It gives me chills just thinking about it. (FI, Delta, 28-32)

Her love of books served her well throughout the years, and she can remember that not only did she receive intrinsic rewards for her reading, but extrinsic as well. She recalled, “Ms. Wiley, my third-grade teacher, told me I was groovy for reading so much, and I believed her. That was the beginning of it all.” (SI, Delta, 167-168), referring to when she knew she wanted to teach children to read.

Delta also had fond memories of reading with her own child, and alluded to these memories as a reason that she will “never give up on real books.” (JE, Delta, 2/22, 62) During her final interview, while conceding that her opinion of e-books had changed, she referred to her memories of reading with her son as a reason she would always continue to read traditional books to

her students. It was not only enjoyable for her, but she also cited their daily read-aloud time during his childhood as contributing to his love of reading.

There's nothing that can really replace a mother reading a picture book with a child.

I just don't see this generation doing this with a tablet, but you know, they may. You can't ever replace that time curled up with a book at bedtime, because I wouldn't trade what my son did with his grandmother, and what I did with him for anything in the world...those are treasured memories...because now he's got a love of reading books so much right now. He's a grown man and he carries a backpack full of books. (SI, Delta, 78-83)

Delta referred to her son's love of reading several times throughout the study. She once even remarked that "he would have never have loved books as much as he does if I hadn't read all those books to him." (SI, Delta, 84-85)

Inga expressed her love of reading as a child as well, though she didn't discover that she loved to read until she was an adolescent. She recalled, "In my teenage years, I got hooked on romantic novels. I still remember. I love, love, loved those books. I didn't like reading out loud, but I loved those books and making pictures in my mind." (SI, Inga, 128-130) She later recalled, in great detail, of laying in her childhood bed reading much past bedtime with a flashlight. As she grew into a wife and mother, she became enamored with cookbooks, discovering new recipes for her family, especially her son who has multiple food allergies. She credits her cookbook reading habit with giving her ways to provide safe meals that her family enjoys.

I read cookbooks like most people read novels, front to back. I don't skip a word. I love it, now, especially with Joel, you know he has all those allergies and it's so hard for him to find something he can eat *and* that he likes. Reading cookbooks makes me feel better

because he can eat what I make, and he likes it too. You know, mama's cooking. (FI, Inga, 48-52)

The excerpt here points to Inga being intrinsically rewarded for her reading, as it gives her a way to meet her family's needs.

Lucy's memories from childhood were strong and continued to influence how she read to her students throughout her tenure in education. She stated that, although she taught math all periods except for her one reading class, she still enjoyed reading aloud to her students, "making it come alive like someone once did for me." (SI, Lucy, 136) She recalled a fifth-grade teacher who "made books fun. She made the characters kind of come alive, and it was the very favorite part of the day." (SI, Lucy, 141-142) Because of that teacher, reported Lucy, she strove to make reading come alive for her students.

In addition to bringing to mind pleasant memories of her childhood, books were a source of permanence for Lucy, a comfort in a world that she refers to as "fast changing and ever advancing." (SI, Lucy, 94) She reported that her hard copies of her books remind her of a "sweet time." (SI, Lucy, 95) Her favorite stories were those with familiar characters that she could follow from book to book in a series. As a child, she loved to save the books and tried to buy books that she loved so she would always have a copy. She recalls, "I still have those books that I bought as a kid and my husband, for our last anniversary, even bought me a first edition of my very favorite book, *The Boxcar Children*." (SI, Lucy, 105-106) She said that while she knew that she needed to advance with technology, "my books are always there." (SI, Lucy, 98), suggesting that the permanent nature of a traditional book and the particular memories that her childhood books evoke appeal to her.

For Lois, it was not the fond memories that encouraged her love of reading. In fact, Lois was the only participant that reported that she did not like to read as a child. Just as positive childhood memories can create a sense of nostalgia around traditional books, Lois provided evidence that negative memories associated with reading make one more willing to try different formats. Lois was very enthusiastic about trying the electronic books and the participant who seemed to transition to electronic books with the most ease. Of her childhood reading habits, she recalled that reading as a child was not a pleasant experience. “It was just always such a struggle that I didn’t like it much.” (SI, Lois, 95).

Lois found joy in reading when she became an adult, however, as she started reading as a part of her spiritual journey. She recalled how as a part of her early religious life, she used books to help her become “more grounded in scripture and to learn more.” (FI, Lois, 28). She continued to say that “reading was a big part of my life then, and when I think of that time, I think about the excitement...you know how it is...and reading for hours and just feeling so uplifted and inspired.” (FI, Lois, 33-35) When asked about her reading habits now, she replied,

I love reading now because it helps me with my relationship with the Lord. I read mostly devotion books and Christian books and I just love those. I love the feeling I get when I’m reading them, and I have a new understanding or a new revelation. Just like in the beginning. (FI, Lois, 41-44)

Even these relatively recent memories, though, seem to have impacted her decision to not use electronic books in her personal life. She reports that she “just loves laying on the bed reading a real book” (FI, Lois, 36) and doesn’t plan on converting to e-books in her personal reading. She will continue to find ways to integrate e-books into her classroom reading, however. She remains “really excited” (FI, Lois, 45) to continue to use e-books with her students.

All participants, including me, demonstrated an emotional attachment to the books of their earlier life and evidence showed that this has affected how easily and willingly they transitioned to using electronic books in their own classrooms. This led me to believe that the teachers wanted to share that feeling with those important to them. Whether it was their children or students, all of the participants expressed a desire to pass on their love of literature—the third sub-theme--and for most of them, in the form of the traditional book.

“I like to see the joy”: **The book as a literary heirloom.** For most of the participants, the book was a means by which to share their love of literature, a treasure to be passed on to the next generation. All participants cited daily read aloud time as important, as it was their time to share with their students “what good reading sounds like” (FI, Inga, 81) and to “make it fun for the kids as someone had made it fun for [them]” (SI, Lucy, 131). For some, though, read aloud time was a time to “share with the next generation” (SI, Delta, 67).

For Delta particularly, it was important that she share her love of literature, and even the books themselves that had brought her so much joy as she grew up. She still has all of her basal readers and childhood books tucked away on a special shelf in her classroom, and “the year isn’t complete until [she] has had a chance to read every last one of them” (SI, Delta, 157-158) to her students. For her, it is not only the joy she has rereading her childhood favorites and sharing with her students the stories of her childhood, but also in seeing their reactions when she reads.

Just their reactions. I just love seeing their reactions when I read *A Case of the Gimmies* or *The Best Christmas Pageant Ever* or *The Big Bad Wolf*. I mean, just certain stories that I love that I like to share because I like to see the joy. The joy. The joy that has been there all these years for me and that same joy is still there. I just love the feeling that they have because I remember having it too. (SI, Delta, 155-158)

Delta confirmed her desire to pass on the love of these books, stating that she would “read these books in her classroom “as long as [she’s] able to do this,” (SI, Delta, 66) and that she’ll “always try to share with the next generation.” (SI, Delta, 67).

Despite the fact that Lois does not have fond memories of reading as a child, she also finds it extremely rewarding to see her children enjoy traditional books.

I still enjoy a book book. And I like to get excited when I read a book to the class. I love story time. “I want to see the picture! That rhymes! What happens next?” and stuff like that. I love that part of the book. I love seeing them get so excited and engrossed in a story. I guess I want to pass on what I didn’t have as a child. (M4, 19-23)

Lois went on to say that she knew “readers were leaders and all that stuff” (M4, 84) and she thought it was her responsibility as a kindergarten teacher to nurture that love of reading. During this exchange, Lucy agreed, but questioned if her students read a book in digital form, would they still want to “go back to another regular book?” (M4, 98), referring to reading traditional books. Her concern reflects the fourth subtheme, a worry that the traditional book would cease to exist as a format.

“Becoming dinosaurs”: the traditional book as a ghost. This fear that somehow the introduction of electronic books was going to erase the traditional book from the literary landscape was another real and present emotion among the participants. This fear conceivably impacted their willingness to try electronic books in their classrooms where traditional books still held prominence in their hearts, their minds, and their memories. Almost all of the participants expressed these feelings.

Lucy expressed her apprehension in the interviews and in meetings. Although she claimed to have no time to read since beginning teaching, she held on tight to the belief that

bound was better, and lamented on several occasions that the traditional book may become an artifact of the past.

At this age, the kids do love the books and I don't want to take away their love of reading and going to the library. They get so excited about it. That's the only thing I worry about. The more they get into electronic books, the more it's going to be almost like, the video stores becoming dinosaurs, nonexistent. (FI, Lucy, 128-131)

Later, she articulated her fear that children were going to see reading a traditional book as "a step backward" (M4, 104) if they were allowed to read electronic books.

So, they do the e-book and they play with it, but do they want to go from that to another regular book? If you say, "Here, I've got another Arthur book that you can read," do they look at it and lose interest and be like, "OK, no. After doing this where I can make everybody move and talk, do I want to go back to a book I have to read myself?" I feel like they would say, "I don't get to make this one move and play so I don't want to do it." (M4, 98-103)

Just like she feared an increase of electronic books would diminish the students' enthusiasm for going to the library, she also felt like reading electronic books would reduce students' desire to read traditional books.

Inga expressed similar concerns, first in her initial interview where she said that she was "just so afraid that books were just going go away." (FI, Inga, 112) She seemed torn, however, about the right way to teach children to read.

I'm afraid if we teach them to read on electronics, they won't learn to read on paper.

Then on the other hand, if we don't teach them to read electronically, I'm afraid the

books are going to go...they're going to go away...everything is going to be electronic.

(FI, Inga, 113-116)

When asked what that would mean for her, if books were indeed to go away, Inga replied, “It would be just so sad. A whole generation missing out on that. Just so sad. Because sometimes it’s good to sit down and relax and take a book and read it and smell it and feel it.” (SI, Inga, 143-144).

Interestingly, Delta, the teacher who regularly professed her love traditional books did not express these fears. She was sure that traditional books were going to continue to exist in her classroom because she was going to ensure that they did. She was very insistent that she would “have my 1,000 paper books in my classroom until probably...as long as I’m able to do this. I’m going to share them with the next generation.” (SI, Delta, 66-67). She admitted that she “didn’t mind them” (M4, 366) when referring to electronic books, but felt certain that she would continue to use traditional books the way that she always had, and therefore did not harbor the same fear that traditional books were something that could be lost. Instead, her fear centered on the newness and unpredictability of the e-book, pointing to participants’ emotional responses to e-books.

Theme 2: The Emotionality of an E-book

Just as the teachers harbored an emotional attachment to traditional books that inhibited their willingness to use e-books in their classrooms, they also had a negative emotional response— apprehension — about using electronic books. Participants’ lack of exposure combined with a healthy fear of technical difficulties based on prior experience with technology made the teachers a bit wary to try the electronic books. In the following sections I will present

and explore the subthemes related to participant's emotional responses of fear and apprehension to the e-book.

“Not one inch of digital books”: the e-book as unfamiliar. In the initial interviews, each participant revealed that she had never read an e-book before. Because of this, in addition to their love for the traditional book, there was also some apprehension to use something so unfamiliar. Not only was the e-book a new format for reading, but none of them had ever used an iPad, the technology on which they would read the e-books. This unfamiliarity with the iPad will be addressed in the next chapter, but it is important to note here that their inexperience with iPads was disconcerting to them and in some cases, inhibited their use of the e-books.

Even though Inga had used e-books on the Smartboard, the books that she had used with her children were simply digital books without any interactive features. She reported that she “didn't even know that there were electronic books that would interact with the children until we met the other day.” (FI, Inga, 127-128), referring to our introductory meeting. She went on to share that she was hesitant to use them simply because she had never read an interactive story before and she didn't know what to expect. In addition to that, she had never used an iPad, even though the rest of her family read digitally. The combination of the two factors made her “a little nervous” (FI, Inga, 134) because she felt she couldn't be fully prepared with a device and a story that she had never used before.

Delta was more willing to try the e-books on the iPads, even though her teacher preparation and her professional and personal experience “did not include one inch of digital books.” (FI, Delta, 22) She did add one stipulation, however, in that before she used them with her children, she wanted to have me model a reading for her. She said,

I just don't feel like I know what to do with one. This isn't something that I've ever done before. It's like a totally foreign country to me and I don't want to lead the tourists astray. I've been teaching for 26 years and I pretty much know what works and what to do. This is new ground. New ground. And I've got to get used to it. (FI, Delta, 62)

These types of declarations, in which Delta expressed her determination that she needed to “step up into the digital world” (F1, 55) recurred throughout the study.

Lucy not only felt uneasy at the thought of using an iPad, but reported a general sense of discomfort with technology in general. She recalled vivid memories of the first time she ever used a computer, and remembered feeling nervous, thinking, “I'm going to do something wrong and it's going to explode.” (M1, 116) She still harbors some discomfort with even the technology that she has to use every day in her instruction.

I think now, even still I just kind of do what I have to do, I learn what I need to learn, like to use the Smartboard all day, but I'm sure it does a lot of things that I'm not aware of because I've not been able to dive into it and really get comfortable with it. (M1, 118-121)

Later on in the same meeting, she repeated that she was uncomfortable with it, and she “didn't like feeling uncomfortable in the classroom which is made worse when it doesn't work right.” (M1, 246) Here, she sets up the second subtheme under the emotionality of the e-book: its unpredictability.

“I don't know how to fix it”: the e-book as unpredictable. Throughout the first half of the study, all participants regularly expressed the fear of the technical issues that often come with technology. In the last five years, the school had installed Smartboards in every classroom. Along with great innovation, however, had come great frustration among some of the teachers as

they experienced technical problems with both the Smartboards and the outdated desktop computers associated with them. In addition to these technical problems, teachers were not given targeted professional development to help them learn how to use them effectively in their grade-specific classrooms. This created great frustration among the staff, especially because there was inadequate technical support until this year, when the school partnered with an on-site technology company.

Therefore, given a new piece of technology to use in their classrooms teachers were a little wary. Delta predicted that there would be many problems due to malfunctioning or nonfunctioning technology.

Well, I tell you. Wi-fi has to be working. Links have to be working. Just the hardware and the whole thing. Because that's what happens with Smartboards. Some days it works and some days it doesn't. What makes us think or actually believe that this thing will actually work like it's supposed to? (FI, Delta, 167-169)

Past experience had taught Delta that technology is predictable only in its unpredictability.

In addition to the technology not working, teachers worried that if indeed they did plan a lesson based around the electronic book, and for some reason it did not work, they would be left unprepared for their students. As Lucy explained,

I'm not always comfortable with things that involve electronics because of the uncertainty of is it going to be there when you get it, compared to a regular book. The way that the computer all of the sudden has issues. You know, I've tried to pull things up on the computer and it's not working. I don't like everything depending on an electronic device. I like to know it's there and it's working. You don't want your lesson that you worked so

hard on based on this e-book and then it's gone because all you have is the electronic.

(FI, Lucy, 164-169)

Later she lamented that she didn't want to "be responsible for going around and trying to fix everything because then [she] also would have to be saying, 'I don't know what you did and I don't know how to fix it.'" (FI, Lucy, 179-181), admitting to her students that she was incapable of helping them.

