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Incorporating Interactive Electronic Storybooks into Shared Reading Programs by Kindergarten Teachers: A Multiple Case Study

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INCORPORATING INTERACTIVE ELECTRONIC STORYBOOKS INTO SHARED

READING PROGRAMS BY KINDERGARTEN TEACHERS:

A MUTLIPLE CASE STUDY

A Dissertation

Submitted to the Faculty

of

Purdue University

by

Sha Yang

In Partial Fulfillment of the

Requirements for the Degree

of

Doctor of Philosophy

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Purdue University

West Lafayette, Indiana

To my family

献给我的家人。

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Finally, I would like to thank the teachers, the children, and the staff at the two schools who made this study possible. They welcomed my research into their schools with open arms.

This dissertation is dedicated to my late grandmother Huiping Xiong, my mother Xiaoping Xiong, my father Liangping Yang and my elder sister Ying Yang, who always support me in my endeavors with their unconditional love.

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GLOSSARY

Electronic storybooks refer to books presented in electronic forms that allow children to listen to the reading of the story while viewing pictures or animations that go with the story plot on a screen.

Traditional storybooks refer to "paperback storybooks with two-dimensional print and text" (Moody, 2007, p.10).

Hotspots are electronic features within e-storybooks that can be activated to produce animations, sound effects, and games, as well as word pronunciations and definitions, depending on the design of e-storybooks (Pearman & Chang, 2010).

Shared book reading is a general practice that involves an adult reading a book to a child or a group of children. It contains a range of methods that vary in complexity, focus, and degree of interactivity (What Works Clearinghouse [WWC], 2006).

ABSTRACT

Yang, Sha. Ph.D., Purdue University, December 2015. Incorporating Interactive Electronic Storybooks into Shared Reading Programs by Kindergarten Teachers: A Multiple Case Study. Major Professor: Victoria Walker.

This qualitative study investigated how two kindergarten teachers used interactive electronic storybooks (referred to as e-storybooks) for shared reading, as well as their attitudes towards adopting this tool as a resource for shared reading. The research inquiry was guided by three research questions: 1) What instructional strategies did the kindergarten teachers employ to try to achieve pedagogical effectiveness of the e-storybooks for shared reading programs? 2) What problems did the kindergarten teachers encounter in utilizing the e-storybooks for shared reading programs, and how did they try to overcome them? 3) What were the kindergarten teachers' attitudes towards adopting e-storybooks as a resource for their reading block?

Three sources of data were collected: interviews, observations, and documents. Each teacher was required to conduct shared reading of the interactive e-storybooks with their participating students within six sessions of their reading block. Before each session, the researcher collected each teacher's lesson plan for using the e-storybook along with the materials and worksheets given to the students. The researcher interviewed each teacher at three time points of the study: before using the e-storybooks, after using the first three

 e-storybooks, and after using all of the six e-storybooks. The researcher also observed

each teacher's application of the six e-storybooks in class. All these data were analyzed

case by case through thematic analysis first and later by cross-case analysis.

The results showed that the strategies both kindergarten teachers employed were

identifying pedagogical objectives, analyzing the attributes of the e-storybooks,

conducting instructional activities around using the e-storybooks, and evaluating the

benefits and cost of using such resource. Their strategies were consistent with Salaberry's

(2001) four major considerations on how to achieve pedagogical effectiveness of

technologies. However, the two teachers varied in their styles of presenting the e-

storybooks. The teachers encountered a few common problems in utilizing the e-

storybooks, and they also had their unique problems in using them. In face of those

problems, the teachers found their ways to overcome them. Both teachers have been

positive about adopting e-storybooks as a resource for their reading block, and they

planned to continue using this resource after the research study. Finally, the implications

of the results along with the strengths and limitations of the study were discussed.

CHAPTER 1. INTRODUCTION

In literacy education, technologies have gradually changed traditional conceptualizations of literacy, as well as the way literacy is taught and acquired (Common Core State Standards [CCSS], 2014; Labbo, 2006; Leu & Kinzer, 2000; New London Group, 1996; Reinking, Labbo, & McKenna, 2000). The concept of multiliteracies was proposed to support literacy education conducted through varied communication channels and media rather than language alone (Jewitt, 2008; Kress, 2003; The New London Group, 1996). The concept of new literacies, which indicates meaning making with computer technologies, was also brought up (Labbo, 2006). In a new literacies environment, meaning making in literacy acquisition involves use of multiple modalities such as graphics, animations, video, audio narration, music, special effects, hyperlinks, search engines, powerpoint presentations, and print (Andrews, 2004).

A brief overview of the literature reveals that computer technologies may support early readers' development of core literacy skills that include writing development, phonological abilities, and independent reading (Labbo, 2006). Among a variety of technologies that support reading, the electronic storybooks have been researched extensively and are found to be a great tool that can be used in home and school to support children's emergent literacy development (de Jong & Bus, 2002; Korat, 2009;

Korat & Shamir, 2007; Korat & Shamir, 2008; Lefever-Davis & Pearman, 2005; Lewin, 1998; Moody, Justice, & Cabell, 2010; Pearman & Chang, 2010; Trushell, Maitland & Burrell, 2003; Trushell & Maitland, 2005).

Before the introduction of electronic storybooks, it is necessary to know what electronic books are. Some sentences in this chapter were taken from the author's published conference article (Yang & Kim, 2013). Electronic books are defined as "documents written in electronic text that have the look and 'feel' of more traditional books" (Horney & Anderson-Inman, 1999, p.128). According to Anderson-Inman and Horney (1997), an electronic book must have a central theme and electronic text presented to the reader visually, and must resemble a book by having such features as electronic pages or a table of contents. These criteria distinguish electronic books from prerecorded books on tape, information networks, and multimedia software programs that present electronic text but do not otherwise resemble books.

Electronic storybooks (alternatively called CD-ROM storybooks, talking books, interactive storybooks, or multimedia storybooks) refer to books presenting children's literature in electronic forms that allow children to listen to the reading of the story while viewing pictures that go with the story plot on a computer screen (Moody, 2007). They are different from other story telling media such as TV cartoons, movies, online videos, online stories, and CD-ROM stories that have neither text nor turning pages. Many electronic storybooks adopt the themes of traditional storybooks such as *Ugly Duckling,*

Alice in Wonderland, The Princess and the Pea, and *Goldilocks and the Three Bears*,

while some do not have an equivalent printed version.

Electronic storybooks (referred to as e-storybooks in the following sections) present

children's literature with text and illustrations similar to traditional storybooks, but they

also include elements designed to enhance the reading experience for beginning readers

(Lefever-Davis & Pearman, 2005). E-storybooks can take on many formats: PDFs on

eReaders, published software on CD-ROMs, online/web-based storybooks, and

interactive apps that can be downloaded in multiple devices such as iPad. Different types

or series of e-storybooks vary in their features that support readers (Lefever-Davis &

Pearman, 2005; Pearman & Chang, 2010).

Most e-storybooks have audio narration, and many have graphic animations, sound

effects, text highlighting, and hotspots that can be activated to generate additional

animations, sounds or games. The e-storybooks with the hotspots are considered to be

interactive e-storybooks. For the interactive e-storybooks, the graphic animations and the

sound effects produced by the hotspots can be distinguished as supplemental and

incidental. Supplemental graphics and audio effects are those that contribute to readers'

story comprehension while incidental graphics and audio effects are those that do not

advance the storyline (Pearman & Chang, 2010; Pearman & Lefever-Davis, 2006;

Trushell et al., 2003). For instance, in the interactive e-storybook *The Town Mouse and

the Country Mouse*, when the character was clicked, he moves the broom back and forth

on the floor accompanied with the sound of this action, which clarifies the meaning of the

word *sweep*. This animation and sound are supplemental graphics and audio effect. In the same slide of this e-storybook, the pots and food on the fireplace jumped into the air and made some sounds when being clicked. These animations and sounds do not advance the storyline and thus are incidental graphics and audio effects.

Certain versions of e-storybooks are equipped with more scaffolding features such as word pronunciations and definitions. These features reduce the cognitive load learners exert on decoding and allow them to focus on meaning making instead (Pearman, 2008), and thus are especially useful for beginning and struggling language learners (Lefever-Davis & Pearman, 2005; McKenna, 1998).

The outstanding strength of e-storybook is that it sets "a mood and context for a story in a highly appealing manner" (Lefever-Davis & Pearman, 2005, p.453), helps activate learners' story schema, and increases learners' confidence (McKenna, 1998) and engagement in reading (Moody et al., 2010). Moreover, highlighting of text as it is read allows children to develop the awareness of letter-sound relationships (Pearman & Chang, 2010). Researchers have pointed out that beginning readers need interaction with a variety of texts (Lefever-Davis & Pearman, 2005), and e-storybooks can be a useful resource (McKenna, 1998).

1.1   Statement of the Problem

Previous research has focused on children's independent reading of e-storybooks and typically employs quantitative methods to compare children's literacy achievements reading e-storybooks with reading traditional storybooks (Korat, 2009; Korat & Blau,

2010; Korat & Shamir, 2007; Korat & Shamir, 2008; Ciampa, 2012; Doty, Popplewell, & Byers, 2001; Shamir, Korat, & Barbi, 2008; Verhallen, Bus, & de Jong, 2006). Studies focusing on monolingual children suggest that compared to reading printed storybooks, monolingual children who read e-storybooks of the same content make more progress in vocabulary (Korat, 2009; Korat & Shamir, 2007; Korat & Shamir, 2008), word reading (Korat, 2009; Korat & Blau 2010), reading skills (Pearman, 2008; Pearman & Chang 2010), comprehension (Ciampa, 2012; Doty, Popplewell, & Byers, 2001; Pearman, 2008; Pearman & Chang 2010), and overall emergent literacy skills (Shamir, Korat & Barbi 2008).

Despite those positive results, studies also reveal the disadvantages of children's exploration of hotspots functions in e-storybooks during their independent reading (Pearman & Chang, 2010; Trushell, Burrell & Maitland, 2001; Trushell & Maitland, 2005; Trushell et al., 2003) and suggest adult supervision and interaction with children during e-storybook reading (de Jong & Bus, 2002; Moody et al., 2010; Pearman & Chang, 2010, Verhallen, Bus, & de Jong, 2006). When children read e-storybooks independently, they are attracted to explore the embedded games and interactive animations such as flying birds and hidden characters, which may distract them from the storyline and comprehension (de Jong & Bus, 2002; Pearman, 2008; Pearman & Chang, 2010; Trushell et al., 2001) and negatively affect their story recall (Trushell et al., 2003; Trushell & Maitland, 2005). Researchers also point out that if children are overly reliant on the electronic features to decode words or read the story, they may become passive receivers of language (Lefever-Davis & Pearman, 2005; Lewin, 1996).

A few studies suggest that shared reading of e-storybooks could help children pay attention to plots and promote children's language production (de Jong & Bus, 2002; Fisch, Shulman, Akerman, & Levin, 2002; Moody et al., 2010; Pearman & Chang, 2010). For instance, Fisch et al. (2002) found that when an adult and a child read e-storybooks together, just as they would read traditional storybooks, their interactions were similar to the behaviors revealed in the literature about reading traditional storybooks, and their utterances involved similar levels of abstraction.

Since school and classroom are important places where children acquire a language, it would be beneficial for children to receive multimedia-enhanced instruction in kindergarten classrooms with teacher's language support. However, there is a scarcity of research exploring teachers' experiences of utilizing e-storybooks for shared reading in kindergarten settings. Based on my experiences with the kindergarten teachers from the school where I volunteered, although those teachers had their students view CD-ROM versions of paperback storybooks as revision and let them watch online story videos for fun, warm-up exercise or independent study, they never used e-storybooks for shared reading in their reading block.

1.2   Rationale for the Study

To enrich children's reading experiences in classrooms and maximize the benefits of reading e-storybooks, it is advisable to incorporate e-storybooks into kindergarten shared reading programs (Lefever-Davis & Pearman, 2005; Pearman & Chang, 2010). Labbo (2006) argued that "Transformation of literacy instruction occur in classrooms where computer technologies are integrated throughout the day and across the curriculum" (p.

204). The International Society for Technology in Education (ISTE) advocates the use of computer technology with young children to build their technological skill and comfort level (ISTE, 2015). While some children have access to e-storybooks at home, some do not. Thus, incorporating e-storybooks in shared reading programs at school can enrich all children's reading experiences.

Kindergarten teachers were chosen because e-storybooks benefit beginning readers most (Pearman, 2008; Pearman & Chang 2010) and because the CCSS expect application of multimedia to presenting information to students as early as kindergarten. In reality, a kindergarten classroom normally has a 90-minute reading block every day, during which time a teacher has shared story reading with students, and the stories they read each week center around a single theme. Pearman and Chang (2010) propose that teachers can project the e-storybook on a large screen, conduct a shared reading with the class, and model appropriate use of the hotspots to aid comprehension.

To promote utilization of e-storybooks for kindergarten shared reading programs and to optimize their usage, it is important to investigate kindergarten teachers' experiences and perceptions of using this technological tool. As emphasized in the literature, the success of technology-enhanced instruction depends more on how teachers use the technology than on the technology itself (Kim, Hannafin, & Bryan, 2007; Levy, 2009; Salaberry, 2001). Teachers understand the context of the classroom that grounds the use of technology, and can thus monitor students' learning outcomes and overcome the novelty effects of using technologies. Therefore, the specific strategies that teachers employ in

using technology, the problems they encounter and the ways in which they overcome

them, and their evaluations of technology are aspects worthy of further study (Egbert,

Preuss, Huff, Sellen, & McNeil, 2009). To explore teachers' experiences and perceptions,

a qualitative approach was adopted. The reason for selecting such approach is that

qualitative inquiries, focusing on "the why and how of human interactions" in a specific

context (Agee, 2009, p.432), seek to answer questions concerning processes, perceptions

and experiences.

Among different formats of e-storybooks, the interactive e-storybooks that are

downloadable from iPad were selected for this study for three reasons. First, there are e-

storybooks of various topics available from the iPad's App Store. A few examples are

Ugly Duckling, Alice in Wonderland, The Princess and the Pea, and *Goldilocks and the*

Three Bears. Some e-storybooks are free to download and some are downloadable at a

cost of a few US dollars for each storybook. Interactive e-storybooks are more interesting

than non-interactive ones. In the App Store, there were many options to choose from

based on the kindergartens' reading themes. Second, an iPad is portable and easy for both

teachers and students to operate in class. Third, iPads can provide rich educational

resources and have been increasingly accessible to school teachers for classroom use.