Lois also expressed the fear of not being able to help her students if the e-book didn't work properly. This feeling of helplessness was one that she said she often felt when her Smartboard lesson went awry due to technical problems. She also felt overwhelmed at the amount of preparation it would take for her students to read e-books on iPads.

I'd have to download it, and I don't even know how to do that. I'd have to make sure that all the iPads were working. I'd have to make sure that they were all charged, that the book had downloaded correctly, and that I knew how to navigate the book completely. With a book, you don't have all those issues. You just take it off the shelf, open it up, and read it.

(FI, Lois, 150-154)

This suggests that Lois was uncomfortable with the thought of using the e-book, something that was new and unpredictable, in her classroom. The data analysis implied that she was not alone in her apprehension, but that the other teachers shared her concerns.

I have shared the themes of the emotionality of a traditional book and the emotionality of an e-book; however, there was still another emotionally-charged aspect of integration: the apprehension associated with the changing role of the teacher. Not only were participants anxious

about using technology because of the difficulties they might have in the classroom, but also because of the changes that they would have to make in the way that they taught using e-books in their reading classroom.

Theme 3: The Emotionality of a Changing Role

The teachers at Raven's Nest Christian School have long used the ABeka and other teacher-focused and scripted curricula. Only in the last few years has the administration made the decision to implement standards-based curriculum and adopt a more student-centered approach to instruction. Consequently, the teachers have had to do a lot of adapting of their role as a teacher in the last three years. However, the reading program has remained the same as it has for the last 15 years, highly teacher-centered. It is not surprising, then, that asking teachers to modify the roles that they play in the reading instruction of their students may cause a bit of apprehension. In the collaborative inquiry, teacher participants expressed concern about how introducing e-books impacted their roles as facilitators, learners, and spectators.

“Relinquishing control”: the teacher as the facilitator. The features of the e-book are designed to lessen student dependence on teacher mediation when reading (Felvegi & Matthew, 2012). All of the interactive e-books that were used in the study had audio narration options, in which the book would read to the student, and many had text-to-voice options where a student could touch a word to hear it even if they chose to read the rest of the book themselves. Students were able to choose from many options on each screen as they read and proceeded through the book at their own pace. With an e-book in the hands of a student, the teachers may have found their role in the classroom changed from the director of learning to a sort of facilitator, as both the literature and the data support (Stronge, Grant, & Xu, 2015).

Delta, not only the most veteran teacher but the teacher who has been at the school the longest, recognized this after a few months of having the e-books in her classroom. She reflected,

You know, I sometimes feel like I want to try to...I have a poster in my room where you lift up their [students'] head and you pour the seeds down on them, and it's not like I feel like I do that with these books. The thing is, I feel like there are certain things that have worked all these years, and now, I'm finding some new ways that work. You know, I'm relinquishing control. I'm letting go of all the things that I thought always worked. (SI, Delta, 146-149)

When asked to talk more about "relinquishing control," something she mentioned five times in the meetings and interviews, she replied,

In the beginning, I felt like I had to be right there with them when we were doing it, but I found that the kids are very adept at being able to handle it, and so I was able to, I mean I just had to, I kinda got a ticket to go ahead and try something new. You know it's so hard to relinquish that control and let them do it on their own and trust that they are getting what they need. (SI, Delta, 218-221)

Lois also acknowledged that her role as a reading teacher would have to change. She was less inclined to think that she could relinquish all of her duties as controller of her classroom, citing that if a child was not reading the e-book the correct way, she "gave specific directions. 'Let it read to you. Then press the buttons. Then go to the next page.'" (SI, Lois, 50-51) in order to keep a calm and orderly classroom. She did recognize, though, that she would be more of a facilitator should she integrate them into her classroom.

I would be a computer programmer of sorts, downloading all of the e-books and making them available to the students who were ready for them. I would make sure that those students on a higher reading level had some appropriate books to read and maybe encourage them to read the books themselves instead of have the book read to them. (SI, Lois, 68-71)

Inga and Lucy also referred to their changing role in both interviews and meetings, actually referring to themselves as “more of a facilitator” (SI, Lucy, 70 & FI, Inga, 168) when their students are using electronic books.

“I should still know more than they do”: **The teacher as the learner.** As technology increases, it is reality that teachers are no longer the only expert in the classroom (Sackstein, 2017). While the teacher may be the expert in subject matter content, it is most likely that in terms of the workings of the latest technology, students will know as much as or more than the teacher (Ebner, 2017). It certainly was a concern of the teacher participants as they started integrating the e-books into their classrooms. Not only did they fear that their students would have skills that they didn’t, they had a certain apprehension about not being the expert in the classroom.

Lucy illustrated this point as she recalled a situation in which her students knew more about the e-book than she did.

You know how some learn how to do things. I watched some actually picking the iPad up and tilting it to make the objects do things. Nowhere in the instructions or on the screen had it told them to do that. I wouldn’t have ever thought of that. Like the rocking chair in Goldilocks. They found out if they picked it up and tilted the screen, the chair

rocked. If they can figure out that, who knows what else they can figure out. I don't know if I like that they are one step ahead of me. (M4, 146-151)

Not only did she not know more about the e-book that she gave her students to use, she did not appreciate the fact that she was less knowledgeable than her students.

Delta, however, embraced a sort of ambivalence about the fact that her students were more knowledgeable than she was when it came to operating the e-books. She conceded that her children were very helpful in assisting her when she had difficulty with things like finding the volume and locating the interactive icons on the screen. However, she was a bit wistful that perhaps her students did not look to her as the expert anymore.

They've become more adapted. They know how to do all that. I don't really. It used to be me getting them set up and putting all the numbers in and getting them started but not anymore. They're going, "I'll do that, Mrs. Gass." They know everything. I mean, that's the beauty of it. But then that's the sad part too, because they're only in kindergarten. I should still know more than they do. (M2, 115-119)

Delta seem resigned and reluctantly pleased that she was in the position to learn from her students. After spending the majority of their teaching careers in teacher-centered classrooms, this was certainly an adjustment for all.

“I didn't have to do a thing”: the teacher as a spectator. As the teachers realized that the students were so independent reading the e-books, they began to take on a spectator stance. Instead of interacting with the students and the books, they observed from a distance, only intervening when behavior became an issue. Even the kindergarten teachers stepped back and let their students self-direct while reading. All of the teachers did this; however, their reasons for doing so and their reactions differed.

Lucy, who teaches third grade, felt that the books helped to foster the independence that she tried to build throughout the year. She tried to stay in the background so that the students could choose what they were going to attend to and how they were going to react.

I sort of feel like if I'm leaning over and asking questions, I'm directing their attention to where I want it and not where they want it. I don't want to influence what they do and how they act because I want them to move toward independence, eventually. Now, we usually don't do that in reading. We've been doing reading the same way since I've been here. So, it's not always easy for me, but I'm trying. Sometimes they get stuck on something that is not very important to the story, and then I'll step in, but basically, I let them do it on their own. (SI, Lucy, 193-199)

She went on to say that she didn't always like to step out of the interaction because she was responsible for teaching them certain reading concepts, but that it felt like the right thing to do in the moment.

Inga had much the same philosophy when it came to her role when her students were using the e-books.

When I first used it, we sat and talked about it and interacted, and I liked that. But then they seemed to take over and be responsible and enjoy it on their own. I noticed that it was almost like they wanted to be in control of the book and be able to use it on their own. They wanted ownership of the experience. I'm not used to that in reading. That was new to me. Usually I have to pull things out of them and direct them where to read and where to look, like they're waiting for me to tell them what to do. That was a new thing. (SI, Inga, 154-159)

When asked about how that made her feel, taking on this new role of bystander during reading, she commented that it was a “mixed bag” (SI, Inga, 161), that sometimes she enjoyed not having to be involved, but that she worried that they weren’t comprehending when she wasn’t sitting with them in charge of the lesson.

Lois, on the other hand, fully enjoyed the independence that the e-books gave her kindergarteners.

I didn’t have to do a thing. They didn’t even need me anymore after the first time, which was wonderful, because in kindergarten they need you for everything. When I didn’t have to be right there with them reading to them, I could be a better observer, do some assessment. What did they like best? What did they focus on? I mean, if I’m going to use these in my classroom, I need to see stuff like that. (SI, Lois, 87-90)

Lois did admit that she didn’t see the use of e-books in reading instruction at this point in kindergarten, and that had it been so, she might have felt differently, saying that she likes to “decide what goes on in the classroom.” (SI, Lois, 92)

Delta also enjoyed the independence of the children, but again, found it difficult to “relinquish that control.” (SI, Delta, 24) She soon realized that her students didn’t necessarily need *her* to help them with the e-books, but did occasionally need assistance. She felt that by surrendering that role to others, it gave some of her students opportunities that they would have otherwise not have gotten. She mentioned one student who didn’t excel academically but was able to help others in the classroom when they brought out the iPad to read the e-books. She felt it was a way for him to “help himself, help others, and help [her] a little bit too.” (SI, Delta, 26) She felt good about this because “every kid needs a chance to shine at something and this gave him the opportunity.” (SI, Delta, 32-33)

Each teacher, it seems, had different feelings about giving up their role in the reading process when their students used the e-books. Two were conflicted, almost like they were glad to give up some of the control, yet having a hard time letting go of the control in the one area of the curriculum that was still teacher-centered. One teacher enjoyed the freedom that the interactive books gave her during the day. Still another expressed discomfort about her changing role. What was similar, however, was that all of the participants expressed an emotional response to their changing roles as they integrated e-books into their reading instruction.

This emotionality connected to reading and reading instruction was the first overarching theme in this study. The thematic analysis of the data resulted in the themes of emotionality of the traditional book, the emotionality of the e-book, and the emotionality of the changing role of the reading teacher. There was another overarching theme, however, that developed through the thematic analysis, and that was the significant change that occurred in understanding of how electronic books work and their perceptions about using them in the classroom.

Reflections on an Inquiry: Looking at Myself

First meeting today, and even though I had thought I had prepared for everything, I can't help but think that things went a little bit awry this afternoon. My vision of the way this meeting would go and the reality were quite different. I envisioned us sitting around discussing the pedagogical and practical implications of using these e-books in the classroom. After all, I did find myself (once I got over the fact that it wasn't a paper copy) marveling over all the things it could do, and for lack of a better word, tickled, at how much my kids loved it. In actuality, however, the meeting could not have gone more differently than I had envisioned. I hadn't thought to ask if they knew how to use an iPad. I hadn't thought to visit each of their classrooms to make sure the app had loaded correctly on their computers, that it was working correctly, and that they knew how to navigate it. I hadn't even considered that I may have needed to write down the directions. Truth be told, I just didn't think...and it showed.

My take-aways from this meeting- the good, the bad, and the ugly. The good is that there is significant learning to be done among us. The teachers are willing and eager and for the most part want to make a concerted effort to use the e-books. The bad is that only one of the teachers was able to use the app at all with her students. The ugly falls with me and the fact that although I thought differently, I was woefully unprepared.

How could I have just assumed that they would have known how to work them? WHY would I have assumed that they would have known? After all, how many times did I have to ask my kids how to work the iPad when I first got it? How many times, STILL? If I don't know, then I shouldn't assume they do. In fact, that should be a new rule...no more assumptions...ever.

(Researcher journal, September 9, 2016)

Overarching Theme: Changes in Understanding and Perceptions about Electronic Books

“In any given moment, we have two options: to step forward into growth or to step back into safety. (Abraham Maslow, 1968)

Six months ago, I probably would have said, ‘No way!’...but now that I see how they contain themselves...I could see much more success in that.” (Delta, SI, 49-530)

The purpose of this study was two-fold. One purpose was to investigate the knowledge of and persistent attitudes about using electronic books in the primary classroom. As shown in the data, with these teachers, the emotionality involved in the idea of the traditional book, the perceptions about electronic books, and the changing role of the reading teacher all contributed to resistance to using this new technology. The second purpose of the study was to explore how collaborative inquiry shifts these teachers’ knowledge of and attitudes about using e-books. The data analysis clearly shows that teachers developed understanding of electronic books over the course of the study.

Theme 4: Changes in Knowledge and Understanding of Electronic Books

There is no doubt that this collaborative inquiry increased the knowledge base of the teacher participants. Before the study, none of the teacher participants had ever read an interactive electronic book, and none of them had used a tablet or iPad before. Through experimenting together with the e-books as a group, reflecting on our experiences in our classrooms, and discussing ways in which we could use them more effectively, the teachers became more proficient at using the e-books, and the data supports this claim.

At the beginning of the study, Delta claimed that she had never used an iPad or an e-reader, even though she had received one as a gift the year before. When she encountered the e-

book on the iPad in our first meeting, she had difficulty signing on to the reading app that we first examined together. Once she got assistance doing this one time, however, she had no further difficulties for the rest of the study. She used the e-books in her classroom “at least once a day” (JE, Delta, 2/22, 12) and asked me to give her the names of some of the websites I used to download e-books so that she could download some on her personal iPad. This suggests a change in knowledge base from the beginning of the study. She even referred to such growth when asked if she could see herself using the e-books in reading groups. She answered, “I could see, I could totally see it. Six months ago, I probably would have said, ‘No way!’ We couldn’t have done that, but now that I see how they contain themselves...I could see more success in that.” (SI, 49-50)

Inga also admitted that although everyone else in her family used an e-reader or iPad to read for pleasure that she had not ever chosen to do so. She did use the Smartboard to play some digital books for her students during snack time, but these books were simply digital copies of traditional books. Although she adapted well to using the iPad for reading the e-books, she was unaware that interactive e-books even existed until the informational session for the study. At the end of the study, she felt that she had “gained a tool to use in the classroom.” (SI, Inga, 11) She reported that she used the iPad e-books at least two times a week, and at no time did she need my assistance with using them, suggesting that she had become proficient.

Lois, as has been previously mentioned, was very enthusiastic about using the e-books in her classroom. However, her journey to becoming adept was not smooth. The first time she tried to use the e-books, she could not navigate the site well, and became discouraged. She had decided that it was “not worth the hassle” (M1, 42) of getting her children excited about using the e-books, only to not be able to work them properly. After our first meeting where we had the

opportunity to learn more about how to use the iPad and explore the different e-books together, she felt more confident and “never looked back.” (SI, Lois, 14) She reported using them every day, mostly to differentiate with a high reader in her classroom, but also with small groups as well.

Lucy showed great development of skills and knowledge. Lucy came to the study with limited knowledge of technology in general. Even a “reluctant cell phone user” (M1, 81), she expressed great discomfort when it came to technology. During the first meeting, she admitted to feeling “lost” (M1, 228) whenever using the e-books and even when we were discussing them. Interestingly, she could use her Smartboard, and touted its utility; however, she found the iPad and the e-book difficult to manage. At the end of the study, she reported that she didn’t use the e-books very often during the study because of time constraints, but she did use them at least once per month so that she would have something to contribute to the group. She also admitted that she had become so much more comfortable with e-books that she decided to download the Bible on her phone, something she insisted that she would never do during her initial interview because she “thought trying to figure out how it works would get in the way of [her] reading time.” (FI, Lucy, 46-47) When discussing this, she alluded to the fact that her ability to use and navigate e-books had changed.