Thus, the e-storybooks associated with this study refer to the interactive ones

downloadable from the iPad's App Store.

1.3   Purpose of the Study

The purpose of the present qualitative study is to explore how kindergarten teachers use

e-storybooks for shared reading, as well as their attitudes towards adopting this tool as a

resource for shared reading. To achieve these purposes, three research questions were addressed in this study:

1. What instructional strategies did the kindergarten teachers employ to try to achieve pedagogical effectiveness of the electronic storybooks for shared reading programs?

2. What problems did the kindergarten teachers encounter in utilizing the electronic storybooks for shared reading programs, and how did they try to overcome them?

3. What were the kindergarten teachers' attitudes towards adopting electronic storybooks as a resource for their reading blocks?

1.4   Significance of the Study

The present dissertation study fills the gap in the literature concerning kindergarten teachers' experiences with utilizing e-storybooks for shared reading and their attitudes towards adopting this technological tool in their reading blocks. First, this study provides information on how e-storybooks could be utilized for shared reading in kindergarten classrooms and how this technological tool is viewed by kindergarten teachers. Second, this study employed qualitative methodology to depict a picture of the teachers' use of e-storybooks and allow them to voice their experiences regarding their e-storybook use. Previous studies primarily employ quantitative methods to compare e-storybook-based activities with traditional storybook-based activities. Third, this study could help us understand more about how to maximize the potentials of e-storybooks in kindergarten settings and then take another step towards transforming literacy instruction.

1.5   Limitations of the Study

One limitation of this dissertation study is that the background of the two kindergarten teachers may prevent generalization of the results to other kindergarten teachers. The two teachers were very interested in integrating storytelling technologies into their teaching and they used them in their reading block on a regular basis. Thus the results might not apply to the teachers who have low or moderate interest in integrating storytelling technologies into their teaching and seldom use technologies for instruction. Another limitation is the small sample size. Since only two cases were studied, the results may not be generalized to a more representative sample of technology-using kindergarten teachers.

1.6   Outline of Dissertation

This dissertation includes six chapters and an appendix section. The first chapter provides a brief introduction to e-storybook and its role in children's reading, statement of the problem, rationale for the study, purpose of the study, significance of the study, and its limitations. Chapter 2 presents a comprehensive literature review of this topic. Chapter 3 describes the research methods, which include the rationale for adopting a multiple case study design, how the two cases were selected, the forms of data collection, how the data was analyzed, the validation strategies used to increase the validity and credibility of the study, ethical considerations, and the role of the researcher. Chapter 4 presents the results of the case-by-case analysis. Each case was described in detail and the themes emerged from each case were presented with quotes. In Chapter 5, the results of the two cases were compared and contrasted, accompanied with quotes. Chapter 6 discusses the results of this study, the implications, the conclusion, and the final thoughts. There is also an

appendix section that includes the teacher background survey, the observation protocol, the interview protocols, and an example of each teacher' lesson plan on how to use one of the selected e-storybooks in the reading block.

CHAPTER 2.   LITERATURE REVIEW

Interactive e-storybooks have multiple features that support young children to develop reading capabilities and increase technological experience (Pearman & Lefever-Davis, 2006), and are considered to be a good tool for children's independent reading at home and in literacy centers (Pearman & Chang, 2010). However, interactive e-storybooks also have disadvantages that may impede children's effective independent reading (Pearman & Chang, 2010; Trushell & Maitland, 2005; Trushell et al., 2003), and adult supervision and interaction with children are assumed to generate better effects of using e-storybooks (Verhallen et al., 2006).

Children's talk about text mostly takes place in school settings and student interactions with teachers and peers are critical to their later independent abilities (Gavelek & Raphael, 1996). Gavelek and Raphael's (1996) advocacy for social interactions and teacher support is revealed below:

> Textual meaning is not 'out there' to be acquired; it is something that is constructed by individuals through their interactions with each other and the world. In classrooms, these interactions take the form of discussion, and the teacher helps guide and participates in them. (p.183)

According to the author's observation and investigation of some kindergarten classrooms, while shared reading of traditional storybooks is a common practice in kindergarten classrooms, shared reading of e-storybooks is not common.

Further, existing research has indicated the positive effects of shared reading on children's literacy development (NELP, 2008). Considering the benefits of reading interactive e-storybooks, it is plausible that use of interactive e-storybooks for shared reading could benefit children more than either their reading of e-storybooks alone or the use of traditional storybooks for shared reading.

Teachers' use of interactive e-storybooks for shared reading in regular classrooms could be affected by multiple factors (Hew & Brush, 2007; Hutchison & Reinking, 2011), such as resources, subject culture, attitudes and beliefs, knowledge and skills, inadequate time, lack of technical support, lack of professional development, and assessment. There are also frameworks (Kim et al., 2007) that could guide teachers' use of interactive e-storybooks for shared reading.

This chapter focuses on the research literature on the benefits and downside of interactive e-storybooks for young children, the rationale for shared e-storybook reading, the factors that might affect teachers' e-storybook use, and the theoretical perspectives on achieving pedagogical effectiveness of technologies. Some content of this chapter was taken from the author's published conference article (Yang & Kim, 2013).

2.1 Benefits of E-storybooks for Young Children

E-storybooks establish a captivating atmosphere and context for a story to unfold, which helps activate learners' story schema while introducing vocabulary words (Lefever-Davis & Pearman, 2005) and increase learners' confidence (McKenna, 1998) and engagement in reading (Moody et al., 2010). Within the context of storybook reading, researchers have found that children's reading engagement is a mechanism for improving their emergent literacy development (Frijters, Barron, & Brunello, 2000; Justice, Chow, Capellini, & Flanigan, 2003; Kaderavek & Sulzby, 1998). The support e-storybooks offer has "the potential to remove the decoding bottleneck facing beginning readers" and "can make independent reading a reality long before decoding reaches the point of automaticity" (McKenna, 1998, p.46).

E-storybooks convey meaning through narration synchronized with images or animations, which facilitates children's ability to comprehend complex elements of stories (Bus, de Jong, & Verhallen, 2006). According to Paivio's (1986) dual coding theory, the language system of human beings operates a verbal system and a nonverbal system simultaneously. Activation of either system will activate the other, and both work together to process information and generate information that stays in the long-term memory. This is consistent with a study showing that prominent auditory and visual features help children extract important information (Calvert, Huston, Watkins, & Wright, 1982). This feature also benefits language minority children in mainstream kindergarten classrooms in that by conveying verbal and nonverbal information simultaneously, they may relate what they already know in their first language to

equivalents in the second/foreign language (Paivio, 1986). Paivio's (1986) bilingual dual coding theory suggests that the verbal system for the first language, as well as for the second, can be interconnected through the nonverbal system.

Another advantage of e-storybooks for both monolingual children and language minority children is visual support. Visual support (e.g., photographs, video, objects, and diagrams) helps language minority children process language and understand concepts (Gottlieb, 2006). Visual representations may be very important for maintaining young children's attention to the narrative (Gibbons, Anderson, Smith, Field & Fischer, 1986). Sharp, Bransford, Goldman, Risko, Kinzer, and Vye (1995) found that dynamic visual support for the beginning of a story alone helped kindergartners remember the actors and settings, which consequently improved their comprehension of the short stories they heard.

Furthermore, e-storybooks make it possible to listen to a word, sentence, or story as many times as a learner wants. Children' acquisition of expressive and receptive vocabulary can be enhanced by listening to a storybook being read multiple times (Sénéchal, 1997). Additionally, children's learning and engagement could be improved by repeated exposure to an e-storybook, based on the findings regarding children's repeated exposure to an educational TV program (Crawley, Anderson, Wilder, Williams, & Santomero, 1999).

Research indicates that children's independent reading of e-storybooks is beneficial to their emergent literacy development. Studies focusing on monolingual children show that compared to reading traditional storybooks, monolingual children who read e-storybooks of the same content made more progress in vocabulary (Korat, 2009; Korat & Shamir, 2007; Korat & Shamir, 2008), word reading (Korat, 2009; Korat & Blau 2010), reading skills (Pearman, 2008; Pearman & Chang 2010), comprehension (Ciampa, 2012; Doty, Popplewell, & Byers, 2001; Pearman, 2008; Pearman & Chang 2010), and overall emergent literacy skills (Shamir, Korat & Barbi 2008). Language minority children also benefit from reading e-storybooks in terms of vocabulary acquisition and oral narrative development (Eshet-Alkalai & Chajut, 2007; Verhallen et al., 2006). Eshet-Alkalai and Chajut (2007) revealed that reading e-stories enabled children who could barely read or speak English to master word pronunciation and meaning recognition in the story. Verhallen et al. (2006) found that by reading e-storybooks independently, children who learned Dutch as a second language expanded their expressive vocabulary and syntax, and learned implied elements of stories that indicated goals or motives of main characters.

2.2   Downside of Children's Independent Reading of E-storybooks

Although interactive e-storybooks have features that are especially helpful for beginning readers to read storybooks before they fully develop decoding skills, whether the e-storybooks can exert their full potential depends on how they are used. Previous studies indicate that independent reading of interactive e-storybooks may not always benefit children (Pearman & Chang, 2010; Trushell et al., 2001; Trushell & Maitland, 2005; Trushell et al., 2003).

Researchers point out that when children read interactive e-storybooks independently, they are compelled to explore the embedded games and interactive animations such as flying birds and hidden characters, which may distract learners from the storyline and comprehension (de Jong & Bus, 2002; Pearman, 2008; Pearman & Chang, 2010; Trushell et al., 2001) and negatively affect their story recall (Trushell et al., 2003; Trushell & Maitland, 2005). For instance, Trushell and Maitland (2005) provide empirical evidence that interactive animations and sound effects negatively affect pupil's story recall. Another study (Trushell et al., 2003) reveals that pupils who read the interactive storybook under the program's *Read to me* option outperformed in recall of the story event structure than those who read under the program's *Let me play* option, which involved interactive picture-play provided by cued animations and sound effects.

One possible solution to this is that an interactive e-storybook contains several interaction tracks available to choose (e.g., read only, read and play, and play only) (Shamir & Korat, 2006). The read-only track offers oral reading of the story; the read-and-play track provides "options in the read-only track with the added possibility of activating the characters, objects, parts of the text, or games" (Shamir & Korat, 2006, p. 537); the play-only track "offers children a variety of amusing activities such as games of skill, puzzles, memory tasks, and pictures to color" (Shamir & Korat, 2006, p. 537). This structure of the e-storybooks provides readers with the modes they could choose from in accordance with the purposes and interest. For instance, when readers are expected to focus on reading, they should not be allowed to play with the animations, sounds, and activities

during the actual reading process but either before or after reading (Pearman & Chang, 2010).

Researchers also point out that if children are overly reliant on the electronic features to decode words or read the story, e-storybooks may make children passive receivers of language (Lefever-Davis & Pearman, 2005; Lewin, 1996; Pearman & Chang, 2010). Many e-storybooks have automatic reading of the whole story and even allow readers to highlight a word, sentence, or phrase and have them pronounced. These features reduce learners' cognitive load of decoding and allow them to focus on meaning making for comprehension (Pearman, 2008). However, if this feature is employed by readers to confirm their predictions of pronunciation and serve as a model for fluent reading, readers could become dependent on this feature to decode instead of improving their decoding skills (Lefever-Davis & Pearman, 2005). Some interactive e-storybooks provide a definition of the word to enhance vocabulary development. It is notable that if young learners depend too much on the word definition function, their development of decoding skills and use of context cues may be impeded (Pearman & Chang, 2010).

In consideration of all the possible limitations of the interactive e-storybooks features, adult supervision of children's use of e-storybooks and their interaction with children during e-storybook reading appear to be necessary (de Jong & Bus, 2002; Lefever-Davis & Pearman 2005; Pearman & Chang, 2010).

2.3   Shared Book Reading

Book reading is considered as an interactive socially created activity (Sulzby & Teale, 1991) and has existed for a long time as a family routine (Bus, 2001). Children read books due to their natural interest in stories and information (Crain-Thoreson & Dale, 1992). However, they need adult help and support.to comprehend and enjoy the stories, which contain words and information that depart from their world and their familiar verbal language (Bus, 2001). In addition, "in most cases the words of the author are surrounded by the social interaction between adult reader and child" (Bus, 2001, p179), and children's interest in books is dependent on this interaction (Bus, 2001). It has been proved that children are as much as or more interested than parents in continuing the parent-child interaction in book reading (Bus, 2001).

The studies that compare adult-led traditional storybook reading to children's independent reading of e-storybooks advocate incorporation of e-storybooks for shared reading. Research shows that compared to children who independently read e-storybooks on computers, children who listened to an adult read a traditional storybook comprehended and phrased the story content better (de Jong & Bus, 2002) and produced more communicative initiations (Moody et al., 2010). Considering the strength of shared reading and the benefits of e-storybooks to children's literacy development, shared reading of e-storybooks can be part of regular classroom instruction, though e-storybooks work well as an independent reading tool at home and in literacy centers (Pearman & Chang, 2010).

Shared reading is the practice of an adult reading a book to a child or a group of children. The existing studies that have examined the effects of shared reading on specific groups of children (e.g., children from different socioeconomic backgrounds, different ethnicities, and different living circumstances) suggest that shared reading would help all or most subgroups (NELP, 2008). What Works Clearinghouse [WWC] (2006) defines shared book reading as:

> [A] general practice aimed at enhancing young children's language and literacy skills and their appreciation of books. Typically, Shared Book Reading involves an adult reading a book to one child or a small group of children without requiring extensive interaction from them. (p.1)

Shared book reading encompasses a range of methods that vary in complexity, focus, and the degree of interactivity (Lonigan, Anthony, Bloomfield, Dyer, & Samwel, 1999; Pollard-Durodola, Gonzalez, Simmons, Kwok, Taylor, Davis, Kim, & Simmons, 2011; WWC, 2006; National Early Literacy Panel [NELP], 2008). Shared book reading methods can be categorized into non-interactive and interactive book-reading methods (NELP, 2008). Typical shared-reading is non-interactive, during which an adult reads the text of a book and the child listens (Lonigan et al., 1999). Non-interactive shared book reading is just like read-aloud, in which a teacher reads orally to students the texts that are "above their independent reading level but at their listening level" (Beltchenko, 2011).

Interactive book-reading methods may vary, but the common purpose they share is to apply strategies that involve children in the telling of the story and discussion of its components such as characters, events and vocabulary (Pollard-Durodola et al., 2011). Interactive book-reading methods are consistent with evidence-based storybook reading strategies such as questioning, scaffolds, and prompts (Higgins & Cocks, 1999; Higgins & Hess, 1999; Moody et al., 2010; Zucker, Moody, & McKenna, 2009).

One common form of interactive book-reading is dialogic reading (NELP, 2008). Dialogic reading is a strategy that involves dialogues between an adult and a child during book reading and prepares a child to be a storyteller (Whitehurst, Falco, Lonigan, Fischel, DeBaryshe, Valdez-Menchaca, & Caulfield, 1988). During dialogic reading, an adult encourages a child's oral responses and promotes his/her acquisition of narrative knowledge by using elaborative "wh-" and open-ended questions, repeating the child's good answers, modifying utterances, and expanding incomplete responses. Dialogic reading progresses through a book slower than non-interactive shared-reading (Lonigan et al., 1999).

In dialogic reading, the three main techniques to improve children's oral narrative ability are asking "Wh-" context-eliciting and open-ended questions (Boyce et al., 2010; Lever & Sénéchal, 2011; Stadler & Ward, 2005), modifying children's utterances (Lever & Sénéchal, 2011), and expanding children's answers (Boyce et al., 2010; Dockrell et al., 2010; Lever & Senechal, 2011). Research shows that frequent use of "wh-" context-eliciting questions in narrative conversations leads to children's frequent provision of

contextual information about when and where in their own narratives (Lever & Sénéchal 2011; Peterson & McCabe, 1994; Peterson, Jesso & McCabe, 1999), which is an indication of decontextualized language. Frequent recasting of children's ambiguous references can improve their contextual knowledge (Lever & Sénéchal, 2011). When children use an ambiguous reference that provides no contextual information, the teacher should help articulate the reference with a character name or a label (Lever & Sénéchal, 2011). For instance, when a child says, "She is swimming in the river," the teacher would reword it as "Alice is swimming in the river." By expanding what children have said to what could have been said provides important linguistic features for children to imitate. For instance, the intervener can add connectives to children's incohesive sentences to highlight the importance of connectives in a narrative (Lever & Sénéchal, 2011). The techniques of dialogic reading can well satisfy children's language developmental needs.

Previous studies have suggested that shared reading of e-storybooks, especially with dialogic reading method, could be more beneficial to children's literacy development than their independent reading of e-storybooks (de Jong & Bus, 2002; Fisch et al., 2002; Moody et al., 2010). Fisch et al. (2002) found that when a parent and a child read e-storybooks together, just as they would normally read traditional storybooks at home, their interactions were similar to the behaviors revealed in the literature about reading traditional storybooks, and their utterances involved similar levels of abstraction. This result implies that given adult support and interaction with a child during storybook reading, reading an e-storybook could generate similar interactions and language production as reading a traditional storybook.

In de Jong and Bus' (2002) study, the number of reading a storybook among groups varied as a result of different book formats. In the regular book-reading condition, an adult read a traditional storybook to a group of kindergarteners for six times, rarely initiating discussion about the story and only commenting once on the story during each session. In the computer condition, another group of kindergarteners read an electronic version of the storybook on their own and were tempted to click on games, illustrations and icons, which distracted them from reading the entire story as frequently as the children in the adult led book-reading group.

Moody et al.'s (2010) study compares children's reading engagement and communicative initiations under three storybook reading conditions: adult led e-storybook, child led e-storybook, and adult led traditional storybook. In adult led e-storybook condition, children read the e-storybook in its interactive mode with the direction of an adult. In child led e-storybook condition, children read the e-storybook in its interactive mode themselves and the reader used scripted dialogic reading techniques (about 10 prompts per session). In the adult led traditional storybook condition, the adult followed scripted guidelines to provide dialogic prompts. It was found that children in the adult led traditional storybook condition produced more communicative initiations. This finding revealed the positive effects of dialogic reading on children's language production.

The studies above suggest that shared reading of e-storybooks may help overcome the potential problem that e-storybooks distance children from the traditional reading practices. E-storybooks have read-aloud function, but that alone is not sufficient to bring

students enjoyment of reading that can be brought by interactive reading with adult readers. However, when an adult conducts interactive shared reading of e-storybooks with a child or a group of children, the potential concerns about technology getting in the way can be minimized.

Dialogic reading also reflects the concept of scaffolding. Vygotsky (1962) identifies the zone of proximal development as the gap between a child's actual developmental level and the potential developmental level achievable with adult guidance or collaboration with more advanced peers. Based on Vygotsky's theory, Wood, Bruner and Ross (1976) develop the concept of scaffolding and define it as support from teachers, peers, or other resources which enables students to complete tasks that they cannot perform by themselves. In the earliest study on scaffolding, the scaffolding tutor's responsibilities include recruitment, reduction in degrees of freedom, direction maintenance, marking critical features, frustration control, and demonstration (Wood et al., 1976). According to Schnotz and Heiß (2009), scaffolds do not directly improve learning, but rather "they trigger learning-relevant cognitive activities, which finally result in higher learning under specific conditions" (p.372). Therefore, scaffolds should lead learners to find the correct answers rather than simply revealing them (Fisch, 2005; Quintana, Krajcik, & Soloway, 2002). Brush and Saye (2002) conceptualize soft scaffolds and hard scaffolds, among which soft scaffolds are characterized by an analysis of learners at the time of instruction that helps instructors decide how to provide personalized support. Some of the dialogic reading techniques are consistent with the scaffolds strategies, and teachers can adjust their prompts according to students' responses, which is a reflection of soft scaffolds.

It is worth noting that the CCSS advocate the use of various media to present information to kindergarteners and highlight teachers' prompting and support to assist kindergarteners to develop the capabilities to read stories, ask and answer questions about key details in a story, and retell it with key details. These expectations and requirements are also reflected in the state standards with regards to English/language arts education for kindergarteners. Considering the positive effects on language development and reading engagement by using e-storybooks and dialogic reading techniques, it is plausible that the combination of the tool and the teaching approach might elicit even more powerful results. All these support incorporation of e-storybooks for shared reading. That is, an adult can lead a child or a group of children to read an e-storybook with interactive shared reading methods such as dialogic reading.

2.4 Major Factors Affecting Teacher's Use of E-storybooks

Technology integration is defined as "the process of determining which electronic tools and which methods for implementing them are the most appropriate responses to given classroom situations and problems" (Roblyer & Doering, 2010, p. 8). Based on a literature review of the studies from 1995 to 2006, Hew and Brush (2007) come up with six main barriers to technology integration into the curriculum for instructional purposes faced by teachers in K-12 schools in the United States and other countries. They are resources, institution, subject culture, attitudes and beliefs, knowledge and skills, and assessment. For integrating technology into literacy instruction specially, the teacher-perceived major obstacles include lack of time to integrate ICTs during a class period, lack of access to technology and technical support, lack of professional development on technology integration, inadequate time to prepare for lessons involving ICTs, the time

devoted to high-stakes assessment and lack of incentives to integrate ICTs (Hutchison & Reinking, 2011). In this chapter, the factors that possibly affect teacher use of e-storybooks are discussed. They are teacher attitudes and beliefs, subject culture, and knowledge and skills.

2.4.1 Teacher Beliefs

Teacher beliefs may include "educational beliefs about teaching and learning" and beliefs about "how technology enables them to translate those beliefs into classroom practice" (Ertmer, 2005, p.28). Teacher beliefs and practices in technology integration are constantly shaped by the expectations, values and opinions of institution, authorities, peers, parents, and students – which are conveyed to teachers through formal and informal norms, rules and procedures (Becker & Riel, 1999; Ertmer, Gopalakrishnan, & Ross, 2001; Scott, Chovanec, & Young, 1994). Teacher beliefs about how language is best taught should be the first guideline for selecting and using technologies (Miller & Burnett, 1986), and teacher beliefs about the importance of integrating ICTs into instruction are key to increasing levels of technology integration. Teachers with strong belief in the importance of integrating ICTs into instruction tend to have confidence in using technology, minimizing the effects of obstacles, and find ways to obtain the necessary technologies.

Teacher use of interactive e-storybook is influenced by their views of the potential of interactive e-storybooks in promoting kindergarteners' literacy development, how well this approach aligns with standards and their current practices, and students' interest in this approach. In the technological society where technology is playing an increasingly

significant role in education, the educational standards and school curriculum allow the use of technology for instruction. The CCSS encourage the use of multimedia to present information to students as early as kindergarten by expecting them to confirm understanding of "a text read aloud or information presented orally or through other media" (p. 23). Within the kindergarten's reading curriculum, teachers have freedom to choose the format and content of storybooks. These are all positive contextual factors that promote teacher change. Despite that, printed materials are still the predominant reading materials in kindergarten, and teachers may face challenges of integrating interactive e-storybooks into instruction such as resource availability.

To gradually change teacher pedagogical beliefs, interactive e-storybooks can be introduced to teachers with the literature about their power of supporting beginning readers (Ertmer, 2005) and as a supplement for traditional storybooks rather than a replacement (de Jong & Bus, 2002). This is a more effective approach to changing teacher pedagogical beliefs about technology use and consequently changing their practices (Ertmer, 2005). For instance, if teachers originally read traditional storybooks to students five times a week, after e-storybooks are introduced to curriculum, they can choose to use traditional storybooks four times a week and then use an interactive e-storybook once a week. From a range of interactive e-storybooks available for download on iPad, researchers could work with teachers to select those stories that conform to their curriculum and are developmentally appropriate (Shamir & Korat, 2006). Having teachers see the success in their own technology use will help change their beliefs

(Ertmer, 2005). After teachers get more comfortable using this technology, they may make more of an effort to use this tool to transform their classrooms (Labbo, 2006).

2.4.2   Subject Culture

Subject culture refers to "the general set of institutionalized practices and expectations which have grown up around a particular school subject, and shapes the definition of that subject as a distinct area of study" (Goodson & Mangan, 1995, p.614). With long-standing histories, subject cultures are shaped by the subject content, subject pedagogy and subject assessment (Selwyn, 1999) and are enhanced by long-term school practices (Goodson & Mangan, 1995).

With the presence of long-established print-based literacies, new literacies that involve meaning making with multiple modalities (e.g., graphics, animations, video, audio narration, music, special effects, hyperlinks, search engines) have made their way to literacy education (Labbo, 2006; New London Group, 1996). Incorporation of e-storybooks into kindergarten shared reading programs meets the expectations of the national and state standards on students' literacy development and technological competences. However, policy-makers and high stakes testing still focus on "students' achievement of discrete literacy skills and strategies related to old or traditional literacy" (Labbo, 2006, p. 206). This may draw teachers to still adopt the traditional teaching materials, pedagogy and assessment methods.

Although researchers have provided the rationale for adopting e-storybooks as children's reading resource, using them as a valuable supplement to traditional storybooks may be

consistent with the present culture of literacy education (de Jong & Bus, 2002; McKenna, 1998). For instance, McKenna (1998) view e-storybooks as simulation of traditional books and hold that transferability to real settings is the main benefit of any simulation. In addition, limiting children's range of interactions with e-storybooks may help maximize their engagement and e-storybooks' instructional impact.

2.4.3   Teacher Knowledge and Skills

Different professional life phases may affect teachers' ways of using technologies (Hughes, 2005). According to Day and Gu's (2010) definition of teachers' professional life phases, 0-7 years of teaching experience is seen as early professional life (beginning teacher), 8-23 years of experience is defined as the middle professional life (mid-career teacher), and 24 years and above of teaching experience is viewed as late professional life (veteran teacher).

Like teaching experience, a teacher's technology knowledge and skills also have an impact on his/her strategies for technology integration (Mishra & Koehler, 2006; Hew & Brush, 2007). The survey conducted by Hutchison and Reinking (2011) reveals that the activities that literacy teachers are conducting to integrate ICTs into instruction are not typically associated with what is called for in the national standards set for the 21st-century literacy. According to Hew and Brush (2007), a major barrier to technology integration is teachers' lack of knowledge and skills concerning specific technology, technology-supported-pedagogy, and technology-related-classroom management. The framework proposed by Mishra and Koehler (2006) shows the complexities in teacher knowledge required for technology integration, which include content, pedagogy,

technology and their intersections (i.e., pedagogical content knowledge, technological pedagogical knowledge, technological content knowledge, and technological pedagogical content knowledge).

Teachers' inadequate knowledge and skills may make them just use technologies to transmit knowledge but remain unaware of how to use technologies effectively. The literacy teachers generally define integration as technological integration rather than curricular integration (Hutchison & Reinking, 2011). Hughes (2005) delineated three stages of technology role in technology-supported pedagogy: replacement, amplification or transformation. When technology functions as replacement, it serves another approach for the same destination without changing established teaching practices or student learning process. For instance, a teacher types words in a word document and projects it on the classroom's wall. This replicates writing the words on a poster or a board, without changing the goal for students to read it. Technology functioning as amplification does not change teaching practices either, but only enables students to complete the same tasks more efficiently and effectively. For example, if a teacher types editing to a student's writing typed in the word processor, the student is able to revise the writing within the word processor file instead of rewriting it to accommodate the changes. Technology playing the role of transformation changes teacher roles, instructional practices, and students' learning processes, which reflects teachers' deeper professional learning and leadership in using technology, and more beneficial effects of technology integration to learning. For instance, an online discussion forum may change a traditional teacher-centered lecture to an engaging student-centered exchange of ideas with teacher

facilitation and guidance. Literacy teachers generally use technologies within their teaching at low level, and the professional development that literacy teacher receive on technology use and integration is not enough or appropriately focused (Hutchison & Reinking, 2011).

In the case of utilizing interactive e-storybooks for shared reading, teachers' knowledge and skills will be needed in such areas as selecting appropriate e-storybooks for students, utilizing the e-storybook features effectively to both engage students and help them develop literacy skills, and designing instructional activities around using e-storybooks.

2.5   Theoretical Perspectives on Pedagogical Effectiveness of Technologies

How teachers try to make effective use of e-storybooks can be examined through two theoretical perspectives: one concerns how to achieve pedagogical effectiveness of technologies and the other concerns the dynamic interactions involved in technology-supported classroom.

The first theory concerns the four major considerations on how to achieve pedagogical effectiveness of technologies (Salaberry, 2001). Salaberry (2001) argues that identifying pedagogical objectives, analyzing attributes of technological tools, designing instructional activities around using technologies, and evaluating the benefits and cost of using such resources are important considerations toward making effective use of technologies. First, teachers need to specify instructional purposes in order to select the proper technology, and new technologies should be used "only to the extent that they serve a pedagogical purpose" (Salaberry, 2001, p.51). Second, teachers should carefully

explore the specific attributes of new technologies that can be employed to achieve

pedagogical purposes. Third, instructional activities should be designed to help learners

acquire knowledge delivered by technology rather than depending on the technology

itself. Just as Salaberry (2001) notes: "The success of a technology-driven activity will

likely depend as much, or more, on the successful accomplishment of pre- and

postactivities than on the technology activity itself" (p. 51). Finally, teachers should

evaluate whether it is worthy to select one tool over the other in terms of effectiveness,

availability, and other implementation factors. These considerations lead to sound

pedagogical rationale for employing technologies for instruction and also provide

guidelines for achieving the pedagogical effectiveness of technologies.