Well, it has changed a little bit for me because at that first meeting when I said I decided not to use e-books (laughter), because I have since downloaded my Bible on there. And I love having it right there and being able to just press things and get right to where I want to be just like that. (SI, Lucy, 173-176)

The data indicates that all of the teacher participants gained enough knowledge to be able to independently use the e-books that we explored together. It is still unclear whether or not they

became proficient enough with the e-book format that they would be able to navigate unfamiliar e-books with similar ease. It is evident, however, that they learned through this experience. Learning, however, was only half of the equation, as the teacher participants held some strong beliefs and perceptions about the role of traditional and electronic books in the classroom. These changes in the attitudes of the participants toward traditional books, but more importantly e-books, make up another theme that developed as the result of the thematic analysis.

Theme 5: Changes in Attitudes and Perceptions

In the beginning of the study, all of the teacher participants held strong beliefs and attitudes about traditional books and electronic books and the role of each in the classroom, as has been discussed in previous sections. Because all of us were born and raised in a time where there was limited computer technology, we had all grown up with only traditional books to read. In addition to this, none of the teachers in the study had experienced any instruction involving electronic books in their teacher training. Therefore, prior to the collaborative inquiry, teachers had not had a chance to develop perceptions of electronic books based on actual experience.

Given the opportunity in this study to use electronic books in the classroom, some of these perceptions changed, some were challenged, and some remained the same. In the sections that follow, I will discuss the subthemes identified around how teachers' perceptions of traditional books and e-books evolved over the course of the study. I will also explore how because of these changes in attitudes, teachers envisioned themselves using e-books in their classrooms in the future, a stark departure from the beginning of the study.

“I’ve got to mix the old with the new”: perceptions about traditional books as privileged. The beliefs, attitudes, and emotions of the teacher participants toward traditional books

remained unchanged, as they “clung to the past,” (SI, Delta, 56), as well as the romanticized notion of the hard copy book. Although they were introduced to new book forms, enjoyed seeing their children reading the electronic books, and recognized the advantages of the e-books, they still held firm to their preference for traditional books in their personal and professional lives. However, there was a change in their willingness to accept that e-books had a place in their classrooms. They may not have been willing to give up their preference for traditional books, but they were able to give up the idea that hard copy was the best format. Every teacher in the study conceded that when given the chance, they would integrate e-books into their reading instruction in the future.

Delta acknowledged that she needed to use the e-books and that there were advantages, but firmly held to the position that “there is always going to be a place for it [reading traditional books] and really there’s nothing that can replace it.” (SI, Delta, 77-78) She felt strongly that we needed to hold on to the traditional book, even though she knew that “times, they are a changing” (SI, Delta, 83). She realized that learners are different, but really wants to “pass on the love” (SI, Delta, 87) of traditional books to her students. Despite admitting on several occasions that she knew that she needed to add more e-books into her teaching to meet the needs of her students, she said that she “still prefers regular books.” (M4, 366)

Delta didn’t discount e-books as a learning tool in her classroom, however. When asked about the value of using e-books in her own classroom, she replied,

If this is a way to do something different, that meets these kids in the middle, then I gotta do it. They’re a two-minute society right now with what they are. So, I just feel like I’m doing them a disservice if I just do the old. I am going to have to try to mix the old with the new. (M4, 304-307)

Throughout the meetings, interviews, and journal entries, she continuously recognized the need to meet the needs of “today’s kids with today’s technologies.” (JE, Delta, 9/1, 14)

Despite the enthusiasm and the skill with which she adopted electronic books into her classroom, Inga also appears to be somewhat attached to the notion of a traditional book. The physicality of a book still held a particular appeal to her, as she referenced in her final interview. She stated, “I just don’t think I will ever get over wanting to hold a book, smell a book, physically turn the pages.” She still feels the draw of a traditional book, but admitted that she was willing to “branch out” (SI, Inga, 23) and keep using e-books. She staunchly professed her belief that “any book that gets a child to read is a good book.” (SI, Inga, 58)

Lucy expressed a strong desire to keep using traditional books in her classroom, both during the final inquiry meeting and during her final interview. She claimed to be “just old-fashioned” (SI, Lucy, 99) and that if she is reading, she still “just wants to hold a book.” (SI, Lucy, 163). She shares the belief with Lois that the students will get better modeling of expressive reading when the teacher reads aloud from a traditional book. Both participants still prefer a traditional book in their personal reading, though Lucy did make a small concession and download her Bible on her phone.

While the teacher participants recognized the need to use digital reading in their classrooms, saw the advantages, and made tentative plans to do so, they still clung tightly to their preference for traditional books. It could be that a longer exposure to and more experience with the e-books could change their perspectives. Their perceptions about traditional books may not have changed dramatically, but they were able to see room for e-books in their classrooms; they no longer saw the traditional book as the best format for all instruction, which is a significant shift in attitude, due in part to their changed perceptions and beliefs about electronic books.

“I still enjoy a *book book*”: Perceptions about electronic books as authentic literature. At the beginning of the study, as has been discussed in the previous section, participants knew very little about electronic books. Only one participant had even seen an electronic book, and none of the participants had even known about the existence of interactive e-books. Therefore, the perceptions about e-books were somewhat limited and developed as we experimented, learned, and talked together.

At the beginning of the study, there was a clear delineation in the participants’ minds regarding books and electronic books. When asked to define a book in their initial interview, all of the participants referred to the printed nature of a book and made no mention of the electronic book at all. Delta replied, “A book is paper, pages, and a cover. An electronic book is this (making swiping motions).” (FI, Delta, 51) This swiping motion in relation to defining how kids read electronically was a motif that occurred regularly in the first two meetings.

However, the definition of a book, at least for some, changed as the study went on. When asked to define a book in her final interview, Lucy replied,

Well, I would have said something I could hold in my hand and read. But now, it’s just anything, whether it’s a book to read for enjoyment or a book for information, it doesn’t necessarily have to be a physical book like before. Because when we started, when I thought of books, I thought of paper books. Now I don’t necessarily think of paper books. I think a little bit more about e-books. (SI, Lucy, 26-30).

Given her initial reluctance to using the e-books and the frequency with which she did so during the study, it was surprising that she had such a shift in her thinking. Delta concurred with this, as she really never thought about a book as being digital, that a book to her always had meant “the paper that held the story” (SI, Delta, 67) but that she could now see a book as a digital entity.

However, in their final interviews, when referring to books, Lois and Inga pointed to paper versions. In the last meeting, when asked to respond to a blog post that recounted the author's love of traditional books and the library, Lois replied,

I still enjoy a book book. I still like to hold it in my hand. And I get excited when *I* get to read the book to the children and not have it play on a screen. I love story time, and I think that gets taken away a little bit with these. (M4, 19-21)

Inga responded to a similar prompt in her final interview.

Well, there *is* a big difference between a book and an e-book. I've changed a lot in the way that I think about the e-books because I've seen what they can do and how the kids can handle them, but I still prefer a book book. (SI, Inga, 117-119)

Both of these responses demonstrate that the delineation between traditional book and an e-book in terms of being an authentic form of literature still exists to some extent.

“They weren’t going over there to play Candy Land”: The e-book as a learning tool. Another way that perceptions changed was in how the participants anticipated their students would use e-books. During the initial interviews, most of the participants thought that students would use the e-books as a toy, and that this would prevent them from using the e-book in their classrooms. Inga predicted that “you’re going to have others that want to play with it. We’re going to have to do a lot of training so they don’t see it as a toy.” (FI, Inga, 175-177) Delta thought it would be important to be the guide as the kids read “because a lot of kids associate the iPad with a game. They will want to flip over and play with it.” (FI, Delta, 150-151) Lucy remarked during the first meeting, as we were exploring one of the e-books, that she just knew that her “kids would be up dancing instead of reading.” (M1, 317)

It could be that the participants anticipated that students would play with it because of the gaming features of the interactive e-book. In the beginning, as referenced above, the teachers partially defined the e-book with a swiping motion of the hand, indicating that students would be swiping instead of reading. And indeed, the study data substantiates this. When Inga was asked in her initial interview about the challenges that she thought e-books would present in the classroom, she predicted that she would have problems because she knew “these kids are really gamers, and they play all the time, and I just know they are going to see it as a play toy and not a reading tool.” (FI, Inga, 110-111).

Lois agreed that her students would probably view it as a toy at first, but was able to see the advantage of them doing so as well.

Those kids who are so engrossed in video games, you know, they’re going to think it’s a game. They’re going to approach it like a game. You know, those kids, when you put a book in front of them, they’re not interested. But if I give them that (pointing to iPad), they’re definitely going to be interested. (M4, 106)

Delta agreed with this, stating, “Yeah, they’ll think it’s a game, but that’s just the way they learn these days. By video gaming.” (M4, 401-402) All of the participants recognized that their students enjoyed video games and felt that the students might view the e-book as another game with which to play.

Much to the surprise of the participants, however, once students got used to reading a book in this format, they did not consider the e-books as toys. . Inga shared,

For the first week that we used it, a lot of them did kinda play with it as a toy, doing more of the interactive than actually listening and reading. But then, as long as I was careful about who I put together, they were OK. The book lost some of its [newness] and they

would still interact with it, but they were paying attention and reading and listening. (SI, Inga, 105-109)

Lucy agreed that her predictions that the e-books would be used to play were not realized. She recounted the story of one of her more active boys and his first time on the iPad with an e-book.

Well, then I had Jonah. And he and this other little boy, they were just loving the magnet book. He wanted to touch all of the things about five times each and he found it hysterical every time he did. I almost took it away from him. But then you know what? When he was done touching things, he read. And if his partner tried to turn the page, he wouldn't let him. He wanted those words. (M3, 96-99)

Delta agreed that her fears didn't come to fruition, commenting that "it wasn't a play toy like I thought it would be. They weren't going over there to play Candy Land or something." (SI, Delta, 115-116)

All participants realized that their initial predictions about their students using e-books as toys had been, while probably warranted from their lack of exposure and information, unfounded in reality. Instead of distracting the students from the reading task, the e-books actually in most cases, focused student attention on the reading experience. Consequently, this transformed the participants' thinking about the e-book; it was no longer something to play with, but something with which to learn.

Teacher participants were surprised by the way that the e-books became learning tools in their classrooms. In the beginning of the study, the teachers were so focused on the fact that the book was on a screen and their students' fascination with all things computerized that they appeared to not consider the e-book as a vehicle for learning. They viewed the e-books as a sure way to reach their technology-minded students, but didn't consider that they would be learning

as they read. Early on, Delta reluctantly conceded, “They don’t want to use their brain to think things out. They just want to see it on the screen. So these books might keep their attention at least.” (M1, 166)

However, by the end of the study, most teachers had been pleasantly surprised that their students actually learned while reading the electronic books. Inga said that her biggest surprise was that “even though they were interacting and playing with the books, they were still comprehending more than what they do when they read on their own.” (SI, Inga, 165-166) Lois thought that one of the advantages of the e-books was that the students were not aware that they were actually learning, that “they think it’s a game but they’re actually learning and comprehending.” (SI, Lois, 39-40). Lucy felt that when it was a new story, the students comprehended more than if it was a familiar story, which may have implications for further study. It was Delta, though, that perhaps summed it up best when she added,

Sometimes, you know, when you do the computer, you feel like it’s just playing, instead of learning. But really, as I saw them doing it, they’re learning stuff as they go. It’s not just a time waster. It really is a learning tool. (SI, Delta, 172-173)

Despite their strong attachment to traditional books, the data shows that the teacher participants recognized the advantages of using electronic books. Evidence from the data analysis clearly demonstrates that their perceptions about using e-books in the classroom were changed. The teachers certainly were surprised by some of the misconceptions that they had regarding e-books and how it would affect their students’ learning and behavior.

“It was almost like a personality change”: The e-book as behavior management.

The biggest surprise to all of the teacher participants about the e-books was how it actually improved the focus and behavior of their students instead of worsening it, as they had feared. Lucy

remarked, “I did notice more focus, more directed attention. Even the kids who just with regular handheld books would not focus so much on it, they were more involved with it.” (SI, Lucy, 50-51) Delta was equally surprised that “it wasn’t a play toy like I thought it would be.” (SI, Delta, 115) Lois, agreed,

They listened to the e-book better than me reading a story. They waited until it was finished and then they would touch things. Their focus was magnificent on it. The pictures, the sounds, the movements. You know some of my kindergarteners learn by doing and touching, some by listening, some by jumping up and down. These books do that. They jump up and down, they’re loud, they’re bright, they’re colorful. They keep their attention. (SI, Lois, 64-70)

According to Lois, the very things that the group thought would detract from the students’ focus actually helped them pay attention and learn.

Delta talked about how even her children who had difficulty paying attention had remarkable focus when reading the e-book.

Well, two of these, they have extreme focus issues in the classroom. It wouldn’t matter what I did, they wouldn’t be paying attention. But they listened so well, and they could point to the words, and they could answer every single question. They just sat there like this was their destiny. (M2, 77)

Lucy referred to the drastic change in behavior that she saw in her classroom when the students were reading an e-book together.

I would watch those kids who couldn’t ever seem to get along, and they would. It was almost like a personality change. They were so engrossed in it and so focused, and you

know if you put them on the floor with anything else, they'd be rolling around in a ball.

But with this, they were taking turns and sharing. (M4, 311-314)

Again, participants were surprised by the fact that the e-books didn't encourage off-task behavior, but more focus and appropriate behavior.

All agreed that once the newness of the e-books wore off, the focus and behavior of their students improved during reading. Teacher participants attributed this focus to the "way kids are these days, you know, techie babies" (M2, Inga, 173), that it's just "natural to them because they've grown up with electronics" (M4, Lucy, 50-51). It was an unexpected surprise that behavior improved with the use of the e-books, and that the e-books actually became a learning tool, and not simply something to read. This improvement in student behavior while reading e-books, along with the other changed perceptions, helped participants see that they would be able to use them in their classrooms.

"I get excited just thinking about it": Perceptions about moving forward. All of the teachers stated that they unequivocally would be using the iPads to download e-books for their children in the future. Three of the teachers did so enthusiastically, while one still had some reservations about how much she would use them. It is evident from the teachers' statements that they had put some forethought into how exactly they could best use electronic books in their classrooms.

When asked how she might use the e-books in her classroom in the future, Delta envisioned herself using them during reading groups, something she could not have imagined at the beginning of the study.

Six months ago, I probably would have said, "No way! We can't do that." But now that I see how they contain themselves and with each of them being able to have their own, it

would work. I'd use my personal one and my iPad mini, and then get a few more from the library. I can see how it could function just as the basal reader we use during reading groups or the kids at their seats could be using it to read instead of doing seatwork. (SI, Delta, 49-53)

Inga, on the other hand, saw herself using them during her class' free reading time, in order to use the iPads most effectively.

I'd like to be able to have the cart available during my DEAR time and let the kids choose an interactive story to use it. That's the time when I could use the iPads best for the whole class. That way I could make sure they were all reading something on their own level, and I would know that they are really reading. (SI, Inga, 25-29)

For her, she felt that the e-books would encourage reading in those that didn't like to read.

Similarly, Lois saw herself using the e-books more for independent reading time rather than for a reading lesson.

I would love to have it for reading time, book time. I would make it a specific time, right after lunch. I would bring the iPads in and let them read the books. Not play games.