The other theoretical framework originates from Kim et al.'s (2007) pedagogical

framework for technology integration, which sought to examine the alignment among the

contexts for technology integration in science education. There are frameworks in

relation to technology integration in general (Hughes, 2005; Mishra & Koehler, 2006), in

language teaching (Bax, 2003; Plass & Jones, 2005; Tudor, 2002) and in science

education specifically (Kim et al., 2007). Bax (2003) illustrates phases of realizing

'normalization' of computer-assisted language learning in which "technology becomes

invisible, embedded in everyday practice" (p.23). Yang and Walker (2015) analyze some

other frameworks as follows:

> Plass and Jones' (2005) model of multimedia-supported cognitive
>
> processing in second-language acquisition focuses on how multimedia can
>
> be used to support learners' cognitive processing processes in acquiring a

second language. Their model provides insights on how teachers can use multimedia to support language learners but does not concern the factors affecting teacher's technology use. Tudor (2003) proposes an ecological perspective of language teaching, emphasizing that teaching and learning processes involve teachers, students, and all others who influence the practices in each classroom, as well as the dynamic interaction between participants, methodology, and context. This perspective highlighted "the various human and contextual factors which influence the use and likely effectiveness of this technology' (Tudor, 2003, p.5). While Tudor's (2003) ecological perspective is helpful to our understanding of the complexity of using technologies for language learning, it does address the role of technology (pp183-184).

Kim et al.'s (2007) pedagogical framework for technology integration was created to examine the alignment among the contexts for technology use in science education. The three contexts of integration are systemic standards and curriculum reform, teacher community and professional development, and technology-supported class. An analysis of the frameworks mentioned above reveals that Tudor's (2003) ecological perspective of language teaching is somewhat similar to and reflected by Kim et al.'s (2007) pedagogical framework for technology integration. Additionally, Kim et al.'s (2007) framework can serve as a generic structure for analyzing the interactions involved in technology integration in a subject area. Both indicate that Kim et al.'s (2007) framework

is more appropriate than the other frameworks for analyzing the interactions in a
technology-supported reading classroom.

Kim et al.'s (2007) framework, which centers on the complexities of using technology for
science education, examines the alignment among the contexts for technology integration
and illustrates the promises and challenges to technology integration in science education.
The overarching context (macrocontext) is systemic standards and curriculum reform,
and the embedded context is teacher community and professional development. The
innermost context (microcontext) is a technology-supported class, which involves
student-tool interaction, teacher-tool interaction, and teacher-student interaction. Kim et
al. (2007) point out that "the interactions among the standards, teachers' community, and
classroom contexts are key to exploring the role of technologies" (p. 1010). However,
due to the differences between the contexts for science education and reading instruction,
Kim et al.'s framework needs to be modified for the reading context in order to be used
for analyzing the interactions in a technology-supported reading classroom.

The author previously adapted Kim et al.'s framework to the ESL context (see Yang &
Walker, 2015). The graphic design of the framework in Yang and Walker's (2005) article
is adopted in this new framework for the reading context. Based on the reading context,
the author revised the descriptors for the macrocontext and the microcontext. Since peers'
language use through discussion and play is important to their ability to create and talk
about text (Dyson, 1992; Gavelek & Raphael, 1996; Graves & Hansen, 1983),
interactions among students remain in the new framework and are indicated by the

curved arrows. The modified framework is shown in Figure 2.1. In this study, the author

focused on using the four types of interactions (i.e., teacher-tool interaction, student-tool

interaction, teacher-student interaction, and student-student interaction) in the

microcontext to guide her observations and analysis of the use of e-storybooks for

kindergarten shared reading programs.
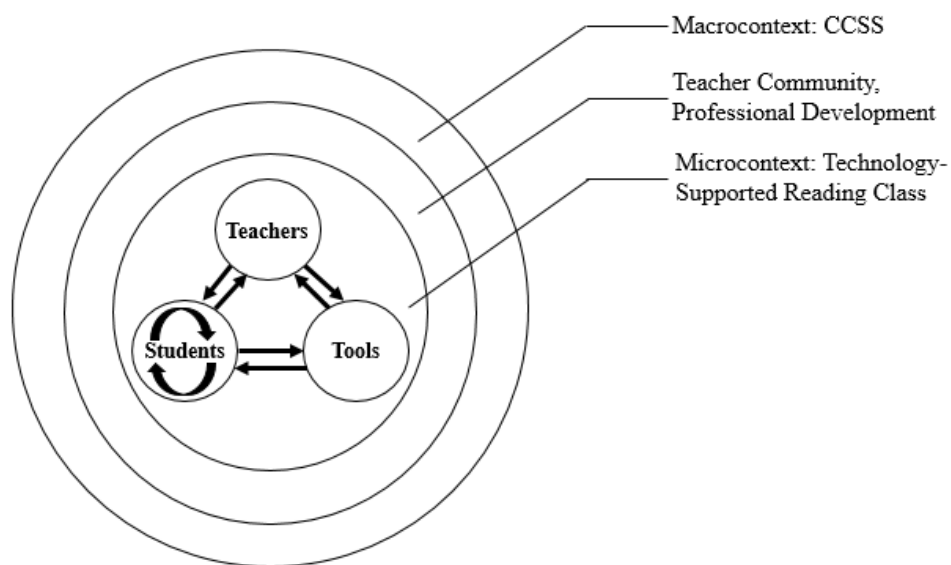
Figure 2.1 Framework for Technology Integration in Kindergarten Shared Reading
Programs, Adapted from Kim, Hannafin, and Bryan (2007)

CHAPTER 3. RESEARCH METHODS

This study, which focused on the similarities in the kindergarten teachers' usage of e-storybooks for shared reading and their attitudes, utilized a multiple case study design. A multiple case study investigates several cases to gain insights into a central phenomenon (Creswell, 2007; Stake, 2006; Yin, 2014). A multiple case study design was selected according to Yin (2014)'s statement:

> If you can do even a 'two-case' case study, your chances of doing a good case study will be better than using a single-case design. Single-case designs are vulnerable if only because you will have put 'all your eggs in one basket.' More important, the analytic benefits from having two (or more) cases may be substantial. (p.64)

This research focused on the experiences of two kindergarten teachers, Mrs. Willow and Mrs. Jones (pseudonyms), who used six e-storybooks on an iPad for their shared reading programs during the spring of 2014. A study of these two cases allowed the researcher to see the commonality and differences between the two teachers' usage of e-storybooks and their attitudes towards adopting this tool as a resource for their reading blocks.

3.1   Case Selection

In order to generate results that represent average cases, typical-case sampling strategy (Creswell, 2007) was selected in terms of contexts and participants. Potential participating kindergarten teachers were selected from those who were teaching in a Midwestern town in the United States. To be specific, they included several teachers previously known by the researcher, a few ones who were introduced to the researcher by others for the study purpose, and those the researcher chosen from the elementary schools' websites according to the teachers' personal profiles. They were all contacted through email, which briefly described the study and asked if they would have an interest in participating. Those who expressed an initial interest in the study were emailed a brief information sheet about what a teacher would do in this study, among which a teacher was expected to use six e-storybooks over six weeks in the study, with one e-storybook per week.

The rationale for selecting six e-storybooks was that teachers would gradually find their ways of utilizing e-storybook and their usage of this tool would become stable by the sixth time they use it. According to the researcher's investigation, in kindergarten's reading block, a teacher usually reads four to five paperback storybooks per week that center around a theme, with one storybook per weekday. Since printed materials are the predominant reading materials in kindergarten, using one e-storybook once every week and paperback storybooks for the rest of the week in the reading block would be acceptable for both teachers and students.

Two teachers showed consistent interest in participating in this study. After their

principles gave permission to the potential study in their schools and the university IRB

approved the study protocols, the two teachers were visited and asked to fill out a brief

survey (see the survey in Appendix A) about their teaching experiences with

technologies. The literature reveals that teachers' professional knowledge and educational

technology learning experiences are the variables which might affect teachers'

technology use (Hughes, 2005). The two kindergarten teachers turned out to be at

different professional phases and have varied technology learning experiences.

Additionally, they both satisfied other conditions for participating in this study-currently

using technologies in their reading blocks and having interest in integrating storytelling

technologies in their reading blocks. Technology-using teachers were targeted because

those who had already utilized instructional technologies in their reading blocks would be

comfortable with using e-storybooks. Moreover, technology-using teachers' use of e-

storybooks for the purpose of this study in their reading block would still belong to their

regular curriculum instead of a change to their curriculum, which would make the study

possible to be conducted. Currently, kindergarten teachers generally have access to

storytelling technologies (e.g., YouTube videos, movies, free online/web-based stories,

CD-ROMs that go with paperback storybooks) in their classrooms and use at least one of

those technologies for regular curriculum instruction. However, they never used the

interactive e-storybooks on an iPad for instruction. The two teachers were selected and

they agreed to participate in the study.

Since the teachers' use of e-storybooks would be contextualized in their classrooms with their students present, their students who had no hearing difficulties or special language impairments were recruited. Those whose parents gave consent and who themselves agreed to participate were included in the study. Seventeen out of twenty students in Mrs. Willow's class and eleven out of fourteen students in Mrs. Jones' class participated in this study. The participating children included both males and females, with the vast majority of them being native English speakers and a few being English language learners. Since the two teachers' use of e-storybooks was part of their regular curriculum instead of a change to their curriculum, the children who did not participate in the study still received the same e-storybook based instruction in the reading block. The difference between the children who participated in the study and those who did not was that whether they were observed by the researcher or not. To distinguish them, a piece of paper containing a number for the participating child was attached on the back of his or her chair prior to the observational session.

In order to maintain the confidentiality of the two teachers, the pseudonyms Mrs. Willow and Mrs. Jones were used to name them in this study. They were teaching in a Midwestern town in the United States, and they were both females. Mrs. Willow was teaching in a public school while Mrs. Jones was teaching in a private religious school. Both of them used most or all of the storytelling technologies-YouTube videos, movies, free online/web-based stories, CD-ROMs that go with paperback storybooks and Tumble

books[1], and they used such technologies more than once a week in their reading blocks. Both of them had a Smart Board in front of their classroom to project teaching materials (e.g., videos, pictures, and CD-ROMs), write and draw. Since the researcher can bring a small projector to the teacher's classroom, having a Smart Board was not a requirement for teachers to participate in the study, and they can choose whatever equipment they think appropriate. Although the two teachers had never utilized interactive e-storybooks on iPad for instruction, they were very interested in integrating them into their reading blocks.

Mrs. Willow and Mrs. Jones had varied years of teaching experience and technology learning experiences. Mrs. Willow had been a full-time kindergarten teacher for three years and had informal technology learning experiences (e.g., self, peer, books), while Mrs. Jones had been a full-time kindergarten teacher for fourteen years and had both formal (e.g., in-service, high education) and informal technology learning experiences. According to Day and Gu's (2010) definition of teachers' professional life phases, Mrs. Willow was a beginning teacher and Mrs. Jones was a mid-career teacher. Table 3.1 summarizes the two cases' features.

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[1] Tumble Book is a type of electronic picture book with animation, sound, music and narration. More information about Tumble Book can be found at http://www.tumblebooks.com/

Table 3.1 Features of the Two Cases

	Mrs. Willow	Mrs. Jones
Teaching Experience(Years)		
Beginning teachers (0-7)	X	
Mid-career teachers (8-23)		X
Veteran teachers (≥ 24)		
Types of Technology Learning Experiences		
Informal (e.g., self, peer, books)	X	
Formal (e.g., inservice, higher education)		
Both informal and formal		X
Types of School where Teacher Taught		
Public school	X	
Private school		X

3.2   Data Collection

Yin (2014) advocates the use of replication logic in multiple case study design to produce either similar results or anticipatable contrasting results across cases. Replication logic means that the same procedures are applied for each case, which helps generate robust findings about similarities or differences (Yin, 2014). Thus, the same procedures were applied in both cases.

The two classrooms used the same e-storybooks for the study. Since one school was a public school while the other was a private one, the two classrooms had different reading

themes for the reading block. However, the teachers did not mind using the e-storybooks that would not exactly match their reading themes. Based on their reading themes within the time frame of the study, the researcher selected three e-storybooks that matched Mrs. Willow's reading themes and the other three that matched Mrs. Jones'. The selection of the six e-storybooks was reviewed and approved by both teachers.

The six e-storybooks used consecutively in the study were *The Train*, *Ethan's Superpower*, *Animal Planet Hide and Seek Pets*, *Around the World in 80 Days*, *A Place to Grow*, and *Three Little Pigs*. All of them have audio narration, text, graphic animations, and hotspots that can be activated to generate additional animations, sounds, and games. None of them provides the features of word pronunciations or word definitions, and none of them place hotspots in a separate mode. Although all the e-storybooks have text, only *Animal Planet Hide and Seek Pets* has its text highlighted as being read. The other e-storybooks either have no text highlighting or have a whole sentence highlighted once it starts reading. Two e-storybooks, *A Place to Grow* and *Three Little Pigs,* provide record function. The record function in *A Place to Grow* allows readers to record their own reading of the story, and the record function in *Three Little Pigs* appears in several pages of the story for readers to record their utterances created for the story characters. Table 3.2 presents the major features of those e-storybooks.

Table 3.2 Major Features of the Six E-Storybooks

	Audio Narration	Text	Graphic Animations	Hotspots	Other Useful Features
The Train	V	V	V	V	

Ethan's Superpower	V	V	V	V	
Animal Planet Hide & Seek Pets	V	V (Word Highlighting)	V	V	
Around the World in 80 Days	V	V	V	V	
A Place to Grow	V	V	V	V	Record
Three Little Pigs	V	V	V	V	Record

Each teacher received a twenty to thirty-minute training given by the researcher in her classroom on how to use an interactive e-storybook on iPad. Using two e-storybooks that had slightly different affordances, the researcher showed each teacher what an interactive e-storybook was, what affordances an interactive e-storybook might contain, how to operate those affordances, and which type of hotspots could help reveal the story plot instead of just being fun. While both teachers were encouraged to design their own ways of utilizing e-storybooks, they were reminded of two general guidelines of using e-storybooks for instruction. First during e-storybook shared reading, they should communicate with their students employing the strategies they usually use when reading a traditional storybook, such as questioning, giving prompts, and providing scaffolds. Second due to the possible distracting effects of activating certain types of hotspots during storybook reading, the teachers were encouraged to only use the hotspots that they thought could facilitate students' understanding of the story. Following the two general guidelines above, each teacher was expected to design her own way of utilizing each e-storybook. After the training, each teacher was asked to explore the six e-storybooks for

this study in their spare time during the next two weeks and ask the researcher any questions they would have.