Read the books. They would love that, and I would love that. I get excited just thinking about it. (SI, Lois, 25-29)

She also saw the e-books as a "perfect way to differentiate. The high readers and the low readers, they can all read something on their level." (SI, Lois, 32-34) With differentiated instruction having become a school priority during the last semester, Lois could see applying that knowledge to her use of the e-books.

Lucy wished that the grade level books used in reading instruction were digital. However, she was also realistic in her expectations and had other plans in mind as well.

The time constraints really limited our time to work with them, so what I would do, if we were done with the reading for the day, on Fridays, or a certain day, they would have the option of going on the iPads and read an e-book, as an interactive thing. One, it would enhance their skills, and two, they would also enjoy a reading a book. I don't think they always do that with the reading program. (SI, Lucy, 232-236)

Lucy had consistently cited time constraints as a reason not to use the e-books as much as the other teachers, and this excerpt shows that perhaps without the time constraints she would be willing to fully implement e-book use in her classroom.

Despite the love for the traditional books, teachers expressed their intention to use e-books in the classroom in the future. This is a rather substantial change in attitude since the beginning of the study when none of the participants had even known about the existence of interactive e-books, much less thought about using them in their classrooms.

Conclusion

The data from the thematic analysis showed that for these veteran primary teachers, reading was associated with a certain emotionality. Teachers demonstrated an emotional attachment to traditional books associated with memories of their childhood and other significant times in their lives. They also expressed fear and apprehension over real and imagined difficulties with the technical aspect of electronic books, as well as the new roles they would have to assume. This, in some cases, had led to unwillingness to use electronic books in their classrooms. Throughout the course of the study, however, understanding of and perceptions about using e-books in the classroom shifted through the collaborative inquiry.

The process of collaborative inquiry that led to these shifts in perceptions is rooted in sociocultural theory (Nelson & Slavit, 2008). As I analyzed the data thematically, I became convinced that the process of how we came to these shifts was just as important as the shifts themselves. Therefore, I went back and analyzed a second time using qualitative content analysis (Hsieh & Shannon, 2013). The following section will outline the findings of this content analysis and answer the second research question: What can be learned about how collaborative inquiry increases knowledge and shifts persistent attitudes about using interactive electronic books in the reading classroom?

Reflections of an Inquiry: Looking at the Learning

You know, it's funny working with teachers. They come to the meetings full of stories about their "kids." How their kids didn't listen, how they talked over instruction, how they just didn't get it. Today Inga came to the meeting all excited because she had let the kids work in groups as the final reading project. She was so excited about what she saw them doing. She actually said, "I could see the lightbulb go on with Jesse as Lindsay explained it to him. And she drew it on their paper and he just got it. I've been trying for weeks, and she was to get to him." She went on to say, and I don't remember the exact words, that she didn't think it would work, this having kids on the floor working together on reading, but that it did. That she thought the noise was going to drive her crazy, but if they just whispered, she would be ok.

I remember feeling the exact same way when I first started letting my kids work in groups. I was skeptical at first. I had studied about the social nature of learning, but had grown up and learned just fine as I sat quietly in my desk. The noise and the "not being in control" drove me crazy. But it worked then, and I see it working now, right here in my own little after-school classroom. Right here among my teachers. That theoretical perspective I worked so hard on? I see it playing out right in front of me. No, it's not as noisy. No, I didn't have trouble letting go of the reins of control, but it's happening. And I'll be darned if everything that I've read about, everything that I've written about, everything that I've learned about Vygotsky isn't happening right before my very eyes. And I have to admit...I'm finding myself more excited...geeked out even... about that than I am about what they are learning about the e-books.

(Researcher Journal, February 16, 2017)

Sociocultural Theory Within the Collaborative Inquiry

My strength is not that of an individual but that of the collective (Maori proverb).

“What did we do? Well, we tried out the e-books in our classrooms, then we came back together and we talked about it. What worked, what didn’t, what we thought. We learned from each other.” (Inga, final interview)

At the core of collaborative inquiry are the principles of sociocultural theory (Nelson & Slavit, 2008). In this section, I will describe the process of our collaboration and how sociocultural theory was exhibited through an examination of the data. While I may not have immediately noticed how enmeshed the tenets of the theory were in our time together, evidence from the transcripts clearly indicates that it was the mediating influence of the e-books, and more noticeably the language and interaction of the discourse, that guided us in the acquisition of new skills and mindsets. This section is instrumental in answering the second research question, and in explaining how the process of collaborative inquiry shaped and developed the understanding, perceptions, and attitudes of the teacher participants toward using e-books in their classrooms.

In the following sections, I will recount how interactions among teacher participants helped develop individual and collective thinking and the ways in which the different tenets of sociocultural theory – mediation of thought, zone of proximal teacher development, intermental and intramental learning, and semiotic mediation - were manifested within the inquiry process.

Mediation of Thought

In adult education, the principle of mediation of thought is demonstrated when teachers come together, using tools and cultural artifacts, to develop a shared understanding (Au, 2013).

Crucial to this principle is that such understanding is enabled by the use of the tools and that together participants achieve what they could not otherwise achieve alone. Group members from different backgrounds and different pedagogical strengths come together, work toward a common goal, develop agency, and believe that they can affect change.

E-books as tools to mediate thought. The e-books were tools around which we based our collaborative thinking. This new understanding about how to best use the e-books was a direct result of the collaborative activities in which we participated. Delta recalled in her final interview how discussions with the other participants guided her thinking about the best use of e-books in her classroom.

Well, some people, when they talked about how they used them in their classroom, that helped me. Because I was, in the beginning, feeling like I had to be right there when [the students] were doing it. But then when they said that, it was like I kind of got a ticket to go ahead and have someone else be the go-to, for them to spread their wings a little. You know it's hard to relinquish sometimes with activities like that, but once I heard that others did that and it worked? Well, then I thought I could do it too. (SI, Delta, 16-21)

Delta had felt when she had started using the e-books, she had to be present with her students. After hearing how other participants were allowing their students to use the e-books more independently, though, she felt that she could do the same. The interaction and intermingling of personal and group perspectives, mediated by the symbolic tool of dialogue and the physical tool of the e-books, drove the social interaction that pushed forward our digital literacy.

These discussions and interactions were made rich as teachers came together with different funds of knowledge (Gonzales, Moll, & Amante, 2005) and with different pedagogical strengths. Although the teachers all shared similar demographic characteristics, each teacher

brought a unique perspective to the group. For example, Inga, with an engineering background, was a good problem solver. When other teachers were struggling with some aspect of using the books in their classrooms, she was quick to offer a solution, as in the following excerpt.

Lucy: I could see that they enjoyed it, for sure, but it was more like a computer play thing.

Inga: Try the bat book with them then...Because it's...

Lucy: I don't think it will make a difference.

Inga: It's nonfiction, so it's more facts and it would keep them...you know...you can still get it moving, but it's not silly. It's more factual and it's really interesting and it gives you so much information. (M3, 161-166)

This is just one of the examples of when Inga made suggestions to others in order to help them see a way to use the e-books more successfully in their classrooms.

Delta, the only teacher participant with a traditional background in education, was able to wax philosophically on how the e-books fit into theory and pedagogy.

Lucy: I just want to use the Reading Rainbow Skybrary on the Smartboard. It seems much easier to me.

Delta: But then you lose the interactivity.

Lucy: That's the point. I keep things normal...as possible...but still use e-books.

Delta: You know, at some point, we gotta do what's best for the kids though. If they are interacting with the books, they are actually making meaning...it's that active learning. And even if it's loud, even if they're bouncing off the walls, we gotta do it. Doesn't matter if we have peace in the valley, we gotta do it. It's that active learning. (M1, 57-64)

As the only member familiar with using e-books in the classroom, I could offer practical guidance based on experience. Each of us used our individual knowledge and skills for the betterment of the group.

As a group, we all came together and worked to answer a question that we formulated collectively: How can we best use e-books in our classrooms? iPads had been available to the elementary teachers for two years. While they were not readily available every day, teachers were aware that iPads could be checked out through the media center. In addition, there were many free e-book resources that were available through the school's Symbaloo, a shared bookmarking tool. Still, teachers had not used e-books in their classrooms. Lois remarked, in her final interview, "I would have never even known about interactive books if I hadn't done this. I knew there were the iPads, but I was always too scared to try them with my class. I didn't know what to do." (SI, Lois, 13-15) It was only when participants came together in the parameters of this collaborative inquiry that they were able to, through much trial, error, and conversation about their mistakes and successes, use them effectively. It was through the discourse that took place in our meetings around the e-books that participants' thinking was changed, and therefore practice altered.

And in the end, there was a moment when we stopped being individuals that were using e-books in our classrooms, sometimes successfully and sometimes with difficulty, and we became a unified, collective voice for change in our school. There was a point within our inquiry where participants stopped referring to what they thought and wanted as individuals and started to refer to the group as a whole; to a certain extent, our *I's* became *we's*. At the first meeting, I heard comments like, "I don't like how unfriendly it was. I was lost," (M1, 78-79) when referring to an e-book I had loaded on the iPads, and "that's good for you, but I have a 'book thing.' I

just want to open up my book and read” (M1, 186). There was a slow, but certain, coming together throughout the experience, and by the final meeting, there was evidence that the teacher participants were taking ownership of their learning experience and all that they had learned. The five individuals came together and developed a shared goal that, unlike our initial focus question, was decided without my initiation.

During the final meeting, Delta suggested that “we need to talk to administration about getting the books for the math program in interactive form” (M4, 470). Then later, as the group excitedly discussed the elementary school getting their permanent iPad cart in the fall, Lois exclaimed, “We would be able to help train others to use these, because we already know what to do!” (M4, 493) Inga even suggested that the group start a fundraising effort to make more iPads available and accessible to all teachers on a regular basis, claiming that “we can supply the school one Chick Fil A sandwich at a time!” (M4, 484) Through the shared dialogue around the e-books in our collaborative inquiry meetings, the teacher participants not only worked toward their common goal, but developed agency. The teacher participants constructed their own meaning around the experiences and practice of using the e-books together, and therefore, took ownership of the new learning they had done through the thoughtful, on-going process of collaborative inquiry.

Language as a Tool to Mediate Thought. Although the e-books were an important mediating tool in the study, language was principal to mediating learner change. As we met together to reflect upon our experiences and learn about using the new e-books in our classrooms, dialogue and discussion played a distinctive role in helping us to co-construct understanding. Conversation that centered around our experiences with e-books became the symbolic mediational

tool with which we appropriated new skills, as we moved from our initial understandings to our mutually constructed meaning. The semiotic mediation of language through personal and collective reflections, along with the interthinking, as we tackled a problem, issue, or concept together led to the eventual internalization of skills and knowledge.

Although most of the participants touted the value of being able to experiment with the e-books together as a learning tool, language was central to even these interactions. Delta, the most veteran of the teachers, confessed that she would have “never even thought to let the students work with the e-books independently, had it not been for [Lucy] and [Lois] discussing the way that they used them in their classrooms” (M3, 181-183) and that “talking out [her] issues with relinquishing that [control of the experience]” (M3, 208) helped her to make that transition within her classroom. Similarly, in the beginning of the study, before any of the teachers would even begin to explore a new e-book, there would be conversation among the group about the features and how to navigate them before anyone would even embark on reading through it.

Lisa: Now, if you find Arthur, touch it and it will open an Arthur story.

Inga: Look, here’s where you can choose to have it read to you

Lois: Look, if you touch the word, it highlights it for you. I wonder if it does that automatically.

Inga: Everybody look at the top of the page. There are boxes. If you touch these up at the top, it shows you the pages.

Lucy: Don’t press the baby, she’ll throw food!

(M2, 209-215)

The participants used their language to direct their thinking, to predetermine together what would be important to attend to in the story.

Conversation between us resulted in a new (to the participants) shared language that focused on the technical terms associated with the e-books themselves. In the initial interviews, participants used primarily hand movements to indicate the features of e-books and even the e-books themselves (i.e. simulating swiping motions and pushing buttons). During our meetings, however, we discovered that these motions and the user interface elements of the e-book had names. During our first meeting, participants were fascinated by the swirling circles that appeared every other page in the Reading Rainbow books, but did not know what to call them.

Lucy: So does when that little circle is blinking, that means push, right?

Lisa: Yes, that's right, but it does have a name. Does anyone know what it is?

Inga: Little blinking circle thingy? (laughter)

Lisa: Good try, but that is called a 'hot spot.'

Lois: Hot spot

Lisa: Anything that you can touch that makes it interactive is called a hot spot.

Inga: Look! There's another one!

Lois: A hot spot?

(M1, 357-364)

From that point on, the spinning circles became 'hot spots,' but this new meaning seemed to apply only to the spinning circles in the Reading Rainbow books. Other hot spots remained "thingies" until they were told the correct name for them.

Inga: Do you choose the microphone or the girl thingy?

Delta: Those are called icons, and by touching one, you are choosing whether you want it to read to you or you want to read it yourself.

Lisa: I think it's called text-to-voice narration. No. It's a read-to-me feature.

Inga: You mean we shouldn't call it a thingy anymore? (laughter)

Lisa: Not if we know what it's really called, probably.

Delta: I think we sound more like we know what we're doing if we call it the right thing.

(M2, 226-231)

Inga continued to call the interactive features “thingies” until the last meeting. However, during the last meeting, she referred to the preview panes by the correct name, a sign that she did indeed know the correct wording.

Eventually, during the last meeting, there was evidence that the participants were picking up the language of the e-books. Lucy described how she taught her students the correct language when interacting with her students.

When I ask what they like about this kind of book, I mean it's detailed. It's like, “I like when I push this and she jumps over there,” and then they give you more in-depth reasons, they are ready to tell you everything. And so you can talk to them about the book, but then you can also talk to them about how they read the book and teach them that the thing that they pushed was called a hot spot. So you're teaching two things. I thought that was sorta cool. (M4, 229-233)

As we learned about the features and assigned common images and names to them, we became more knowledgeable about the way that the e-books actually worked and therefore became more proficient in deciding how to use them in our classrooms. This shared language, along with the shared goal of our time together helped to push our thinking forward so that we could be more efficient and effective with the use of e-books in our classrooms.

Zone of Proximal Teacher Development (ZPTD)

It was also through this shared dialogue that teachers operated in the ZPTD, the zone of proximal teacher development (Warford, 2011). Although the ZPTD, the proximal level of performance at which teachers can perform with mediated assistance, was originally formulated to describe the stages of development that a teacher-in-training goes through during a teacher education program, the basic principles can be applied to professional development situations as well and especially practitioner research such as this collaborative inquiry (Fani & Ghaemi, 2011). This is because practitioner research often takes place within a group, as did this study, and there are few groups in which everyone begins at the exact same level of proficiency.

The first stage in the ZPTD is self-reflection, where the teacher reflects on prior experiences in education and of the unspoken, perhaps unrecognized, beliefs about teaching and learning. The first part of this study focused on this stage, as I interviewed each teacher about their experiences with traditional books, both academically and personally, as well as with electronic books. Some of the questions I asked the participants were more thought-provoking than I had imagined they would be, giving teachers the opportunities to reflect upon what they knew and didn't know about e-books. In response to a question about the nature of reading instruction using e-books, Delta replied

Well, ya know, I don't really know if it would be the same or different. I've never used them and I've never taught that way, so I'm not exactly sure how it would be. I mean, this generation would be adept at it, sorta like second hand, but would I teach it the same? See, I don't know. I've never thought about it before. I've never had reason to think of it before. (FI, Delta, 137-140)

Asking questions about the e-books not only made them think in the interview, but also provided a focus for later on in the study when they actually would have e-books, as evidenced by Inga's reply below.