Each teacher utilized the six e-storybooks over six weeks, with one e-storybook per week. In Mrs. Willow's classroom, the connection line of the Smart Board was fixed to the wall and the plug was too far away from the Smart Board. If an iPad were connected to the connection line of the Smart Board, the teacher would have to sit far away from the Smart Board, which would not be a good position for shared reading. Thus, a small projector was provided by the researcher to project the e-storybooks to the Smart Board and Mrs. Willow could sit anywhere near the Smart Board. In Mrs. Jones' classroom, since the connection line of the Smart Board was mobile, it was connected to the iPad and the projector of the Smart Board was used to project the e-storybooks onto the Smart Board. In each classroom, the e-storybooks were projected onto the Smart Board, and the teacher sat near the Smart Board, holding the iPad and operating the e-storybooks. For this study, three sources of data were collected from each teacher: documents, semi-structured interviews and non-participant observations.

3.2.1   Documents

The documents included a survey filled out by each teacher, the teachers' lesson plans on utilizing the e-storybooks, and any materials (e.g., worksheet for exercise and hands-on activities, small books) that the teachers distributed to their students in class. In the recruitment process, each teacher filled out a brief "Teacher Background Survey", which asked about the teacher's gender, years of teaching, types of technology learning experiences, storytelling technologies used in the reading blocks, the frequency and ways

of using them, and his/her interest in integrating storytelling technologies into the reading block. The survey provided basic information about how the two teachers used storytelling technologies before this study. Every week each teacher either sent the researcher her lesson plan and the materials for the students electronically one or two days before the observation session, or gave a paper copy of them to the researcher right before class.

3.2.2 Interviews

Each teacher received three semi-structured interviews about their usage of the e-storybooks-one before using all the e-storybooks, one after using the first three e-storybooks and the third one after using all the six e-storybooks. All the three interviews with Mrs. Willow were conducted in her classroom, and the three interviews with Mrs. Jones were conducted respectively in her classroom, the dining hall of her school, and a reading room of her school when there were no other people there. For both teachers, the first interview lasted no more than thirty minutes, while the second and the third interviews lasted approximately thirty to forty-five minutes. All the interviews were audio-recorded. At the beginning of each interview, both teachers were informed the purpose of the interview and its approximate length. They were also informed that they would not need to share anything they did not want, they could take a break at any time they wanted, and they could withdraw from the study at any time point.

Three interview protocols (see Appendices C, D, E) were developed. The first interview asked the teachers to envision how they would use the e-storybooks, what problems they thought they would encounter, and their attitudes towards using e-storybook as a resource

for the reading block. The second interview inquired about what pedagogical strategies they had applied when using the first three e-storybooks, the problems they had encountered and how they tried to overcome them, and their attitudes towards using this tool. The third interview explored those after the teachers had used all the six e-storybooks. After each interview, a brief interview memo was recorded.

3.2.3 Non-participant Observations

The purpose of the observations was to obtain detailed information about how each teacher utilized the e-storybooks in the classroom. Being a non-participant observer, the researcher sat in one corner of each classroom, observing each teacher utilizing an e-storybook with her students and taking notes in the observation protocol (see the observation protocol in Appendix B). Since the focus of this study was on the teachers' use of e-storybooks, the record of their participating students' behaviors was general instead of being specific to each participating student. Each observation began from the introduction to the story until the last related activity within the 90-minute reading block. Most of the observations in the two classrooms lasted about one hour, and only two observations in Mrs. Jones' classroom lasted about one and a half hours. The field notes for each observation was rewritten into a detailed observation report.

3.3 Data Analysis

An electronic folder for each teacher's information was created on the researcher's laptop. Each teacher's electronic folder contained the interview audio recordings, the interview transcripts, the interview memos, the observation reports, some of the teacher's lesson plans and teaching materials (when they were sent electronically). Each folder was encrypted and only accessible by the researcher. In addition, a binder was used to hold

together the paper materials, including all the observation field notes, printed observation reports and interview transcripts, some of the teachers' lesson plans and teaching materials (when the paper version of those was given), the survey forms filled out by the teachers, a list of participating students in each classroom, signed teacher consent forms, and signed parent consent forms. The binder, which was locked in one drawer of the researcher's desk, was only accessible by the researcher.

The interview audio recordings were transcribed by a native English-speaking graduate student from the College of Education at Purdue University. After that, the researcher checked the transcripts back against the original audio recordings and revised the inaccurate transcription, which is an essential step in transcription (Braun & Clarke, 2006). The edited interview transcripts were then emailed to the teachers for member checking. Each teacher checked her own interview transcripts and replied that they were fine.

For a multiple case study, the data were analyzed case by case through thematic analysis first and later by cross-case analysis (Stake, 2006; Yin, 2014). Thematic analysis was selected as the analytic method for analyzing the data for each case. According to Braun and Clarke (2006), thematic analysis is "a method for identifying, analyzing and reporting patterns (themes) within data" (p.79). This method was chosen because it interprets different aspects of the research topic more than describing the data in detail (Braun & Clarke, 2006), which satisfies the research purpose. In addition, it is easy for early qualitative researchers to use (Braun & Clarke, 2006). The data were coded based

on the six phases of thematic analysis (Braun & Clarke, 2006), which are familiarizing yourself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report.

For each research question of each case, the interview transcripts, the observation reports, and the teacher' lesson plans were read one after another for emerging codes. The codes for the first research question emerged from the three sources of data, the codes for the second research question emerged from the interview transcripts and the observation reports, and the third research question had its codes generated from the interview transcripts. The data sources for each research question were coded independently. When coding one source of data, the researcher tried not to be affected by the codes from another source of data. After the initial codes for each research question were generated, they were modified (e.g., compared and renamed, merged, or put aside for later consideration) while the themes were developed. At this stage, "the relationship between codes, between themes, and between different levels of themes" (Braun & Clarke, 2006, p89) were considered. The themes were then reviewed, refined and further refined based on Braun and Clarke (2006)'s steps. The tables below display the codes, the themes, and the data examples for each research question for each case.

Table 3.3 Coding for Research Question 1 for Mrs. Willow Case

Codes	Themes	Data Examples
(1) Objectives of the literacy block (2) Using e-storybooks for teaching objectives	Identify pedagogical objectives	[*interview*] A lot of our objectives in the literacy block have to do with writing a response or comprehension skills, so we'll do that a lot.

		[*lesson plan*] To be able to incorporate our electronic storybook into our 90-minute literacy block. A main goal of hitting at least 3 literacy skills during this activity.
(1) E-storybooks' content and language should be appropriate. (2) Visuals, audio, drop-down text, animations, and hotspots are helpful.	Analyze attributes of technological tools	[*interview*] And they are such a generation of kids that really, that see so much and so much is visual for them. So to have that extra piece in my classroom to get them involved in the reading is really a nice thing.
(1) Planning (2) Presenting an e-storybook (3) Doing fun activities that tie to the e-storybooks and the target skills	Design instructional activities around using technology	[*interview*] I sit down and made all the worksheets and thought about the writing, the prompt I was gonna give them for the writing to go with the story but also to the main skills we're working on right now and that was definitely the creative spelling and the segmenting and the phonemes.

[*observation*] The fourth activity was that the students searched for the words shown at the bottom of the "Train Terms Word Search" sheet. Students searched for the words and sang with the background song. |
| (1) Pros (2) No cons | Evaluate the benefits and cost of using e-storybooks | [*interview*] It's been…they are way more involved in that. It is easier to build more of the work off it because they are so engaged. |

Table 3.4 Coding for Research Question 1 for Mrs. Jones Case

Codes	Themes	Data Examples
(1) Objectives of the literacy block (2) Using e-storybooks for teaching objectives	Identify pedagogical objectives	[*interview*] I think that again, by making sure that I was very familiar with what the story was about and seeing if it fit best. Like last week's story fit best with character so we did character things.

[*lesson plan*] Identify the characters in Ethan's Super Power, discuss their super powers and how each super power would be useful to a Super Hero. |

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(1) Length and content of an e-storybook (2) Visuals, audio, drop-down text, "Read to me", and "Record" affordances (3) Hotspots	Analyze attributes of technological tools	[*interview*] Whether it matched the content area of what we were doing would be a consideration. I think that one of the stories that you had picked that had to do with animals and hamsters, so that was very informational, like an information book as opposed to fiction.
(1) Directions (2) Presenting an e-storybook (3) Design activities that tie to the e-storybooks and the target skills	Design instructional activities around using technology	[*interview*] A Place to Grow…on that one we focused on writing instructions, the kids had to write instructions on how to plant a seed. All three of those being things that are activities and standards that we have to cover in our reading series. [*observation*] Afterwards, they listened to the e-storybook Ethan's Superpower. Mrs. Jones explained the story plots while presenting the storybook, and she had students interact with the hotspots as the story progressed.
(1) Pros (2) No cons	Evaluate the benefits and cost of using e-storybooks	[*interview*] I know the pros and I've talked about this with Miss Mueller, that when the story's up there, I have everybody's attention. Almost every time you've come, not having to do a lot of redirection, they're pretty focused.
(1) Teacher-e-storybook interaction (2) Teacher-student interaction (3) Student-e-storybook interaction	Enhance three types of interactions	[*observation*] Mrs. Jones had a lot of communication with students while presenting the e-storybook. She explained every slide after its narration in order to help students better comprehend the story; raised questions frequently about the story content to make students think, to check or enhance their learning, or predict the story plot; related to real life examples; guided students to play the games; and summarized the whole story. [*observation*] While presenting the e-storybook, Mrs. Jones tried to have every student touch at least one hotspot. For instance, she asked one student to click the egg into pieces to reveal the newborn Ethan.

Table 3.5 Coding for Research Question 2 for Mrs. Willow Case

Codes	Themes	Data Examples
Problems		
(1) Teacher was kicked out of certain e-storybooks (2) A page that located at the end of the story appeared at the beginning	Design problem	[*interview*] Every once and a while it will kick me out. [*observation*] One problem she encountered was that when she intended to enter the story, she accidentally entered the museum embedded in the story, which followed the last story slide. I heard the other teacher participant mention this problem when we met.
The loud-speaker was out of power once	Equipment problem	[*interview*] The one was the sound thing but that wasn't anything to do with it…but it was fine, they could hear it off the iPad, so it was fine. [*observation*] One problem that occurred from the beginning was that the loud-speaker was out of power and thus they had to depend on the volume of the iPad itself, which was low for the class.
Solutions		
(1)Went through the stories several times in advance to know what to touch (2)Teacher talked about the error and students waited for teacher to restart the story and return to the page (3) Asked students questions while restarting the story (4) Be careful and not touch the same thing the next time (5) Teacher quitted the page and moved back to the beginning of the story	Solutions to design problem	[*interview*] I think I may have touched the X instead of something else that kicked me out, but I mean, that's okay…I just…I knew the next time to be really careful, slow down, not touch it. [*observation*] This could be a design problem of the e-storybook. She quitted the museum, but was at the last slide of the story. Then she moved forward to the 1st slide of the story.

Asked students to listen attentively and showed the drop-down text	Solutions to equipment problem	[*observation*] Mrs. Willow asked her students to listen to it very attentively, and meanwhile she showed the story text. Perhaps she expected that the text could help some high-level readers understand the story.

Table 3.6 Coding for Research Question 2 for Mrs. Jones Case

Codes	Themes	Data Examples
Problems		
(1) An embedded game didn't work and trying to quit the game led to shutdown of the story (2) An e-storybook stopped working in the middle during teacher's preparation	Design Problem	[*interview*] I think the only one was that one stopped working in the middle. I don't know why. I never figured out why, but I think that was the only problem there.
The connection between the iPad and the smart board was not stable when using the 1st e-storybook	Connection Problem	[*observation*] Since the connection between iPad and smart board was not stable, occasionally the picture on the smart board disappeared.
Solutions		
(1) Restarting the story, returning to the game, and trying the game again (2) Trying several different times first and then using a different iPad	Solutions to design problem	[*observation*] The teacher had to enter the story again and moved to the specific slide where the story got closed. She did not ask a student to try opening the door again. Rather, she touched it herself and this time the door opened, so the students were able to see what was inside a carriage. [*interview*] I tried it several different times. At first I wasn't sure if I was doing something to make it stop, and then I just put it on a different iPad, and that seemed to work fine.

(1) Adjusting the connection between the equipment and restarting the iPad (2) Adjusting the position of the iPad (3) Trying out the equipment beforehand (4) Preparing an alternative projector	Solutions to connection problem	[*interview*] I think you have alternatives that you bring. You have the projector that's already set for us. [*observation*] Mrs. Jones tried to fix it. She unplugged the VGA adaptor from iPad and plugged it to it again, and also tried to strengthen the connection between the VGA adaptor and the connection line of the smart board. She even restarted the iPad once. After all these efforts, the picture came back, but it turned up-side-down. Mrs. Jones adjusted the position of the iPad until the picture was in the right position.

Table 3.7 Coding for Research Question 3 for Mrs. Willow Case

Codes	Theme	Data Examples
(1) Being positive before using the e-storybooks (2) Enjoy using e-storybooks and plan to continue using them after the study	Like the idea of adopting e-storybooks as a resource for her reading block	[*interview*] My attitude is really positive now and we haven't even used them yet, but I know they're really going to enjoy it and I can see what it will bring to the classroom in that aspect of really engaging the children and getting more out of it than maybe a traditional setting would. I think it will be good. All positive. [*interview*] We'll probably even do some more this year but then especially next year. You know, setting up as I work this summer, I'm setting up plans for my curriculum, and my weekly plans for themes, I would like to get some more that would go along with different things.

Table 3.8 Coding for Research Question 3 for Mrs. Jones Case

Codes	Theme	Data Examples
(1) Being positive before using the e-storybooks (2) Being positive about using e-storybooks and plan to continue using them after the study	Like the idea of adopting e-storybooks as a resource for shared reading	[*interview*] I would say positive. I'm willing to try new things with technology, so I would say generally pretty positive. [*interview*] I would have a positive attitude toward it. I would be willing to look for stories and still do them on my own.