That's something I have really not experienced, so I really don't know. I'd have to see what they do because...where's a piece of paper? Because this is something I want to know now, and I need to remember to look for later. Is it easier? Is there something about the device itself? There's just a whole 'nother world to think about, but I won't know until I see them interact with the books. (FI, Inga, 143-147)

Asking about the e-books served to add intentionality to her use of them in her classroom. She now had something to look for as she observed her students.

During the study, the teacher participants were encouraged to reflect in writing and in group discussions about how the things that they were learning fit into their personal philosophy of teaching and learning. While my original intentions had been to simply gather information for my own purposes, I realize now that asking them to reflect set the stage for their own learning. In the excerpt above, for example, Inga wanted to write down what she needed to look for when she did get to see the students interact with the e-books. This added an intentionality to her observations and her learning.

The second stage of the ZPTD is teacher-assistance (Warford, 2011), wherein the more knowledgeable other (Vygotsky, 1978) mediates learning through scaffolding the learning experiences. At the beginning of the study, I found myself as the more knowledgeable other. I had not adequately anticipated my participants' unfamiliarity with electronic books, and instead of facilitating conversation, found myself teaching the others how to use the iPads and e-books. I purposely chose e-books with fewer interactive features in the beginning of the study so that

teachers could get used to the format and the iPad slowly. I scaffolded the experiences by adding e-books with more and more features as the study went on. A list of books added by month and interactive features can be found in Appendix B.

Although it was not apparent at first, there was a subtle shift in the power dynamic within the group beginning in the third meeting. After three months (and two official inquiry meetings) using the e-books in her classroom, Inga had taken the initiative to practice on her own so that she was more proficient with using them herself and could therefore help the students in her class to use them more effectively. It was after doing this that she started assuming the role of the more knowledgeable other periodically. After another participant expressed a frustration about an issue in her classroom involving the e-books, Inga seized the opportunity to share with her, and the others, how she solved the same problem within her classroom. Another time, when we were exploring the new e-books at a meeting, she helped another participant figure out how to navigate the book, by relating it to what they did with their Go! Math lessons, explaining, “it’s just like with the Go! Math. You know how you have that bar at the top to choose your page? It just like that. You can choose your page up there. Watch.” (M3, 265-266)

After this exchange, the others started questioning others’ statements in the way that they often redirected their students’ thinking, as is evident in the following excerpt.

Lois: The other book that I did with the boys, it was too interactive for them. All they did was play.

Inga: But don’t you think it had more to do with the fact that they had never seen or done an e-book before? That that might be the reason that they were more focused on the playing?

Lucy: I know that was true with my kids. They had to get used to it. Because really, think about the two stories. How are they that different?

Lois: I still think it was the book.

Delta: But both books had interactive things, things to push and swipe.

Inga: Interactive features, Delta, not things. (Laughter)

Lois: But the first one had random things to push...I'm sorry...random interactive features. These had a purpose, it seemed.

Delta: I still think it could have been that this was their second time doing it.

Inga: It's not so new anymore. They could focus on the words. They wanted the words. Even my Noah, he wanted the words.

Lois: I don't know. I'll have to go back and look more carefully. All I know is that there were lots less arguments with this one.

(M3,33-47)

In this excerpt, Lois was quick to attribute her students' improved focus to the lower level of interactivity in the e-book. Inga, however, thought that instead it was that the e-book had lost some of its novelty, and this was the reason for the increased attention to the story.

As for the last two stages in the ZPTD, internalization and recursion, I am not convinced that we have moved into these stages yet. While the participants have become comfortable with the e-books that I have provided and we have explored together, I am not convinced that they are comfortable enough with new e-books that they could use them in the classroom without prior joint exploration. At the time of the last meeting and final interviews, we had not achieved this level of performance. We will continue to use the tools of collaboration, conversation, and both individual and collective reflection to work toward internalization and application.

Intermental and Intramental Learning

From the situated learning perspective, cognitive development first occurs in social settings through dialogue with others and then is internalized (Lave, 1993). The collaborative inquiry on which this study is based was situated within the teacher participants' school and directly related to the problem we were investigating, using electronic books in the primary classroom. This authentic professional development was a time where the participants came together and engaged in focused, relevant discussion that led to a shared understanding. This shared understanding of how to use the e-books with their students was first established within the group, intermentally. Vygotsky used the term, *interpsychological* to refer to the learning that takes place within the context of social interaction (1978), however, Wertsch & Tulviste coined the term *intermental* (1992).

In each meeting, the last fifteen minutes was spent working in pairs to explore the new e-books that I had loaded on the iPads. During the first two meetings, new learning was quite obvious through the dialogue that took place among the participants.

Lisa: If you would find the icon with the hot balloon on it. That is where we will find the Skybrary.

Lucy: So you don't have to go on the Internet?

Lisa: No. These are loaded on the iPads for you. You need to simply touch the icon to open it.

Lucy: (Begins singing with the theme song that begins playing) Well, look at that!

Delta: Does it show you how to go in and how to get where you want?

Lois: I'm watching you. Can you turn yours around so that I can see what you are doing?

Lisa: Right here. Press that right there where it says, "Enter."

Lois: Well, I didn't see that when I tried to open it on my Smartboard.

Inga: Oh look! I got a book. No wait. That's a video.

Lisa: You are welcome to look at the videos, but let's look at the books and how to find them.

Inga: Ok. Now I have a book!

Lois: Show me how you did that!

(M1, 169-181)

This dialogue among the participants as they explored the Reading Rainbow Skybrary continued until our time together was over. They asked questions, made observations, and discussed what they were doing and how it would work in their classrooms. Lucy even exited the Skybrary app and logged back in again to make sure she still knew how to pull up a book. The following comments were recorded during this time of exploration.

Lucy: I don't know how to log off. Is there an X somewhere? Inga, show me how you did that. (M1, 226-227)

Lois: I can't find that book. How did you do that? (whispers to Inga) (M1, 263)

Inga: Push that bottom button. This button will always take you back to the home screen. Actually, normally, this button is usually on the top instead of the bottom. You may need to turn it over. (M1, 264-267)

As evidenced here, participants worked together to figure out how to navigate the e-books on the iPads. Their learning was intermental, pushed forward by the social interactions around the book.

They then took what they had learned in the meeting and went back in to their classrooms to use it to help them share their e-books with their students. They internalized what they had learned when they took the books back to their classrooms, and learned to operate and navigate the books independently, intramentally. In contrast to the intermental learning above, Vygotsky referred to the learning that took place as an individual internalized the learning while applying that knowledge individually as intramental (Wertsch & Tulviste, 1992). In the following excerpt, Inga talked about how she “practiced” with the e-books so that it became internalized.

Lisa: So tell me about your experiences using this with your students. Let’s talk about the first time you did it (shared an e-book with a small group).

Inga: Well, mine loved it because they were able to touch everything.

Lisa: Did you have any trouble getting it to work?

Inga: Well, I practiced first. (laughter) I didn’t want to get them all excited and then not be able to do it, so the night before, I took my notes and practiced finding the book.

(M2, 11-16)

And later, Lois referred to “practicing” as well.

Well, I held it for my kids. And they were right there (pointing the space in front of her).

And they watched me interact with it first. They watched how I found the book and chose the book. It’s almost like Inga said. I was practicing what we had done in the meeting. I was a little nervous I would mess up, but I only did once and I don’t think they noticed too much. (M2, 66-70)

Not “practicing” had its disadvantages, as Lucy found out when she tried to use it for the first time and had difficulty.

I just could never get it to work right. I looked back over my notes, and no matter what, I think I was going in under the wrong area. You know how you told us to look for the balloon? I could never even find the balloon! I needed another session with Inga! When I saw her at lunch and asked her about it, she reminded me of the backpack that we found and as soon as she said that, I remembered! (M2, 145-149)

Practicing the skills that we had learned together in the meetings seemed to help participants internalize the knowledge. When they still were unable to figure something out, they turned to me or to each other for reminders of what we had done in the group, during our intermental learning.

As stated in the section above, it is unclear at this time whether teachers have internalized their understanding enough to apply the learning in their classrooms independent of our inquiry. However, Delta, Inga, and Lois stated in their final interview that having the chance to discuss and try out the books before taking them back to the classroom was the most valuable part of the collaborative inquiry experience. It is clear, however, that the sociocultural nature of the collaborative inquiry meetings impacted and encouraged learning.

Opened Eyes: Looking Forward

They say you will always remember the moment you fell in love. I remember the moment that I fell in love with my husband – during our very first phone call, that lasted over an hour, and at the end of it, I felt that my heart was home. I remember the moment that I fell in love with Jesus – on a Walk to Emmaus retreat, that lasted a weekend, and at the end of it, I felt that my soul had found home. What I don't remember is when I fell in love with words. It's always been there, this fascination with words. Writing them, hearing them, and speaking them. Putting them together, taking them apart, scrambling and unscrambling them. Stringing them together in my head to form a poem, a song, or a running commentary that I sometimes, but not always, put on paper. But most of all, I love reading them. In my books, my mind finds home.

And really, this is where this story begins. It doesn't start with my first paper, or the day I sat in my professor's office and this idea came to light, or even the day that I started my research. It started so very long ago with my love of the written word. This moment, this moment that I can't remember but that shaped the inner core of who I've been, who I am, and who I am to be, is the beginning of this story. It's my "once upon a time," if you will...

Once upon a very long time ago, I was a little girl who loved to read. Perhaps it was the feel and smell and sound of the library. Perhaps it was the chance to sit on my mother's lap and snuggle into sleepiness. Perhaps it was a way for me, that painfully shy little girl, to escape into worlds where I wasn't quite so afraid, where I wasn't the outsider, where I just fit in. Regardless of the why, however, as a little girl I was absolutely, positively, unequivocally in love with books.

I spent many years growing up, raising a family, dealing with all of the things that adults have to do, all the while doing what I had always dreamed of doing – teaching children how to read. Oh, there had been changes along the way. Big changes, small changes, changes both

life-altering and life-shattering. But what hadn't changed over all that time was my books. I was still in love with books.

To say the journey to this dissertation was life-altering would not be an exaggeration; if anything, it is an understatement. I walked into my first class as a doc student, a big stain of recently spilled coffee on my shirt and an equally big batch of butterflies in my stomach. I walked into the first class with confidence, and walked out realizing how little I knew...about life, about others, about myself. And now that the last class is over, I know so much more. It is as if the blinders have been taken off, my eyes truly open to the reality of life and learning outside of my sheltered little private school bubble.

Except wait. Because for the most part of the last three years, there has been a separation. There is school, where I go to work each day, safely ensconced within my carefully crafted comfort zone where I am considered smart and creative and respected. Then there is SCHOOL, where I go twice a week, stepping so outside of my comfort zone that it often leaves me feeling emotionally and physically exhausted. And now, with this study, the two worlds have intersected.

With this, my colleagues have become my study participants. My classroom has become our meeting place. My role has shifted from coworker to something of a leader. The biggest change, however, and perhaps the most disconcerting of them all, has to do with the long shelf against the back wall of my classroom. My books. I stand and look at them sometimes, remembering and recounting the characters, the pictures, the patterns in the reading that make them so beautiful to read, to listen to. Remembering the way my first graders would stare up at me with open minds and open hearts and open mouths, getting lost in the story, traveling to another place and time. Remembering how I used to go with them. Before the intersection. Before everything changed.

For now, thoughts of my books bring to the surface so many conflicting emotions. It's as if there is a battle within me between what I want, what I long for, versus what I know is best for my kids. Between what I know in my heart and what I know is in the research. Between the teacher I am and the teacher I know I should be. My heart wants to stay curled up with a hard copy of a book, running my fingers over the words and pictures, inhaling its scent as I clutch it to my chest after reading it, a final embrace of all that is lovely within its pages. My heart wants to pass this along to my students, to pry them away from their screens and put into their hands the paper that contains an amazing story. The story that will transform their lives from what it is into what it could be. Oh, how I still love my books.

No, that hasn't changed for me. But like my eyes have been opened, so has my mind. I realize that bringing in the e-books doesn't mean that my books are relegated to the shelves where they will stay for eternity. I realize that children can love technology, love the interactivity of an electronic book, love to read digitally, yet still find joy between the hard covers of a traditional book. I realize that children can spend hours a day on a computer of some sort and still, their favorite time of the day can still be going to the library. I can realize this because I have seen it. I have seen my third graders go from reading about Magnus the Magnetic Dog, with all of its bells and whistles, smiling and laughing and totally engrossed, to curled up in the bean bag in the corner with Harry the Dirty Dog, a different kind of smile, a soft kind of giggle, and lost in the story. There is room for both.

Through the analysis of my data and the writing of this narrative, I have come to realize this. There is room for both. My participants, my friends, they realized it first, I see, now that my eyes are open and I'm looking back. Their words, their attitudes, their actions...all of it came together to say it, while my own continued their white-knuckle grip on my memories, my

heirloom, my books. While the changes that they experienced are documented in this paper, my own are perhaps more profound. For I now realize that just as my students and the participants in my study, I can embrace them both – the electronic book and the traditional book. I can protect my heart and empower my students. I can embrace change while holding on to the past. I can open my mind as I have opened my eyes. I can. I will. I have.

(Researcher's Journal, May 15, 2017)

Conclusion

The purpose of this study was to answer the following two research questions:

1. What can be learned about veteran primary teachers' knowledge of and persistent attitudes about using interactive electronic books in the reading classroom?
2. What can be learned about how collaborative inquiry increases knowledge and shifts persistent attitudes about using interactive electronic books in the reading classroom?

The data showed that for these veteran primary teachers, reading was associated with a certain emotionality. Teachers demonstrated an emotional attachment to traditional books connected with memories of their childhood and other significant times in their lives. This, in some cases, had led to unwillingness to use electronic books in their classrooms. They also expressed fear and apprehension over real and imagined difficulties with the technical aspect of electronic books, as well as the new roles they would have to assume.

Through the process of collaborative inquiry, teachers had the opportunity to use interactive electronic books in their classrooms for a period of six months, and then met to deconstruct and reflect upon the experiences. Because of this experience, teachers were able to dispel some of the misconceptions they had about using e-books with their students and were able to see the advantages for both themselves and their students. All teacher participants indicated that they intended to use interactive electronic books in their classrooms in some manner in the future.

In the next chapter, I will present the implications of the findings of this study, including a more thorough, critical examination of the data and its importance. This will include suggestions for future professional development, as well as for the use of electronic books in the primary grades at our school. I will also consider the implications for further research, as well as the possible limitations of the study.