When it came to the cross-case analysis, one of the three tracks proposed by Stake (2006) was followed. Stake (2006) provided three tracks for doing cross-case analysis: Track 1 emphasizes the situationality and findings of the cases, Track II focuses on merged findings across cases and maintains slight situationality, and Track III is quantitative-oriented and involves factors for analysis. Since this study focused on the merged findings across the two cases, Track II was selected for doing the cross-case analysis. Based on Stake (2006)'s worksheets templates and steps for data analysis, several worksheets were created and completed one by one as the data analysis progressed. Worksheet 2 "The Themes (Research Questions) of the Multicase Study" was filled out first. Based on the thematic analysis for each case, Worksheet 3 "Analyst's Notes While Reading a Case Report" was completed, which served as a synopsis of a case and the case findings. After that, Worksheet 4 was developed to evaluate the utility of each case for each theme.

Before filling out Worksheet 5B, the researcher made findings strips for each case based on Worksheet 3, and began to sort and merge findings of the two cases. A name was

given to each merged finding, and both were written on a card. Following, each name was reviewed and improved to represent more of each merged finding, and the merged findings were sequenced by assigning a roman numeral to each card. Some findings, which occurred in only one case but were worth mentioning, were also written down on cards with names given. These findings were identified as the special findings. For each theme, the corresponding merged finding cards and the special findings cards were ranked in order of importance for understanding the theme, with a rating marked on each of the ranked card. All these work led to the completion of Worksheet 5B "A Matrix for Generating Theme-Based Assertions from Merged Findings (Track II)".

The next step was to make assertions for the research questions. After all the above work, tentative assertions about the merged findings were made. Finally, the researcher read the tentative assertions, thought more deeply about the themes and the cases, finalized the tentative assertions, and completed Worksheet 6 "Multi-case Assertions for the Final Report".

3.4   Validity of Data

Several strategies were employed to address the credibility of this study, including triangulation, thick description, multivocality, and member reflections (Tracy, 2010). The data were triangulated with three sources of data-interviews, observations, and documents. To obtain thick description, the specifics of each case were described, including the context, participants, how the teacher utilized the e-storybooks, and any unexpected incidences that occurred in each case. To achieve multivocality, the two teachers' voices were presented under each theme to provide diversity in opinion. For

member reflections, the researcher sent the teachers interview transcripts for member

checking, sought more information about their professional experiences, and confirmed

with them about some of the contextual information.

<h2 align="center">3.5   Ethical Considerations</h2>

All of the participants were treated in accordance with the ethical guidelines of the

Purdue University Institutional Review Board. Although the risk of participating in this

study was minimal, the researcher kept in mind a couple of considerations when dealing

with kindergarten classrooms.

First, the participants were informed that they should be relaxed about being observed.

The teachers and their students might be uneasy with the researcher's observations of

their use of the e-storybooks in the classroom. Before collecting the data, the researcher

communicated with the teachers that they would be observed using the e-storybooks in

natural classroom settings and the researcher would not participate in or express opinions

about anything they would do. This was communicated to the potential participant

children by a teaching aid who read the assent script to them. When the researcher went

to each classroom for one observation per week, she tried to be as unobtrusive as

possible.

Second, some measures were taken to distinguish the participant children from the non-

participant children for observation. The teachers used the e-storybooks with the whole

class as their regular curriculum, but the non-participant children were not observed by

the researcher. To make it easy to observe the participant children, a piece of paper

marked a Roman numeral that represented each of the participant children was attached on the back of his or her chair.

Third, the researcher took full responsibility for the iPad that was lent to one teacher for the purpose of this study. The teacher who used the iPad provided by the researcher might be concerned with the possibility of damaging or losing it. The researcher specified in the teacher consent form that the researcher would be responsible for repair or replacement of the iPad should it be became damaged or lost during the research study.

<div align="center">3.6   The Role of Researcher</div>

My previous volunteer experience in the kindergarten classrooms other than the two teachers' helped me develop my dissertation idea and shape my position in this dissertation study. In fall 2013, I volunteered in the reading blocks at three kindergarten classrooms in a public elementary school in a small Midwestern city in the United States. That experience taught me

- As evolution of technology in education, a variety of technologies have entered the U.S. classrooms. A kindergarten classroom is usually equipped with such technologies as a smart board, a computer for the teacher, several computers in the listening station for students, and a CD player. However, paperback storybooks are still the predominant reading materials in kindergarten.

- The three kindergarten teachers used paperback storybooks for shared reading with their students, but they sometimes employed technologies for different purposes. For instance, one teacher once let her students review a story she had just read by watching the electronic version of the paperback storybook on the

smart board. Another time she introduced a story by showing the song version of
the story on YouTube.

- The kindergarten teachers had the freedom to select storybooks in terms of
  content and format around the designated reading theme of each week. They can
  use interactive e-storybooks in the reading block as a supplement to paperback
  storybooks.

Through my volunteer experience, I came to know how kindergarten teachers usually
conducted shared reading with paperback storybooks. However, since I did not know
how they would conduct shared reading with interactive e-storybooks, I considered
myself as a learner and explorer and my study as an exploratory qualitative study. My
research topic did not involve participants' self-disclosure that could only happen after a
long-term relationship with researcher, so I did not need to establish a close relationship
with either the teachers or their students before collecting the data. Additionally, even
though I knew Mrs. Willow and Mrs. Jones through the recruitment process for this study
and never volunteered in their classrooms, I felt that they were intrinsically motivated to
participate in my study, without having formed an expectation on what kind of
relationship I would establish with them. Thus, I started with respectful relationship with
the two teachers and their students, and more trust and rapport between us were built as
my data collection progressed.

To guide the qualitative inquiry for my study, I employed constructivism paradigm,
which requires informed and sophisticated constructions of realities through interaction

between and among investigator and participants (Guba & Lincoln, 2005). Although Mrs. Willow and Mrs. Jones had never used interactive e-storybooks either personally or in their reading block before the study, in the training they quickly learned how to use them and appeared confident and excited to use them for the study. Since I wanted to observe teachers' use of e-storybooks in natural classroom settings, I did not involve myself in the teachers' decisions in any sense or impose anything on them. Instead, I tried to impress them that I was a learner and totally open to their teaching approaches. Additionally, I was considerate of the teachers' schedule, helped set up the equipment for every observational session, provided support whenever they needed in class, and sometimes had a small casual chat with them after the observation. As a result, our relationship developed as my data collection progressed. After the data collection was completed, I emailed the two teachers twice, once asking for member checking of the interview transcripts and another time asking for more information about their background. Both teachers replied warmly and provided me the information I needed.

As a non-participant observer, my contact with students did not go beyond exchanging greetings in the classroom and offering a little bit help to a few students who asked me questions about their in-class exercises. Some students said hello or goodbye to me when seeing me entering or leaving their classrooms respectively, and I said hello or goodbye back to them. When the students were working on the assignments of the instructional activities that followed the e-storybook presentation, I sometimes walked around their tables to observe how they were doing. When a few students asked me for help on their assignment, I offered them a little help but still let them complete it independently. Once

a student invited me to visit his house and asked for my phone number to contact me, I refused politely.

CHAPTER 4. RESULTS CASE-BY-CASE ANALYSIS

This chapter includes a detailed description of the two classrooms that participated in this study. For each case, the researcher presented information about the teacher and her classroom, the teacher's experiences with utilizing storytelling technologies, the instructional activities in her reading block that involved e-storybook, and the emerged themes around the research questions.

The results concerning the strategies employed by each teacher in using e-storybooks mainly come from the three interviews, corroborated by the observations and the documents. The results on the problems each teacher encountered and their ways of overcoming them derive from both the interviews and the observations. The results on each teacher's attitudes towards using e-storybooks mainly come from the analysis of the interviews.

For each research question for each case, the initial codes were generated from examples and then were categorized into initial themes. During the whole data analysis, I experienced the iterative processes, including modifying codes while developing themes, refining themes, examining the relationships between codes within and cross themes,

examining the relationships between themes, dealing with codes that did not belong to

any theme. The codes after several passes through the data were developed into the final

themes. For each research question, how the final themes were developed is briefly

explained at the beginning of each result section. In regard to the four types of interaction

involved in the first research question, each type of interaction served as a theme and the

examples were identified from the observation descriptions.

4.1   Case 1 Mrs. Willow

4.1.1   Introduction

Mrs. Willow, a native-English speaking Caucasian, has been working as a full-time

kindergarten teacher for three years in a public school in a small Midwestern city in the

U.S. She had a bachelor's degree in liberal arts, specifically a major in Art and minor in

Art History, and a teaching certificate. She taught preschool for four years and then

worked as a permanent substitute for Grades K-3 for three years in a school corporation.

Before teaching kindergarten in the current school, she opened a cake business. She tried

to keep up with both her cake business and teaching when she first started at the school,

but by her second year teaching there, she found it was too busy to keep both and had to

give up her cake business. In 2013, she was one of five local teachers who won a regional

prestigious teaching award.

In spring 2014 Mrs. Willow had twenty students in her classroom, among whom

seventeen students participated in the study. Most of her students were native-English

speaking Caucasians and a few of them were from families where other languages than

English were spoken at home. Mrs. Willow revealed in the interviews that her class

contained high-level readers, immerging readers and low-level readers. It was observed by the researcher that her students were active in class and responsive to the teacher's questions.

Across from the entrance of the classroom was a smart board, which was connected to the teacher's computer located on the teacher's desk in the far left corner of the classroom. On the left side of the smart board was the listening station comprised of two computers. On the right side of the smart board along the wall there was a low bookshelf filled with a variety of stuff for teaching, such as books, organizers, a tape recorder, and a disc player. In front of the smart board near the low bookshelf there was another teacher desk and an armchair. It looked like that the armchair was used for Mrs. Willow to sit and read storybooks to her students.

4.1.2   Experiences with Storytelling Technologies

Mrs. Willow had informal technology learning experiences and she was very interested in integrating storytelling technologies into her reading block. She used storytelling technologies more than once a week in her reading block. The storytelling technologies she used included YouTube videos, movies, free online/web-based stories, and CD-ROMs that went with paperback storybooks. She set up digital stories in the listening station so that her students could listen to them almost every day if they chose that to be their station. The way she used those digital stories in her reading block included introducing a topic, showing to the class and asking questions, reinforcing/reviewing what she had previously read, and rewarding students. Although she had never used

interactive e-storybooks on iPad before participating in this study, she was very interested in trying it.

Many of her students had access to tumble books from the public library's website at home for home reading as assigned by Mrs. Willow, and she thought that they enjoyed reading tumble books. From her perspective, e-storybooks on iPad would be a good option for her students because they were fun and the drop-down text could teach her students to read, and the "Read by Myself" affordance and the recording function that is available in some e-storybooks could be especially beneficial to her high-level readers.

4.1.3 Activities around E-storybooks in the Reading Block

In Mrs. Willow's reading block, the instructional activities around each e-storybook lasted for about one hour. The activities included a brief presentation of an e-storybook and the follow-up activities that tied to the e-storybook topic and the target literacy skills.

In each e-storybook presentation, the storybook was projected to the smart board and the students sat in their chairs on the left and right sides of the smart board. Mrs. Willow sat facing the smart board in the midst of her students, holding her iPad and operating e-storybook. A loud-speaker provided by the researcher was connected to her iPad to enlarge speaker volume so that everyone in the classroom could hear the reading of a story. Mrs. Willow showed an e-storybook to her class once using the automatic reading ("Read to Me") affordance. After the automatic reading of one page, she seldom paused to explain the page content but turned to the next page. She clicked on some hotspots in each e-storybook herself, and occasionally she led her students to play the embedded

games in the e-storybooks. The total length of time she spent presenting an e-storybook was no longer than fifteen minutes.

After e-storybook presentation, Mrs. Willow and her students conducted follow-up activities that were related to the e-storybook topic and also tied to the target literacy skills. The activities varied from story to story. For instance, after presenting the e-storybook *The Train*, Mrs. Jones asked her students to color the steam engine on their worksheets while listening to a song. Five minutes later, her students were asked to name different types of trains they knew and Mrs. Willow wrote the names on the smart board. Mrs. Willow then asked her students questions about their travel experiences and guided them to answer. Following that, per Mrs. Willow's request, her students searched for the target words among the letters on the "Train Terms Word Search" worksheets, completed the train-related word family exercise around the word root "ack", and did a cut and paste activity that combined the head of a train with its carriages represented by words ending with the word root "ack".

Another example was the activities around the e-storybook *Ethan's Superpower*. After presenting the e-storybook, Mrs. Willow asked her students what superpower they wanted to have. She called some students to answer this question, wrote their answers on the smart board, and gave a brief summary of their answers. Following, Mrs. Willow asked each student to write two sentences on a chart paper about the superpower he/she would like to have and what he/she would do with that superpower. As revealed by the teacher, writing was the targeted skill of that week. The first sentence would be "If I had

a superpower, it would be _____." The second sentence would be made up by the students about what they would do with their superpower. Her students could also draw a picture about their superpower above their writing. In this process, Mrs. Willow showed one student's work to the class as an example. Finally, she asked each student to draw two pictures-one picture was about what he/she would do with his/her own superpower, and the other picture was about the superpower he/she wanted Mrs. Willow to have. While her students were working on this task, Mrs. Willow drew on the smart board what she would do with her imaginary superpower.

4.1.4 Themes

4.1.4.1 Strategies with Using E-storybooks

Mrs. Willow's pedagogical strategies included identifying pedagogical objectives, analyzing attributes of e-storybooks, conducting instructional activities around using e-storybooks, and evaluating the benefits and cost of using such resource. Her strategies fit into the four major considerations on how to achieve pedagogical effectiveness of technologies proposed by Salaberry (2001). However, in Mrs. Willow's technology integration, there were few interactions between her and her students and between her students and the technological tool, which may impede their best use of the e-storybooks.

4.1.4.1.1 Identify Pedagogical Objectives

The examples found relating to this theme included: objectives of the literacy block focus on writing and comprehension skills, tying the story to the targeted skills of that week, using the e-storybook for teaching objectives (i.e., writing, comprehension and spelling), using e-storybooks for academic skills, teacher created activities that emphasized words

and word family, teacher created activities that tied the story to writing skills, teacher designed activities that tied the story to spelling, sequencing and writing, the instructional activities tied the story to motor skills, instructional activities focused on spelling, writing and phonetic awareness, and instructional activities tied the story to spelling and motor skills. These initial examples were categorized into three initial codes: "objectives of literacy block", "using e-storybooks for teaching objectives", and "the instructional activities tie the e-storybooks to the targeted skills". Later I thought that the codes "objectives of literacy block" and "the instructional activities tie the e-storybooks to the targeted skills" overlapped and could be combined into one code "objectives of literacy block". The two codes "objectives of literacy block" and "using e-storybooks for teaching objectives" were developed into the theme "identify pedagogical objectives".