Chapter 5

Discussion

The purpose of this study was two-fold. Primarily, the study aimed to investigate what could be learned about veteran primary teachers' knowledge base, as well as persistent beliefs and attitudes about using electronic books in reading instruction. Thematic analysis of the data supported the idea of an emotionality connected to reading and reading instruction that sometimes led to resistance to using electronic books in the classroom, but exposure, practice, and conversation was instrumental in creating an increase in knowledge and a shift in perceptions. Furthermore, through content analysis, the sociocultural nature of the study was identified, as well as the way that perceptions were shifted through the dialogic, reflective nature of the collaborative inquiry. In the following sections, I will discuss the findings in relation to each research question. I will discuss the importance of the findings, examine the findings in light of the current literature, explain the implications of the findings both within the study and in practice, and then make suggestions for future research.

Discussion of Findings Related to the First Research Question

This qualitative research study answered two questions. The first question was concerned with the knowledge base and persistent attitudes of teacher participants in relation to electronic books: What can be learned about primary teachers' knowledge of and persistent attitudes about using interactive electronic books in the reading classroom? In the next section, I will discuss findings used to answer the part of the first research question concerning what can be learned about teachers' knowledge of electronics and how it relates to the literature.

Unfamiliarity of e-books. As shown through the data, the teacher participants lacked the technological knowledge to begin using the iPads effectively in their classrooms at the beginning of the study. They had not used iPads previously, and there had been no training in using the iPads at the school level, despite the fact that there were several carts available for checkout. Teachers came to the study needing support in using the iPads, as well as support in navigating interactive e-books. As they increased their technology skills, they were able to more effectively use the e-books in their classrooms.

This finding is consistent with the research on TPACK, the knowledge described by Koehler and Mishra (2006) as the framework for teacher knowledge in the context of technology integration. TPACK includes technological, pedagogical, and content knowledge, and is considered a critical factor in determining effectiveness in teaching with technology. It consists of knowledge necessary for teachers to apply technology, the ability to recognize the degree of usefulness of technology in any instructional situation, and to be able to adjust to changes in technology and apply them accordingly to their instruction. TPACK differs from Shulman's pedagogical content knowledge (1987) in that it includes technological skills and focuses on the intersection of the three knowledge areas.

I can assume that the teachers in my study had the pedagogical and content knowledge that they needed to be successful in the classroom. Their students regularly met achievement standards as outlined by the state and the school, and student scores on the reading subset of standardized tests exceeded the national and state percentiles (personal communication, assistant principal, January 2017). However, in order to begin using e-books and eventually integrate the use of e-books into their already established reading curriculum, they would need the physical

resources to do so. Currently, the elementary school has a limited number of iPads that are available for checkout. An iPad cart for each grade level would increase the availability tremendously. The teachers would also need the technological knowledge as outlined in TPACK (Koehler & Mishra, 2006). At the beginning of the study, participants possessed neither; at the end of the study, they were beginning to develop the skills necessary to implement the e-books into their reading instruction.

Consistent with the research findings that teachers with more than ten years of teaching experience are less likely to have a pedagogy that includes the integration of computer technology (Prestridge, 2012), only half of the teacher participants used computer technology daily in their classrooms. Those that did used the Smartboard exclusively to access pre-loaded apps and activity pages, as a video screen, or as a blank word document. Prior to the study, none of the participants had either heard of or used an interactive electronic book with their students. Therefore, at the beginning of the study, their level of technological knowledge, as well as TPACK, was minimal.

Rowell (2014) claimed that the embodied practices of tapping, scrolling, formatting and reformatting text, and the physical act of navigating a nonlinear storyline were necessary for teachers to be able to develop an adequate measure of TPACK in order to share the e-books effectively with their students. Similarly, Parette, Blum, and Luthin (2015) found that in order for teachers to plan effective lessons using e-books, they must know about the features of e-books and strategies for using these features to extract meaning from the text. After we spent one inquiry meeting (approximately 60 minutes) exploring the iPads and learning how to use them, how to access the books, and how to use the features of the iPads to navigate e-books effectively and efficiently, we then were able to focus on the e-books themselves. Teachers' level of

TPACK had increased enough that they were then able to take the books back into their classrooms and use them with their students, substantiating Rowsell's (2014) claim. For the majority of the time, however, teachers limited the use of the e-books by using them only during their students' free-reading time.

In using the e-books during free-reading time, teachers adopted a spectator stance, stepping back and choosing to watch their students read the e-books instead of being part of the interaction. This corroborates the findings of a recent study (Miller & Ishizuka, 2014), where it was found that the majority of teachers in schools with e-book libraries use them exclusively for free reading activities. However, a search of the current literature offered no supporting research to explain why teachers did this. The teacher participants did remark that the students "seemed as if they wanted to do it themselves," (SI, Inga, 157) as if they wanted control over their own learning with the e-books. There was no evidence to support that teachers planned to let the children read independently; rather it was a decision made within the teaching moment.

In this section, I have discussed the findings as they related to the study participants' knowledge base as it related to using e-books. Participants were completely unfamiliar with e-books, never having heard or made use of the technology. Findings show that this unfamiliarity may not be coincidental, as the teacher participants demonstrated a strong emotional attachment to traditional books, which may have impacted their willingness to experiment with e-books. This emotionality will be discussed in the next section.

The emotionality of reading. Through thematic analysis of the data, the emotionality of reading was demonstrated. Participants expressed strong emotional connections, both positive and negative, in connection to traditional books, to interactive electronic books, and to their changing role with the introduction of the e-books in the classroom. It is this emotionality that

contributed to the reluctance of the teachers to utilize electronic books in their classrooms prior to the collaborative inquiry and also to the hesitancy to plan full integration of electronic books into their reading instruction in the future.

The topic of reading proved to be emotionally charged, both in the interviews and the inquiry meetings. Positive emotions were expressed in conjunction with traditional books and the memories of experiences involving reading traditional books. Negative emotions, such as anxiety and discomfort, were associated with the introduction of e-books and their perceived changing role. While a review of the literature in previous chapters addressed the professional, personal, and pedagogical beliefs that could influence technology acceptance and integration (Starkey, 2010; Mama & Hennessy, 2013; Ertmer, 2005; Kanaya, Light, & Culp, 2005), studies that identified teachers' emotional responses to reading and children's literature were not reviewed prior to the study.

However, upon further searching and reading, I discovered that the emotionally-charged opinions of traditional and electronic books were similar to four opinion types, as defined by Shrimplin, Revelle, Hurst, and Messner (2011). In their e-book research, they determined opinion types of faculty, graduate students, and undergraduate students and developed four categories of readers: *Book Lovers*, *Technophiles*, *Pragmatists*, and *Printers*. Perhaps because it was a quantitative study, the categories are fairly exclusive. While I did not analyze my data with these categories in mind, the data certainly indicates that these categories are relevant.

Book lovers (Shrimplin et al., 2011) possess a fundamental affinity for the traditional format of a print book and treasure books for their physicality. When forming opinions about e-books, their pleasure reading habits hold great importance. A book lover may do some digital

reading but generally does not like reading long texts on a screen. According to this study, 64% of the women surveyed held opinions that qualified them as book lovers.

Technophiles, unlike Book Lovers, are very intrigued by the possibilities that e-books afford (Shrimplin et al., 2011). They feel that the advantages of the e-book far outweigh any negatives associated with the format, and have no difficulty reading from the screen. They are intrigued by the accessibility of e-books, as well as the search capabilities of many types of e-books, and these two features are particularly attractive to them. Although they embrace the e-book for use in their professional life, technophiles still prefer the traditional print format for leisure reading.

Pragmatists adopt a more neutral opinion about e-books (Shrimplin et al., 2011). Being able to see the pros and cons of both formats, Pragmatists are more interested in the content of the books than the format. They tend to like to write in the margins of their books and dog-ear pages. However, it is the content of the book, regardless of format, that interests them the most, and will use both formats interchangeably. The final category, the Printers, prefer print books, not because of the emotional attachment to the traditional format, but because of their difficulty navigating or using the technology surrounding the e-book.

According to the data in my findings chapter, the majority of the study participants fit most of the characteristics of one particular opinion type category but none embodied all of the features, with the exclusion of Delta, who seemed to exhibit preferences close to the Book Lover. While Lois' and Lucy's opinions seemed to straddle two of the categories (Technophile and Book Lover), Inga's opinions seemed to defy categorization. She clearly valued the physicality of a book like a Book Lover, referring often to the smell and the feel of a book. She became ex-

cited about using e-books with her students, yet continued to read for pleasure in traditional format like a Technophile. Similar to a Pragmatist, she remarked about liking to write in the margins, but enjoyed the changes she could make to the text in an e-book. And like a Printer, she preferred the ease and predictability of a traditional book. In this way, my findings both validated and challenged Shrimplin et al. (2011).

However, it is not the categorization of the opinions of the study participants that is important, but the substantiation of the claims that Shrimplin et al. (2011) make in regards to the emotional connections to traditional books. It is not just the participants in my study that feel an emotional connection to reading and traditional books; according to Shrimplin et al., it is more pervasive. What is specific to my study is the fact that for all of my participants, the reading was tied to childhood memories.

While the Book Lovers may indeed have strong, positive memories of literature and the experience of reading, these connections were not cited in their work, perhaps because of the more quantitative nature of their study. However, among the teacher participants in my study, the memories that they associated with reading as a child or as a young adult were strong and were very much a part of shaping their preference for the traditional book over the e-book.

The negative emotions of anxiety, fear, and discomfort were just as strong as positive emotions and perhaps played an equal role in the teacher resistance to using electronic books at the research site. The discomfort and anxiety of the unfamiliarity and unpredictability associated with technology in general, and specifically e-books, was a subtheme in my study. None of the participants had ever read an e-book personally or professionally, and the thought of using them in their classrooms made the participants nervous. Previous experience with technology had not

been altogether positive, and this, coupled with not knowing how to use e-books made the participants wary of even trying them.

This substantiates the revised Technology Acceptance Model (MacCallum, Jeffrey, & Kinusk, 2014), in which the researchers identified digital literacy, anxiety, and digital self-efficacy to have major impact upon teachers' acceptance, adoption, and use of technology in the classroom. Anxiety occurred among the teacher participants in my study due to past negative experiences with technology, thereby negatively impacting their willingness to use new technology in their classrooms. Teachers, in their initial interviews, expressed concern that based on previous experience, that the e-books would not work correctly and that they would be helpless to ameliorate the problem. This validates the finding by Beckers, Rikers, and Schmidt (2006) that technology anxiety arises from fear of the unknown happening and the lack of confidence in their ability to resolve the problems.

In the preceding section, I have presented and discussed the findings related to the first research question: What can be learned about veteran primary teachers' knowledge of and persistent attitudes about using interactive electronic books in the reading classroom? I found that teacher participants came to the study with limited knowledge of electronic books and no knowledge of interactive electronic books. Their anxiety (grounded in past experience with technology and a fear of the unknown) about electronic books combined with their positive emotional association with traditional children's literature had caused some reluctance in using electronic books in their classrooms prior to the study. Participants' technological knowledge in reference to electronic books was increased during the study, due to the collaborative learning done

in our monthly inquiry meetings and also being able to use the e-books in their classrooms. Participants' attitudes and beliefs about using electronic books underwent a significant shift as well, as will be discussed in the next section.

Discussion of Findings Related to the Second Research Question

While the first research question was concerned with veteran primary teachers' knowledge of and persistent attitudes about using electronic books in their classrooms, the second research question dealt with how these two constructs changed through the process of the small group collaborative inquiry: What can be learned about how collaborative inquiry increases knowledge and shifts persistent attitudes about using interactive electronic books in the reading classroom? Through the use of thematic analysis, changes in knowledge and attitudes were noted, and by employing qualitative content analysis, it is possible to see how this collaborative inquiry was, in part, responsible for these shifts. In the following sections, I will discuss the overarching theme, changes in understanding and changes in attitudes, and how the data points to the role of collaborative inquiry. I will examine the findings in light of current and recent literature.

Changes in understanding. Many experienced teachers find themselves lacking in the expertise to successfully integrate technology, including e-books, into their curriculum (McDougall, 2010). This is consistent with my findings, as the level of teachers' technological, pedagogical content knowledge (Koehler & Mishra, 2006) was limited at the beginning of the study. Although the teachers had computers, laptops, Smartboards, and iPads at their disposal, they rarely used them for purposes other than presenting information. In fact, at the beginning of the study, none of the teachers had used an iPad before, nor were they familiar with interactive electronic books.

Consistent with a recent study (Erbes, Lesky, & Myers, 2016), teachers in my study recognized the need to integrate technology into their classrooms, but had not learned how to do it effectively. Codrington and Grant-Marshall (2012) suggested that in order for teachers to make changes in their TPACK and integrate successfully, they needed to feel a sense of urgency in order to make true change in their classrooms. Participants in the current study did indeed recognize the need to provide their students with instruction to meet their 21st century needs; however, this did not inspire them to seek out professional development on their own accord. It was only through this collaborative inquiry, when they were provided with the time and resources, that teachers were able to begin learning about how to integrate e-books into their reading instruction.

Change in technological knowledge and ability levels did indeed happen. After the first month, teacher participants who had never used an iPad before and were unaware of the existence of interactive electronic books used them in their classrooms with minimal assistance. Not only that, but three out of four of the teacher participants incorporated the e-books into their classroom instruction at least once per week. At the end of the collaborative inquiry, when asked about if they would use interactive books in the future, all of them replied that they intended to do so.

However, the data suggests that this new understanding may have only been tentative in nature. One of the subthemes discussed earlier in the chapter is that teachers assumed a spectator stance when using the e-books with their students. Teacher interaction with the student during the reading of an e-book has been proven to be important to comprehension, arguably as important as it is in the reading of a traditional book (Korat, Segal-Drori, & Klein, 2009; Wood, Littleton, & Chera, 2005; Salmon, 2014). All teacher participants have a long history of literacy instruction; however, findings from the current study substantiate Reinking, Labbo, and

McKenna's 2000 findings that teachers assimilated technology into their already established instruction instead of accommodating new skills into a modified curriculum. Teacher participants used the books almost exclusively for independent reading, which is a necessary and important to develop independent reading skills, but not conducive to instruction of new skills or support of weak reading skills.

It is likely that lack of pedagogical training contributed to this type of e-book use instead of a more teacher-directed approach, consistent with the 2013 findings of Mama and Hennessy, who found a correlation between limited pedagogical training and low use of instructional technology. Study participants had not been trained in the practical issues of iPad use and had been unfamiliar with e-books in general; the collaborative inquiry served as their practical and pedagogical training. Much of our time together focused on the practical use of the e-books, as the pedagogical component took a secondary position in the learning. It is encouraging to note, however, that research has shown that with positive perceptions of technology comes "pedagogical evolution" (Zhao & Cziko, 2001, p. 186), and teacher participants expressed much more positive attitudes about electronic books at the end of the study.

It was through the sociocultural nature of the collaborative inquiry that the teachers were able to increase their understanding of the interactive e-books and the iPads on which they shared them with their students. As a group, we assumed inquiry as a stance (Cochran-Smith & Lytle, 2009), as we met together, using our collective intellect to transform the way that we thought about teaching and learning in our classrooms using the interactive e-books. The dialectical relationships generated new knowledge and insights. Teacher participants reported trying out new strategies or gaining new insights based on the conversations from the meetings, consistent with the previous research findings (e.g. Butler & Schnellert, 2012; Cochran-Smith &

Lytle, 2009). The dialogic activity of the inquiry meetings led to new learning among participants that they took back into their classrooms and used with their students. Our conversations also led to changes in study participants' attitudes, as discussed in the following sections.

Changes in perceptions. Teacher participants came to the study with limited knowledge about e-books, but initial interviews showed that although they had never read one, they had strong opinions about them and their use in the classroom. At the beginning of my study, all teachers clearly delineated between the e-book and the traditional book as a form of literature. By the end of the inquiry, most teachers continued to privilege the traditional book in their classrooms, despite noting the advantages of using e-books with their students and using e-books more often. However, there was a shift in the way that teachers viewed the e-books as the study went on, with most teachers conceding that although they once thought of the e-book as a game and something for their children to play with, in the end, they viewed it as a learning tool.

The view that an e-book is not a real book was very common among the participants at the beginning of the study. They referred to e-books by making swiping motions, mentioning their game-like features, or pointing to the iPad, while referring to traditional books as *book books*. This is not an uncommon demarcation among adults, children, and especially teachers (Sargeant, 2015), as most people feel that books are things that can be read, while e-book apps are things that can be used. And indeed, there is a difference between traditional books and e-books. Books are limited by their physicality (Bacon, 2013), something that the participants referred to repeatedly when discussing the appeal of a traditional book's heft, feel, and smell. E-books, on the other hand, are software, and as such, are much less limited in the scope of what they can do, how meaning is made, and level of access.

At the end of the collaborative inquiry, after participants had experienced e-books in our meetings and in their classrooms, three out of five participants still referred to traditional books as “real books.” Only two of us, me included, had articulated that e-books really were children’s literature and could be used as such. The format was different, this was true, but all participants recognized and remarked on the fact that the stories read on the iPads had the same basic structure as a story in a traditional book: characters, setting, sequence, and plotline. The difference was in the amount of control the reader had over the content of the book (Sargeant, 2015). Though this feature appeared to be a draw for the participants of my study, as it is for many e-book readers (Petrelli & Wright, 2009), with most, the firm delineation between book and e-book remained.

Despite the fact that the participants largely maintained their assertion that an e-book was not a “real” book, there was a marked shift in their thinking in reference to the way that they considered the books for use in the classroom. At the beginning of the study, teachers clearly privileged the traditional book as the format that was either preferred by the teacher or considered most appropriate for use in the classroom. This is consistent with the research that clearly identifies the print book as the format most preferred by teachers, as well as middle, high-school, and college students (Tosun, 2014).

One reason that teachers may prefer traditional print copies of books to the e-book is the perception that the e-books would be distracting. This was certainly the case in my study, where teachers predicted that their students would use the e-book “as a play toy.” (FI, Inga, 111) They discussed the features, much as Labbo and Kuhn did in their 2000 study, as distracting to the story. Much like in the recent literature (Barger & Notwell, 2013; Engel-Unruh, 2010), however, once teachers had a chance to work with the e-books in their classrooms, their opinions changed.

They went from considering the e-books “too gamelike” (FI, Inga, 110) and “time wasters” (SI, Delta, 173) to firmly believing, much to their own surprise, that they could be learning tools, as well as texts with which to make meaning.

In the last two sections, I have addressed the second research question dealing with the shifts in knowledge and perceptions that occurred during the study. Teacher participants moved forward in their thinking about using interactive electronic books in their classrooms, and as a result were much better equipped to share them with their students. In addition, there were definite shifts in teacher participants’ perceptions and beliefs about using electronic books in the classroom. These shifts in knowledge and perceptions took place due to the dialogic and experiential nature of collaborative inquiry. In the following sections, I will discuss the implications, suggestions for future research, and limitations of the study.

Implications

The importance of this study is in its implications. Though small in scope, there are important implications of the study for teachers, administrators, and even policy-makers as they move forward in integrating electronic books into the curriculum. The findings from both the thematic analysis and the content analysis hold important implications for literacy professionals.

Implications of the emotionality of reading. The emotionality of the reading experience is an important finding. The importance of the theme of emotionality, however, is not so much in its existence but in how this knowledge is used. As stated in the first chapter, schools in the United States are spending billions of dollars each year on technology resources (McCandless, 2015), yet there is little evidence to show that teachers are effectively integrating this technology into their classrooms (Lightsail Education, 2015).

This study shows that teachers are willing and able to experiment and use electronic

books into their classrooms. They are devoted to meeting the needs of their students and after being given the opportunity to learn how to use electronic books, are committed to using them in the future. It is not due to lack of training or willingness that teachers are not using electronic books. It is because, in part, of the deep emotional association with traditional books and their prior reading experiences make it difficult for them to transition away from the traditional format of their youth. It is also due to the anxiety and fear associated with technology and their changing roles in the classroom as they introduce e-books to their students. At the intersection of the positive emotions connected with traditional books and the negative emotions associated with the new technology of the electronic book lies reluctance, even resistance.

By having a better understanding of the reasons why teachers may be reluctant to integrate e-books, administrators and leaders in the field may be able to better support them in this transition from traditional to electronic books. A high level of teacher support is necessary when making this transition, just as with the introduction of any sort of technology (Duncan-Howell & Lee, 2007; Lim & Khine, 2006). For teachers who harbor anxiety in connection with technology, more support than is standard may be needed. Further training may be required, as well as encouragement before, during, and after the integration phase to meet the practical and emotional needs of teachers.

More discretion may be necessary in making the financial and policy-related decisions that shape the American classroom. The expense of transitioning a library or a curriculum to digital resources is hardly judicious if the majority of teachers will be too emotionally tied to the hard copy resources to use the newer electronic versions. Vast resources of electronic books are hardly worth the money spent to purchase them if they remain on the metaphorical shelves. Regardless of how wise the transition to e-books may appear to be, decision makers at the school

and county level must consider the individuals who will determine the effectiveness of such a transition.

Much of today's research points to the usefulness of technology for meeting the needs of the 21st century student. Many support using more and better technology to give American students a global competitive edge. While this may be effective in theory, the most important determinant in student success is the teacher (Stronge, 2010), and without teacher buy-in to newer, electronic books, they will remain unused and irrelevant. However, this study also demonstrated the ability of professional development to affect change in understanding and attitudes, and it will be the implications of these findings that will be discussed in the next section.

Implications for professional development. The success of the collaborative inquiry in increasing knowledge and shifting attitudes holds important implications for future professional development. The purpose of my research was to investigate veteran primary teachers' persistent attitudes about and knowledge of using electronic books in the reading classroom. While we discussed the way that we used them and both our reactions and our student reactions, we did not delve much into the pedagogy of using e-books in the context of reading instruction. Because of this, and because of the time constraints, teacher participant use of the e-books was limited in scope. The technology component of the TPACK was developed by exploring the iPads and e-books, but a pedagogy surrounding the books was not. In order to fully integrate electronic books into the curriculum, a more focused professional development is necessary.

It is not adequate, if full integration of e-books into reading is the focus, to simply supply the e-books, the technology on which to deliver them, and practical training. Professional development needs to focus on developing pedagogy around these books in the context of the specific reading program that is used. Teachers need training how to integrate the technological

knowledge with the pedagogical and content knowledge as they pertain to the e-book infused classroom. If teachers are to acquire the TPACK necessary to use the e-books for optimal student learning, they will need targeted, subject specific training in how to best use e-books in the elementary classroom.

However, a simple instructor-centered training will not be sufficient. Teachers need training to know how to best situate e-book use to support student learning and much more than simple technological knowledge. Teachers need to be able to experiment with the electronic books in a safe environment. They need to be able to collaborate with their colleagues to make meaning and create understanding. They need an on-going, hands-on environment in which to learn. All of these characteristics of good instruction should be applied to the teacher learning within professional development. All of these skills can be explored and developed through the context of collaborative inquiry, as the findings of my study demonstrate.

The shifts in teacher perceptions of e-book use in the classroom present some implications for professional development as well. So often teachers are given technology to use in their classrooms with very little training, and the training is usually practical in nature (Okojie, Olinzock, & Okojie-Boulder, 2006). Just as the focus is on teaching the whole child, so should it be with teacher training. Just as it is important, as mentioned in the last section, to address the emotionality that many teachers have associated with traditional books and the anxiety about e-books, it is important to address the preconceived attitudes and beliefs that they may hold. Giving teachers a forum to individually and collectively share, discuss, and reflect on issues related to technology acceptance and integration is key, along with regular supported experience with the technology itself, to create these shifts in perceptions that may then lead to changes in pedagogy.

Suggestions for Future Research

This study fills an important gap in the research. Studies that examine professional development to advance adoption and integration of instructional technology are many, but those that do so through collaborative inquiry are few, and those that focus on primary reading teachers are even more scarce. This study provides school leaders and professional development coordinators with an example of effective practice to deal with resistance to electronic books in their schools.

This study also presents many areas in which more research would be beneficial. Given the findings about teacher emotionality about reading, more research is needed in order to identify the type of support necessary to meet the needs of the teacher during the transition from traditional to electronic books. Because the current research about veteran teachers and e-book integration is limited, it may be worthwhile to do research on this particular demographic. With the attrition rate of new teachers at an all-time high and veteran teachers making up 50-60% of the teaching workforce (Phillips, 2015), it would be wise to invest in learning how to equip the veteran teachers with the knowledge and skills to teach their 21st century students.

Currently, the research regarding how to teach with electronic books is limited. A search of the current and recent literature produces few resources (e.g. Ciampa, 2012; Huang, Liang, Su, & Chen, 2012; Javorsky & Trainin, 2014; Karchmer-Klein & Shinas, 2012) to help teachers as they begin to use electronic books instead of their traditional counterparts. These resources offer very general suggestions and provide a good starting point for teachers just beginning to integrate e-books into their reading instruction. However, these resources are not sufficient to help teachers develop best practices. There is little that directs teachers in how to best incorporate e-books into a learning framework.

Without this knowledge, e-books will continue to be used for independent activities like sustained silent reading. While independent reading is a valuable part of any reading program, teacher interaction with students as they read e-books has been proven to be the most effective method of reading electronically (Ciampa, 2012; de Jong & Bus, 2002; de Jong & Bus, 2003). In order to harness the educational potential of the e-book, research must be done so that teachers can use the e-books as the powerful learning tools that they can be.

As this study has demonstrated, the perceptions and attitudes of teachers is important in determining the use of electronic books. While there is much research about these teacher perceptions about e-textbooks at the secondary and college level, there is relatively limited research about elementary teachers' perceptions about using children's literature in e-book format. In this way, this study adds to a still growing literature base, but it is not clear how from the research how to shift perceptions and attitudes so that the pedagogical evolution can occur. The findings of my study, however, suggest that regular exposure to e-books, the opportunity to use e-books in the classroom with support, and dialogic interaction and reflection around the experiences of doing so encourage an examination and shifts in perceptions and beliefs. Longer, more in depth studies of this kind may yield further insight into how to best support pedagogical and perceptual changes.

Limitations

This qualitative study was a collaborative inquiry investigating teacher knowledge of and persistent attitudes toward the use of electronic books in the primary classroom. Because of the nature of this practitioner research, some limitations arose. Despite these limitations, which will be discussed below, every precaution was taken to ensure validity and trustworthiness.

As discussed earlier in chapter three, my role in the research was three-fold: researcher, facilitator, and learner. As a long-time co-worker of the other teacher participants, I knew the participants as friends and as fellow teachers. Therefore, it was difficult to separate my out-of-study knowledge of the participants out of my analysis. To guard against this, I read through the data additional times, and I completed member-checks at different times throughout the study,, including after analysis was complete. This member-checking validated my analysis, and when areas were contested, I re-evaluated them. However, as it is not possible to remove all bias from qualitative research, and peer review could have been helpful.

The length of the study was also a limitation. The study lasted seven months from the time of the first interview until the last interview. The teachers had six months to use the e-books in their classrooms, and meetings took place four times over the course of five months. During this time, shifts were made in teacher knowledge and perceptions. However, research about professional development states that a minimum of one year is the optimal time span for effective learning to occur (Flint, Zisook, & Fisher, 2011). While the collaborative inquiry continued beyond the time line of the study, time constraints limited data collection to seven months. A longer study may have yielded different or more significant results.

The purpose of qualitative research is not to generalize but to study a particular phenomenon in a specific setting (Creswell, 2014). However, I realize that the context of my study is unique in the literature, and therefore may be considered a limitation. This study took place in a private, religious school. As such, the school is not subject to the same requirements and technology standards as public schools, and for this reason, public school teachers may have been more experienced with technology in the classroom than the private school teacher participants.

Therefore, while helpful for other private school scholars who are perhaps searching for literature relating to their context, public school teachers may find the results only selectively useful. Regardless of what kind of school a teacher works in, however, the universality of the theme of the emotionality of reading is certainly one that can resonate with all.

Conclusion

The purpose of this qualitative research study was to investigate veteran primary teachers' knowledge of and persistent attitudes about the use of interactive electronic books in the reading classroom. In addition, the study sought to examine how collaborative inquiry can be used to create shifts in understanding and perceptions about electronic books as instructional tools in reading instruction. The goal was to provide some insight into the reasons why teachers were not using electronic books in their classrooms, despite the fact that they were available for them to use.

In a small group collaborative inquiry, four teachers and I explored e-books and used them with our students. Collaborative inquiry proved to be an effective process through which to affect change in perceptions and practice. Not only is the cyclical, reflective nature of collaborative inquiry consistent with all of the research about effective professional development (Darling-Hammond & McLaughlin, 2011; Flint, Zisook, & Fisher, 2011), but it also gave teachers an outlet to share and validate their emotional attachment and memories of traditional print books and to experiment with the electronic books in a safe, supported environment. In an environment in which instructional technology is "oversold and underused" (Cuban, 2001), the use of collaborative inquiry groups such as these can offer opportunities for opened eyes, opened minds, and a more complete and effective use of electronic books in the classrooms of the future.