Mrs. Willow first identified the objectives of the literacy block for the week and then planned to utilize the e-storybook for those objectives. Bearing in mind that the literacy block focused on writing and comprehension skills, she tied the use of an e-storybook to the target skills of that week (e.g., writing, comprehension, and spelling). She revealed in the second interview:

> Well definitely trying to work on a lot of comprehension, what did you take from the story, putting it into a writing skills and making comparisons to the story to what you want to write about, what ideas you have. The main thing is what can you take from the story and use for different skills. Like today we used the animals from the story for spelling. Creative spelling is big in kindergarten, for them to be able to figure out the

phonics and the phonemic awareness. That part is a huge piece of how to

spell those animals.

4.1.4.1.2 Analyze Attributes of Technological Tools

Multiple examples relevant to the features of e-storybooks were found, such as students

can see and hear the story, audio enables kids to listen to live reading, story is grade-level

appropriate, story content ties to their learning theme, and being animated, fun, and big

on the smart board. Those examples were categorized into the two codes "e-storybooks'

content and language should be appropriate" and "Visuals, audio, drop-down text,

animations, and hotspots are helpful". The rationale for generating these two codes was

that one code dealt with the content and language of an e-storybook while the other code

covered the technological part of it. These two codes formed the theme "analyze

attributes of the e-storybooks".

When analyzing the attributes of an e-storybook, Mrs. Willow checked on its content,

language, visuals, animations, audio, drop down text, and hotspots. Considering that the

content and language of an e-storybook should be appropriate, she checked if the story

content was grade-level appropriate, if it tied to the learning theme for that week and fit

well into the curriculum, and if it was good and engaging. When the story language was

translated into English from another language, she checked if the translations could be

understood by her students. In addition, she analyzed if the visuals, animations, audio,

drop down text, and hotspots were helpful. In her mind, the visuals and audio enabled

students to see and hear the story, and being animated, fun, and big on the smart board

drew kids in and could help with their comprehension skills. She said that as a generation of kids who "see so much and so much is visual for them", her students "like to see things move" and some of them really need it, which helps them pay attention and get things from the story. Mrs. Willow thought that the drop down text could help all levels of readers learn to read. According to her, her high level readers were already reading an e-storybook, her immerging and low level readers can follow the drop down text and "focus on what sight words they can pick up, and follow along and hear it". In particular, her low level readers who didn't even know which way to read text could "watch that light and visualize how we read stories along the voice" and read text from left to right. While Mrs. Willow thought that the hotspots helped draw kids' attention, got them excited and showed them more things in the story, she realized that not all the hotspots were useful and she should only use what she thought helpful. The following quote demonstrates her view on the application of hotspots:

> I know we don't use them a whole lot in some of the stories where it's not as much help, helpful tools. But today it was good because it was where the text would come up from the different spots. They enjoyed that. So when you are using it appropriately it's great and they help with that engagement tool. You know if I am starting to lose my audience I can say 'oh look at this' and show them and kind of bring them back in so that's a good tool to have with that.

Although she clicked on some hotspots in each storybook during her presentation, in a few e-storybooks, she did not use other useful hotspots that could have helped her

students better understand the stories and be more engaged. Perhaps she skipped those hotspots on purpose, or perhaps she forgot about them.

4.1.4.1.3   Conduct Instructional Activities around Using e-storybook

In addition to the previous two strategies, Mrs. Willow conducted instructional activities around using an e-storybook. Examples concerning how those e-storybooks were utilized were identified from the interview and observation data, such as presenting e-storybook to a whole group, going through the story with a whole group without stopping to talk about it, building different lessons off the stories, designing activities that tie the story topic to the teaching objectives, guiding students to pull things out of the story, and starting from easy skills and proceeding to advanced skills. An analysis of all the examples revealed that they could be grouped into three steps which actually reflected the teacher's way of using e-storybooks. They were "planning", "presenting an e-storybook", and "doing fun activities that tie to the e-storybooks to the targeted skills". Some of the examples were adjusted and the three codes formed the theme "design instructional activities around using technology".

Her teaching beliefs that led her to conduct activities around an e-storybook came from how she was trained as a teacher, as she said: "[t]he way I was trained was a lot of new skills are introduced through a certain story". She considered it a good way to draw kids in with an introduction and make kids learn through activities. She revealed that she always started with a story and went from the story to the activity, and she built a whole activity or unit around the story.

In order to conduct instructional activities around an e-storybook, Mrs. Willow followed the procedures of planning, presenting an e-storybook, and doing fun activities that tied to the e-storybook and the target skills. In the planning stage, she firstly thought about what skills to focus on through an e-storybook and then designed activities that tied to the story topic and the teaching objectives. Different lessons were built off different e-storybooks. Mrs. Willow considered that it was easy to plan the activities if the story was engaging and informational. In the stage of presenting an e-storybook, Mrs. Willow used an e-storybook as an introduction just like using a traditional storybook. She presented an e-storybook to the whole group on the smart board, and usually went through the story with the whole group without stopping to talk about it. For different e-storybooks, she presented them in the same way but the follow-up activities varied. In those reading sessions, among the target skills (e.g., spelling, phonetic awareness, sequencing, motor skills, and writing), she started from easy skills and proceeded to advanced skills. In this way, all levels of learners got involved and did what they could do, which was Mrs. Willow's main purpose. As she said: "that's the main thing I think about and the philosophy of hitting all my learners". Meanwhile, she wanted to make those activities fun so that her students could enjoy and get creative.

4.1.4.1.4   Evaluate the Benefits and Cost of Using Such Resource

Mrs. Willow thought that there were only pros but no cons of using e-storybooks. The code "pros" included the examples that e-storybooks draw kids in and help develop their comprehension skills, kids enjoy using e-storybooks, teachers enjoy using e-storybooks,

and e-storybooks are easy to use. Another code is "no cons". These two codes form the theme "evaluate the benefits and cost of using e-storybooks".

Mrs. Willow considered that both teacher and students enjoy an e-storybook more than a regular storybook, and teacher is willing to spend time building lesson around an e-storybook. In her opinion, using an e-storybook is no more difficult or time-consuming than using a traditional storybook. She said that "I just read them, listen to them, watch them real quick and get familiar with them. It would be the same as any other activity". She did not see any cons of using e-storybooks.

Although Mrs. Willow applied the four strategies above in utilizing e-storybooks, in her technology integration, there was limited interaction between her and her students and between her students and the e-storybooks. Mrs. Willow interacted with an e-storybook through operating it during the presentation, including clicking on the hotspots. However, she had limited interaction with her students in the process of presenting an e-storybook. She occasionally explained or emphasized the story content; only in a few e-storybooks she explained or emphasized the story content a little bit more, raised questions to her students and answered their questions. By contrast, she had much interaction with her students in the follow-up activities after the e-storybook presentation. Additionally, although her students were excited to see her using the hotspots, they were not given opportunities to click on the hotspots themselves since Mrs. Willow operated everything in the e-storybooks.

In general the students were not allowed to talk to each other during the e-storybook presentations, but there was student-student interaction in the activities that followed the e-storybook presentations. For instance, after the presentation of the e-storybook *Ethan's Superpower*, Mrs. Wilson asked her students what superpower they wanted to have. After one student said his or her imaginary superpower, sometimes a few other students confirmed his or her answer or provided more information on that. Another example was that when the students wrote on the chart paper two sentences about the superpower he or she would like to have and what he or she would do with the superpower, some students sitting around a table talked to each other about their imaginary superpower.

4.1.4.2   Problems Encountered

Mrs. Willow did not think she encountered problems in using those e-storybooks. Maybe she considered those problems as minor problems which did not affect her usage at all. However, the researcher noticed the problems she encountered and recorded them in the observations. Mrs. Willow encountered several problems in her use of the e-storybooks. She was kicked out of a few e-storybooks for unknown reasons while operating them. However, Mrs. Willow considered it as user error on her part instead of a problem with the technology. As she said: "I'm probably doing something wrong, I'm probably touching something… That's the only thing…I wouldn't say it's a problem. It's probably user error, so it's my problem, not the book's". She stressed that it was not a problem for her and both she and her students did not mind. Another problem was that when Mrs. Willow opened the e-storybook *The Train*, the last page of it accidentally appeared at the beginning of the story. Mrs. Willow did not mention this problem at all but it was

observed by the researcher. Perhaps because this problem only happened to her once, it did not impress her as a problem. The third problem was that the loud-speaker provided by the researcher was out of power once over the entire e-storybook presentation so the sound of the story could not be enhanced. Similarly, Mrs. Willow did not see it as a problem. When asked about the problems she encountered in using the last three e-storybooks, she said: "No problems that I ran into. The one was the sound thing but that wasn't anything to do with it…but it was fine, they could hear it off the iPad, so it was fine". Above all, Mrs. Willow was quite tolerate of those technology glitches and did not see them as problems.

4.1.4.3 Ways of Overcoming the Problems

Before using an e-storybook in class, Mrs. Willow went through it several times in advance to know what to touch. After being kicked out of a page in use, she restarted the e-storybook and returned to that page, and tried not to touch the same thing again. While students were waiting, she was talking about the error, such as "Oh, look, you know, something happened" and "give me a second and let's do this". Her students were quite relaxed and easy-going about the technology glitches so they just waited. According to Mrs. Willow, her students were "so used to technology" and "used to things like that happening". Sometimes she asked her students questions about the story to draw their attention and check their understanding. Once Mrs. Willow dealt with this kind of problem in another way when users could select which section to present first. In the e-storybook *Animal Planet Hide & Seek Pets*, the home page displays six animals and users can track the information about those animals one by one in the order they like. After

being kicked out of one page about an animal she was going to present, Mrs. Willow

restarted the story, returned to the home page and selected another animal to present

before returning to the animal page where she was kicked out. When encountering the

disorder of the last page in the e-storybook *The Train*, Mrs. Willow quitted that page and

moved backward to the first page of the story.

When the loud-speaker provided by the researcher was out of power over the entire

presentation of one e-storybook, Mrs. Willow showed the drop down text and asked her

students to listen very attentively to the story. Perhaps she expected that the drop down

text could help her students follow the story. After class, Mrs. Willow told the researcher

that her students had no problem hearing the story. Later in the interview she said: "They

could hear it, yeah. They had to be extra quiet so maybe that was a good thing. They had

to really listen but they could hear it. It was fine".

4.1.4.4   Attitudes towards Adopting E-storybooks

The related examples were found from the interview data and were evaluated, and then

two codes were generated for the theme "the teacher likes the idea of adopting e-

storybooks as a resource for her reading block". The two codes were "being positive

before using the e-storybooks" and "enjoying using e-storybooks and planning to

continue using them after the study". The first code was supported by the examples that

the teacher thought that e-storybooks would engage kids and make them learn more and

that being excited and looking forward to using e-storybooks. The code "enjoy using e-

storybooks and plan to continue using them after the study" was supported by the

examples that the teacher enjoyed the new teaching experience with using the e-storybooks and that the teacher planned to continue using e-storybooks after the study. The second example was supported by three instances that illustrated the teacher's future plan of using e-storybooks.

Throughout the study, Mrs. Willow liked the idea of adopting e-storybooks as a resource for her reading block. Even before using the e-storybooks, she was positive about adopting them. Thinking that e-storybooks would engage kids and make them learn more, she was excited and looking forward to using them. She said:

> My attitude is really positive now and we haven't even used them yet, but I know they're really going to enjoy it and I can see what it will bring to the classroom in that aspect of really engaging the children and getting more out of it than maybe a traditional setting would. I think it will be good. All positive.

After using three e-storybooks and again after using all the six of them, she indicated that she found herself enjoying her new teaching experience with this resource and planned to continue using it after the study. After using the first three e-storybooks, she indicated that she would introduce more into her program even if they would not be provided by her kindergarten. She said: "I really like it, even though I could see just the ones that we went through… I would buy some and then introduce more into my program myself even if it doesn't…it isn't a grade level thing or whatever". After using all the six e-storybooks, she expressed that she really enjoyed the new teaching experience of using the e-

storybooks with the whole group and doing activities around them, which was different from her previous practice of using digital stories just for the listening station. Her passion for adopting e-storybooks in her reading block in the future is revealed from her words: "I loved it, I enjoy the whole process and the kids like it. It was neat, I like it, I enjoyed it. I would do it in the future for sure".

In regard to her plan on how to use e-storybooks in the future, she expressed that she would use them with both large group and small group, would review the current six e-storybooks and explore more into them, and also would like to introduce more e-storybooks into the program. In the future, she would like to continue utilizing e-storybooks with her whole class as she did in this study. She also planned to use this resource as a one on one tool between two children who could use it and talk about it, or between a child and an adult (including the teacher) to read the story together, discuss it or do comprehension activities. Another way she thought of was to use it as an individual learning tool, in which an individual student can hear a story being read to him/her. Mrs. Willow also planned to review the existing six e-storybooks together with her students, or have her students review them individually or within small group so that her students can manipulate the e-storybooks and become more familiar with them. In addition, she intended to introduce more e-storybooks into the program, as she said: "Then in the future probably purchasing more stories and building up that but using it how we do now, building units around it and doing activities involved with the skills we're working with". She may use e-storybook two to three times a week or once every day in her reading block, depending on how she would use them. If she would build them into different

types of work (e.g., the listening station, one on one work, the whole group activity) throughout the classroom, she could use it once daily.

4.2   Case 2 Mrs. Jones

4.2.1   Introduction

Mrs. Jones, a native-English speaking Caucasian, has been working as a full-time kindergarten teacher for fourteen years. She earned her bachelor's degree in Elementary Education in 1993 and her master's degree in Elementary Education in 2006 with a focus on Reading. Currently, she is about 3/4 of the way complete on a second master's degree in Educational Administration and Supervision. She is licensed as an all grade reading specialist as well as a general elementary teacher who can teach grades K-6 and 7 & 8 non-departmentalized. Before teaching in her present school, she taught kindergarten for two years in another city. Since 1996 she has been working in the private religious school in a small Midwestern city in the U.S.-first serving as the Day Care Director for three years, and then teaching first grade for two years, and consequently teaching kindergarten for twelve years by the time of this study.