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APPENDICES

Appendix A

Timeline of Data Collection

Month/Year	Study Component	Assigned Article	Loaded E-books
August/2016	Initial Interviews 8/1 Inga 8/3 Lucy 8/4 Delta 8/11 Lois	What is an Ebook? What is a Book App? And Why Should We Care? An Analysis of Contemporary Digital Picture Books	Reading Rainbow Sky- brary <i>Goldilocks</i> <i>Hungry Bear</i>
September/2016	9/8 Collaborative In- quiry Meeting #1	Teaching With Interac- tive Picture E-Books in Grades K-6.	<i>Magnus the Magnetic Dog</i> <i>Bats!</i> <i>Arthur's Birthday</i>
October/2016	10/13 Collaborative In- quiry Meeting #2	Storytimes in a Digital World	<i>The Fantastic Flying Books of Mr. Morris</i> <i>Lessmore</i> <i>Jack and the Beanstalk</i> <i>Little Critter Library</i>
November/2016	Meeting cancelled due to mandatory school meetings		<i>A Charlie Brown Thanksgiving</i> <i>Gobble: The Famous Thanksgiving Turkey</i>
December/2016	No meeting scheduled due to holi- day activities	Ted Talk: Mike Matas, Next Generation Digi- tal Books	
January/2017	1/5 Collaborative Inquiry Meeting #3		<i>Amazing Amphibians</i> <i>Magic School Bus:</i> <i>Under the Sea</i> <i>Violet</i>
February/2017	2/16 Collaborative In- quiry Meeting #4 Final Interviews 2/27 Delta 2/28 Inga	Shanthi Sekaran Returns to Haunt Her Childhood Library: Ghosts on the Shelves and Memories in Hand	3D Pop-Up Classic Fairy Tales Bundle
March/2017	Final Interviews 3/1 Lois 3/2 Lucy		

Appendix B

Supplemental Reading/Viewing Sources

Month	Source	Type of Source	Rationale
August	Sargeant, B. (2015). What is an ebook? What is a book app? And why should we care? An analysis of contemporary digital picture books. <i>Children's Literature in Education</i> , 46(4), 454-466.	Peer-reviewed article	Chosen for the explanatory nature of the article. For those that were unfamiliar with the format, it was a good source of information.
September	Schugar, H., Smith, C., & Schugar, J. (2013). Teaching with interactive picture e-books in grades K-6. <i>Reading Teacher</i> , 66(8), 615-624.	Peer-reviewed article	Chosen for its pedagogical applications. Because participants were new to using e-books, this gave practical information.
October	Paganelli, A. (2016). Storytimes in a digital world. <i>Knowledge Quest</i> , 44(3), 8-17.	Peer-reviewed article	Chosen because teachers were reluctant to use e-books in a read-aloud.
December	Matas, M. (2011, March). Next Generation Digital Books [Video file]. Retrieved from https://www.ted.com/talks/mike_matas	Ted Talk	Chosen to show other applications of the e-book format.
February	Sekaran, S. (2017, January 12)Shanthi Sekaran returns to haunt her childhood library: Ghosts on the shelves and memories in hand [Web log post]. Retrieved from http://lithub.com/shanthi-sekaran-returns-to-haunt-her-childhood-library/	Blog post	Chosen because it reflected some of the participants' connections to traditional books. It was specifically chosen as a reflection piece.

Appendix C

E-book Apps Used in the Study

E-book App	Publisher	Features
Reading Rainbow Skybrary	RRKidz Inc.	Interactive touch screen Read-to-me option Embedded videos
<i>Goldilocks and the Three Bears</i>	Nosy Crow	Interactive touch screen Read-to-me option Text-to-voice Camera features Tilt/Rotate screen features
<i>The Very Hungry Bear</i>	We Are Wheelbarrow PTY LTD	Interactive touch screen Read-to-me option Embedded game Voice recording option
<i>Magnus the Magnetic Dog</i>	Julian Damy	Interactive touch screen Read-to-me option Navigation panes Embedded games
<i>Bats! Furry Fliers of the Night</i>	Bookerella	Interactive touch screen Read-to-me option Pop-up windows Embedded games
<i>Arthur's Birthday</i>	Wanderful Inc.	Interactive touch screen Read-to-me option Text-to-voice Navigation panes Hidden objects
<i>The Fantastic Flying Books of Mr. Morris Lessmore</i>	Moonbot Studios	Interactive touch screen Narration Embedded games Companion book offered Original musical score

E-book	Publisher	Features
<i>Jack and the Beanstalk</i>	Nosy Crow	Interactive touch screen Read-to-me option Embedded games Camera features Text highlighting Embedded games Multiple storylines
<i>Charlie Brown's Thanksgiving</i>	Loud Crow Interactive	Interactive touch screen Read-to-me option Tilt screen features Text-to-voice Text highlighting
<i>Gobble: The Famous Thanksgiving Turkey</i>	Hub Creations	Interactive touch screen Text highlighting Embedded puzzle Embedded game
<i>Little Critter Library</i>	Oceanhouse Media	Interactive touch screen Read-to-me option Text highlighting Text-to-voice Voice recorder Embedded games
<i>Amazing Amphibians</i>	3D Learning Group, LLC	Interactive touch screen Pop-up windows Embedded games
<i>Magic School Bus: On the Ocean Floor</i>	Scholastic Interactive	Interactive touch screen Read-to-me option Tilt screen interaction Text highlighting Embedded games
<i>Violet</i>	Black Dog Books LLC	Interactive touch screen Read-to-me options Touch-screen animations Pop-up windows Hidden animations Original musical score

Appendix D
Complete List of Initial Codes

Code	In. Int	Mtg 1	Mtg 2	Mtg 3	Mtg 4	Fin Int.
Book Choice important	x					x
reading and faith	x					
prefer traditional	x	x		x	x	x
highlight and write	x	x				x
lack of exposure	x	x				x
recognize need	x	x			x	x
more space	x					
dog-ear page	x	x				
turn pages	x					x
children's lit	x					
Importance of rd aloud	x					
teacher as rdg model	x		x	x		
time constraints	x	x	x	x	x	x
increased information	x					
increased motivation	x		x			
increased engagement	x		x	x		
increased enjoyment	x	x	x	x	x	
some experience	x					
tech issues	x	x	x			
ebook not a book	x	x			x	
take more time	x					
ebook=toy	x					
modeling needed	x					
targeted PD needed	x					
"love reading more than living"	x					
obsessed with books	x					
books =friends	x					
"not willing to relinquish"	x			x		x
book as a memory	x	x	x	x		x
books as experience	x					
ebook reading same on both formats	x					
harder to read	x					
"100% hard copy"	x					
ebooks limit communication	x					
pass down love of books	x					x

Portability	x					
ZPD	x					x
student independence	x	x		x	x	x
playing vs reading	x	x	x	x	x	x
more prep time	x					
willing to try	x	x				
"book in my hand"	x					x
books=good stories	x					
picture in your head	x				x	x
importance of pictures	x					
see others use	x					
more ebooks=fewer trad. Books	x					x
no pics in ebooks	x					
role of teacher	x		x			x
not comfortable	x	x				
not know what to do	x	x				
perceived student difficulty	x					
need for collaboration	x					
hands-on	x					
nervous about use		x				
not friendly enough		x				
smell of traditional books		x				x
age as an excuse for discom- fort		x				
learn from others		x				x
kids loved it		x	x			
"my book thing"		x				
more selection		x				
student knowledge>teacher knowledge		x	x	x	x	
worsen behavior		x				
reading support		x				
too many passwords		x				
kids misuse		x				
Bookmarks		x			x	
boys vs girls playing instead of reading			x	x		
new thinking involved			x			
Fun			x			
improved behavior			x		x	x

positive experience			x	x		x
spectator stance			x	x	x	x
increased focus			x		x	x
desire for more iPads			x	x	x	x
increased comfort level			x	x		
trial and error			x			
like interactivity			x			
inconsiderate features			x			
controlling student use			x			
more focus with more exposure				x		
future plans				x	x	x
increased student opportunity				x		x
helps with vocab acquisition				x		
increased comprehension				x		x
need to direct students				x		x
Differentiation				x	x	x
preference for traditional				x		
reader as a model				x		
love of storytime					x	
less immersion					x	
increased interactivity=decreased immersion					x	
easy access					x	x
loss of imagination					x	
ebook=book					x	x
teaching is different with ebooks					x	
increased student interest					x	x
students taking teacher role					x	
"get more out of an ebook"					x	
too loud					x	x
negative perceptions->positive perceptions					x	
"meet kids in the middle"					x	
"getting into the book"						x
e-book more real						x
more thinking with traditional book						x

learning tool						X
right way to read an ebook						X
specific teaching of skills						X
students arguing						X
more creativity with traditional books						X
ebooks stifle creativity						X
ebooks- some creativity						X
no right way to read an ebook						X
encourages thinking about reading						X
ebooks increase critical thinking						X
less playing with more exposure						X
lost its newness						X
everyone wanted to do it						X
ebooks foster student independence						X
"brings the pages of a book to life						X
changed perspective						X
books are JOY						X
fit in with active learning						X
must have purpose to use						X
increased use in personal life						X
"too much screen"						X
Distracting						X

Appendix E

Definitions of Themes in Thematic Analysis**Overarching Theme: The Emotionality of Reading**

The Emotionality of Reading was an overarching theme that described the emotional response that participants had to the reading experience, reading instruction, and traditional books. There were several categories of ways that participants expressed those emotions about traditional books, electronic books, and their role as a teacher.

Theme 1: The emotionality of a traditional book. This theme was used to describe how participants said they preferred the traditional format of a book and attributed this preference to some sort of emotional connection to it. When participants expressed the feeling of satisfaction that they experienced associated with the physical characteristics of a book, as well as its permanence, they were communicating their preference for *the traditional book as a desired physical object*. Participants also associated traditional books with a significant time period or person in their lives when they alluded to *the traditional book as a memory*. So much did participants treasure the traditional format of books and the memories associated with them, that they expressed the desire to pass on their love of the book and the reading experience, much like *a literary heirloom*. Because of the deep emotional attachment that they participants had to traditional books, they also had an unfounded fear that electronic books would replace traditional books in the home and the classroom, rendering *the traditional book as a ghost*.

Theme 2: The emotionality of an e-book. This theme was used to describe the mostly negative emotions participants associated with e-books. Because participants had never used iPads, they had apprehension about using them. They viewed *the e-book as unfamiliar*, and

therefore had misgivings about using them in their classrooms. Prior experiences with other kinds of technology also made them consider *the e-book as unpredictable*. They thought of technology as something not to be trusted to work consistently, and consequently were hesitant to use the iPads.

Theme 3: The emotionality of a changing role. This theme describes the participants' emotional response to their perceived changing role in the classroom with the introduction of electronic books. Frequent references to relinquishing control of classroom activities and becoming more of a facilitator is covered under the subtheme of *the teacher as a facilitator*. The changed dynamic of the students knowing as much or more than the teacher refers to the changed role of *the teacher as the learner*. For different reasons, teachers chose not to interact with the students during their reading of the e-books, and this is reflected in *the teacher as a spectator*.

Overarching Theme: Changes in Understanding and Perceptions

This overarching theme describes ways that the participants' knowledge and persistent attitudes about electronic books changed throughout the course of the study. Instances in which the participants expressed their new knowledge and shifted attitudes were noted underneath this central motif.

Theme 4: Changes in knowledge and understanding of e-books. As teachers experienced shifts and increases in understanding about the way that e-books worked and how to use them with their students, it was noted under this theme. This included instances in which teachers demonstrated their newfound knowledge of using the iPad, either through actually doing so in the meetings or recounting the way that they used it in their classrooms. This also included occasions where the participant shared their growth with the group.

Theme 5: Changes in perceptions about e-books. This theme explains the shifts in persistent attitudes and perceptions that occurred among the participants throughout the course of the study. This included examples where the participants expressed that they had changed the way that they thought about e-books and using them in the classroom, or where there was a perceptible change in the dialogue in the meetings. When participants exhibited a change in perceptions about there being room for both formats of books in their classrooms, this was considered as changes in *perceptions about traditional books as privileged*. Similarly, teachers clearly delineated between books and e-books, holding *perceptions about e-books as authentic literature*. As the study progressed, the teachers clearly changed the way that they thought of learning potential of e-books, as noted through the theme of *perceptions about e-books as learning tools*. As the teachers realized that the behavior of their students was not adversely affected by the use of the e-books, their comments and conversation around the topic were categorized around the theme of *perceptions about e-books and student behavior*.

Throughout the study, as the understanding, perceptions, and persistent attitudes changed, the teacher participants also changed the way that they envisioned themselves using the e-books in the future. Examples of participants discussing how they were going to use e-books in the future, how they would best utilize the iPads were they readily available, or their desire to have more iPads in their classrooms were classified as *perceptions about moving forward with e-books*. This also included instances when participants made any plans to discuss the acquisition of more e-books for the school.

Appendix F

Definitions of Categories in Content Analysis

Each of the tenets of sociocultural theory were defined as follows. It is important to note that some passages of the transcripts may have been labeled in more than one way.

Mediation of Thought

As teacher participants met together in collaborative inquiry meetings, the e-books and language served as tools through which thinking was changed. Any passage of dialogue or interaction that demonstrated that the participants' thinking was changed or moved forward through the conversation or through the use of the e-books was labeled and categorized as an example of *Mediation of Thought*. Furthermore, any instance of the teachers coming together and developing agency was categorized in this way as well.

Zone of Proximal Teacher Development

As we met together, teachers often could do things with the help of others that they could not do alone, as they worked within the Zone of Proximal Teacher Development through shared dialogue. This was recognized in at least three ways. When my questioning opened up new possibilities of thinking to the participants, this gave intentionality to their actions and observations. When my questioning or other participant questioning scaffolded thinking, this allowed support and framing of thinking as it moved forward. Finally, when participants took turns being the more knowledgeable other, they worked at a level at which they could not work alone. Each instance of these things occurring within the meeting transcripts were labeled *Zone of Proximal Teacher Development*. Each time a teacher participant acted as the *More Knowledgeable Other* as described above, it was labeled as such.

Intermental and Intramental Learning

Instances in which teacher participants made meaning by working or conversing together were labeled as *Intermental Learning*. When participants discussed going back to their classrooms and using the previously constructed knowledge to share the e-books with their students, and when participants referred to recalling dialogue from the meetings as they used the e-books, the passage of the transcript was labeled as *Intramental Learning*.

Appendix G

Measures of Verification

Measure of Verification	Working Definition	Evidence of Achievement
Outcome Validity	Outcome validity has been achieved if the results of the actions of one cycle drive the actions of the next cycle.	<p>Meeting 1: Because of navigation issues, we worked on navigation issues and planned to use the e-books at least once during the interim.</p> <p>Meeting 2: Because participants had more success with the e-books, books with more features were added and we agreed to use them at least once per week.</p> <p>Meeting 3: All participants were able to use the e-books, but because of time issues, we brainstormed ways to help those who had difficulty fitting the e-books into their day.</p> <p>Meeting 4: Because of the success of using the e-books in their classrooms, participants decided that they would like me to continue to load e-books on the iPads for the rest of the academic year.</p>
Process Validity	Process validity has been achieved each time the inquiry cycle was completed in a procedurally valid manner.	Meetings 2-4 followed the same basic agenda. We attempted to meet once a month to assess, reflect, and plan. In between meetings, participants acted and observed. Meeting 1 did not follow the basic agenda due to extra focus on technical skills.

Democratic Validity	Democratic validity has been achieved if group norms are established and each member of the group has equal opportunity to contribute.	All participants had the opportunity to contribute to the group at every meeting, except for Meeting 4, when one was absent.
Catalytic Validity	Catalytic validity has been achieved when participants express through words or actions that they have applied new knowledge or skills acquired during the inquiry process.	<p>Meeting 1: Participants learned how to use iPads.</p> <p>Meeting 2: Participants reported using e-books on iPads in their classrooms.</p> <p>Meeting 3: Participants helped each other with navigation of the e-book.</p> <p>Meeting 4: Participants reported intentions to continue using e-books.</p>
Dialogic Validity	Dialogic validity occurs as members of the inquiry group participate in critical and reflective dialogue during the inquiry meetings.	All participants took part in conversation at each meeting. Exception: Meeting 4, when one member was absent due to hospitalization.
Trustworthiness	Trustworthiness is achieved when multiple sources of data are collected, and participants are given a chance to determine if researcher interpretation is correct.	<p>Data Sources: interviews, participant observation, reflective journals.</p> <p>Member checks done on the following dates: 8/15/16; 2/2/17; 3/5/17; 4/19/17</p>