In spring 2014 Mrs. Jones had fourteen students in her classroom, eleven of whom participated in this study. All the participating students were native-English speakers. According to Mrs. Jones, two participating students were more struggling readers than the other participating students. It was observed by the researcher that her students were active in class and very responsive to the teacher's questions. Perhaps due to the small class size and Mrs. Jones' teaching style, her students were given more time to express

their ideas in class and worked one on one with her more often, when compared to Mrs.

Willow's class.

A smart board, which was connected to Mrs. Jones' laptop, was fixed on the wall

between the two doors of the classroom. A teacher's desk and a chair were located on the

left side of the smart board, with Mrs. Jones' laptop placed on the teacher's desk. Along

the other three walls there were bookshelves, cabinets, and tables. On the floor before the

smart board was a big rug, where students sat to have teaching activities, such as listening

to teacher reading stories or watching the smart board. Behind the floor rug there were

student tables and chairs. A small table with a CD player on it was placed near the other

door of the classroom.

4.2.2   Experiences with Storytelling Technologies

Mrs. Jones had both formal and informal technology learning experiences. Being very

interested in integrating storytelling technologies into her reading block, she used them

more than once a week for instruction in her reading block. Before this study began, the

storytelling technologies she used included CD player, radio, YouTube videos, movies,

free online/web-based stories, and CD-ROMs that go with paperback storybooks. Having

about 150 books with accompanying CD's, Mrs. Jones used a CD player for the listening

station, where two students used the CD player and chose from a selection of five to

seven books. About ninety-five percent of the time Mrs. Jones also used the CD player

daily during quiet time to play chapter books. Sometimes she used the Christian radio

broadcasted show *Adventures in Odyssey*. With reading, she focused on using the reading

stories that went with their reading curriculum and were available through both the

internet and CD ROM. Although those reading stories were a type of e-storybooks, they were not interactive e-storybooks. For other content areas such as math and science, she applied other forms of digital stories such as YouTube videos. In her reading block, the ways she utilized storytelling technologies included introducing a topic, showing a digital story to the class and asking students questions, and reinforcing or reviewing what she had previously read. Although she had never used interactive e-storybooks on iPad before participating in this study, she was very interested in trying it.

Most of her students had prior experience with tablet or smart phones. According to Mrs. Jones, her students were familiar with operations such as swiping and playing games. Her students found the iPad intuitive to use. Once they received iPad from their school (at almost the same time as this study began), her students just took it and explored it. Mrs. Jones noted: "They know to swipe it or push it. They'll try what they know how to do".

4.2.3   Activities around E-storybooks in the Reading Block

In Mrs. Jones' reading block, the time range of the instructional activities around each e-storybook was from one hour to ninety minutes. The activities included a detailed presentation of an e-storybook and the follow-up activities that tied to the e-storybook topic and the target literacy skills.

In each e-storybook presentation, the storybook was projected to the smart board and the students sat in their chairs around the smart board. Mrs. Jones sat near her desk on the left side of the smart board. She sometimes positioned her iPad at an approximate sixty

degree angle on her desk, but sometimes she held it with her left hand and operated it with her right hand. A loud-speaker provided by the researcher was connected to her iPad to enlarge speaker volume so that everyone in the classroom could hear the reading of a story.

Mrs. Jones showed an e-storybook to her class once using the automatic reading function ("Read to Me"). After the reading of a single page, she usually talked about it with her students in a way that could facilitate their story comprehension, such as explaining the story content, relating to students' prior learning or experience, providing additional information, raising questions to check their understanding, or asking them to make predictions about the story plot. As the e-storybook presentation progressed, almost each of her students was asked to come over to the iPad to touch at least one hotspot. The length of time Mrs. Jones spent presenting an e-storybook was at least twenty minutes.

After e-storybook presentation, Mrs. Jones and her students conducted follow-up activities that were related to the e-storybook topic and also tied to the target literacy skills. The activities varied from story to story. For instance, after presenting the e-storybook *The Train*, Mrs. Jones carried a crock pot full of boiling water to a student desk and asked her students to watch the hot steam rising from the boiling water. To make her students understand how the steam train worked, she related the hot steam to students' life experiences and compared the hot steam from boiling water with the steam that propelled the train engine. Following, she asked her students to imagine themselves as inventors and think about the job they could do with their own inventions. Consequently,

her students were asked to describe their inventions. After that, her students were required to draw a picture of his/her invention (a machine that has never been invented) and write what the invention was. Finally, she showed and read each student's work to the whole group.

Another example was the follow-up activities around the e-storybook *Ethan's Superpower*. After presenting the storybook, Mrs. Jones asked her students to share with their neighboring students what superpower they would like to have. She then showed some images on the smart board, with a sentence below each image. She asked individual students to come to the smart board to read a sentence and at the same time point to each word of the sentence with a sticker. Following, she introduced the sight-word reader *Color Monsters* with some paper cards to the class. On each card there was a colored monster and a sentence (added by Mrs. Jones herself) above the monster and another sentence below the monster. She read those sentences first and asked the whole group to read after her. Finally, she had her students return to their tables to read their own copy of *Color Monsters* book and then color each monster according to the sight word in each sentence above the image.

4.2.4   Themes

4.2.4.1   Strategies with Using E-storybooks

When using an e-storybook, Mrs. Jones' pedagogical strategies included identifying pedagogical objectives, analyzing attributes of e-storybooks, designing instructional activities around using e-storybooks, and evaluating the benefits and cost of using such

resource. Her strategies fit into Salaberry (2001)'s four major considerations on how to achieve pedagogical effectiveness of technologies. In addition, in her technology integration for instruction, there were interactions between and among her, her students and e-storybook, which could facilitate their effective use of the e-storybooks.

4.2.4.1.1   Identify Pedagogical Objectives

The examples I found relating to this theme included: using standards to guide the design of objectives and instructional activities, going through a book and then deciding what skills to teach, thinking about how an e-storybook would fit in with the teaching objectives, being familiar with the story and see what skills it fits with, selecting the parts in an e-storybook that match the objectives, matching the stories to the targeted skills, picking something in the story that matches or relates to the teaching objective of that week, tying the activities around the e-storybooks to the targeted skills and standards, tying activities to the story and also the standards, and covering the academic standards. I evaluated which examples could form new codes, which examples could be merged, and which could be removed tentatively. After this evaluation, I categorized the examples into the two codes "Objectives of the literacy block" and "using e-storybooks for teaching objectives", and the two codes formed the theme "identify pedagogical objectives".

Mrs. Jones applied academic standards to the design of teaching objectives and instructional activities of the literacy block. After identifying the teaching objectives of a week within the time frame of this study, she got herself familiar with an e-storybook and

checked what skills it fit with, and then she selected the parts in the e-storybook that matched or related to the objectives of that week. Mrs. Jones described:

> I think that again, by making sure that I was very familiar with what the story was about and seeing if it fit best. Like last week's story fit best with character so we did character things. This story I found a little readable and the decodable book that talk about pets with that short e sound, so just kind of picking a story that connects back to something we're doing.

4.2.4.1.2 Analyze attributes of technological tools

I found multiple initial examples that fell into this topic. While I was categorizing those examples into codes, I evaluated those examples and removed some tentatively. Finally, I developed three codes from the remaining examples. They were "length and content of an e-storybook", "visuals, audio, drop-down text, 'Read to me', and 'Record' affordances", and "hotspots". These codes formed the theme "analyze attributes of the e-storybooks".

In analysis of the attributes of an e-storybook, Mrs. Jones checked on its length, content, visuals, audio, drop down text, hotspots, and some other affordances such as recording. She mentioned that "the length of some of the stories was a little bit long" but "the story itself would keep their attention for the whole time". She also considered whether an e-storybook matched the content area they were covering or the comprehension strategy that they were working in. She found out that "the content of the stories helped because they did kind of lend themselves".

Mrs. Jones liked that an e-storybook can be projected up on the screens so that everybody can be observing even though one person is interacting with it. She also liked that an e-storybook can read the story to students and highlight the words. She always used the "Read to me" affordance with the whole group, which she thought kept her students' attention very well. Since her students could actually read some parts of the stories, the highlighted text could help them follow along and read at their reading level.

In the use of hotspots, Mrs. Jones checked a story first and then decided what hotspots to use. She tried out hotspots during her preparation and checked if the puzzles and games, which are part of hotspots, fit in with the lessons. Whenever she felt that the puzzles and games did not fit in with the lesson, she saved them for the learning center time when the kids can play. In the whole group presentation, she allowed her students to play a limited number of games to make them stay focused. She pointed out:

> I think some of them are useful. Some of them, I think, are fun, as opposed to giving them more actual content. I think it just depends on the actual hotspot. The ones that are fun that just make something move are not nearly as important as ones that are part of the story elements.

Mrs. Jones also noticed that there were different levels of games available in an e-storybook and she selected the levels that could best match the levels of the children. However, she found that the options available in some games were too easy for her students.

She considered the "Record" affordance fun and useful, especially for her high-level readers. In the e-storybook *Three Little Pigs*, there was the "Record" affordance in the slide where the mother pig was supposed to give her three little pigs a warning before they moved out of their home. One student was asked to come over to the iPad to speak out a warning to the little pigs on behalf of the mother pig. Mrs. Jones recorded the student's voice and played it to the class. In another slide of this story with the "Record" affordance, Mrs. Jones asked three students who pretended to be the three pigs to say something to the wolf who was kept outside their new house. She also mentioned that the e-storybook *A Place to Grow* had the option to record the child reading the story. Although she did not use that affordance in the story, she thought that it would be a good option for her students who could have read the story. She indicated: "I always liked the recording…that was fun for the kids. I think that if we spent more time on it, there would be more things that they could record, come up with better ideas for that too".

4.2.4.1.3   Conduct Instructional Activities around Using E-storybook

In addition to the previous two strategies, Mrs. Jones also conducted instructional activities around using e-storybooks. Examples concerning how those e-storybooks were utilized were identified from the interview and observation data, such as tying activities to the e-storybook and the academic standards, wanting kids to get much practice through doing the activities, teacher introduced the topic in a way that helped students connect to the e-storybook, getting kids to relate to what they already knew, and using the e-storybooks in a similar way but the activities vary. A close examination of the examples revealed that some examples could be merged and some could be removed tentatively.

The remaining examples could be grouped into three steps that reflected the teacher's way of using e-storybooks. They were "directions", "presenting an e-storybook", and "designing activities that tie to the e-storybooks to the targeted skills". These three codes formed the theme "design instructional activities around using the e-storybooks".

Mrs. Jones' teaching beliefs that led her to design activities around e-storybooks were that she wanted children to make connections to the e-stories and practice the target skills through doing activities. She used the e-storybook as an introduction to some other topics and the target literacy skills. She designed different activities for each e-storybook but used the e-storybooks in a similar way, that is, to "use the story as kind of the spring board to the further activities".

In order to conduct instructional activities around an e-storybook, Mrs. Jones followed the procedures of identifying the directions, presenting an e-storybook, and carrying out activities that tied to the e-storybook and the target skills. Based on the academic standards and her teaching philosophy, she tied the activities to both the e-storybook and the academic standards. Before presenting an e-storybook, she first introduced the topic in a way that could help her students connect to the e-storybook and relate to what they already knew. For instance, before presenting the e-storybook *Around the World in 80 Days*, Mrs. Jones asked her students if they had ever been in a race, and then she had several students share their stories of racing. After the warming-up exercise, she began to introduce the e-storybook and provided her students some background information. With a globe, she pointed to students the route the main character Phineas Fogg travelled. She

explained that this story was written 140 years ago-before the time of airplanes, and then she asked her students what types of transportation they thought he used to race around the entire world. The answers given by her students included bike, boat, feet and car. After the introduction, Mrs. Jones began to present an e-storybook on the smart board with the whole group. During the e-storybook presentation, she liked to have her students interact with the hotspots as the story progressed and talk about almost every page with her students just as she would when reading a traditional storybook.

She presented each of the six e-storybooks in a similar way, but the follow-up activities for each e-storybook varied. The follow-up activities were designed to relate to a specific e-storybook and tie to the teaching objectives in such areas as reading comprehension, writing, phonetic awareness, and motor skills. Mrs. Jones noted: "I think that I was just looking at what standards we still needed to cover and trying to choose an activity that went with the story, but also went with things that we needed to do". Through the follow-up activities, she also tried to help children make a personal connection to a story in order to fully comprehend it, which she thought was really important. For instance, after presenting the e-storybook *The Train*, she asked her students to watch the hot steam rising from the boiling water in the crock pot with the intention of giving her students an idea of how the steam train worked.

4.2.4.1.4 Evaluate the Benefits and Cost of Using Such Resource

Mrs. Jones thought that there were only pros but no cons of using e-storybooks. The code "pros" included the examples that e-storybooks draw kids in and help develop their

comprehension skills, kids enjoy using e-storybooks, and using e-storybooks is not time-consuming for teachers. Another code is "no cons". These two codes form the theme "evaluate the benefits and cost of using e-storybooks".

Mrs. Jones thought that e-storybooks draw kids' attention more than a traditional storybook does and using e-storybooks can help with children's story comprehension. On children's part, they were interested in e-storybooks and liked to listen to and review them during their learning center time. On the teacher's part, she liked to use technology in the classroom. Although she might need to spend a little more time on new e-storybooks than traditional storybooks of the same content, she would not need to spend more time on familiar e-storybooks than traditional storybooks. She did not see any cons of using e-storybooks.

In addition to the above four strategies in utilizing e-storybooks, in Mrs. Jones' technology integration for instruction, there were interactions between and among her, her students and the e-storybooks, which could facilitate their effective use of the e-storybooks. She interacted with an e-storybook by operating it during presentation. She used them flexibly to try to achieve her teaching objectives. She let her students have interaction with an e-storybook by touching the hotspots as an e-storybook progressed. Generally, for each e-storybook, every student was asked to touch at least one hotspot. The students liked to try out the hotspots themselves and also watched others trying out them. In regard to teacher-student interaction, Mrs. Jones had much communication with her students during each e-storybook presentation. She liked to talk about each slide of an

e-storybook with her students after its narration, such as explaining the story content, relating to life examples and students' prior learning, raising questions to check their understanding, providing guidance and support, asking students to make predictions about the story plot, and occasionally summarizing the whole story. In this way, she made her students engaged in comprehending the stories. During the instructional activities that followed the e-storybook presentation, she also had much interaction with her students.

Usually, the students were not given the opportunities to talk to each other during each e-storybook presentation except when the students were encouraged to give their peers help in answering the questions. One example was that in the dubbing activity during the presentation of the e-storybook *Three Little Pigs*, some students offered their advice to their peers about what could be said for the characters. In the activities that followed the e-storybook presentation, there was student-student interaction. For instance, after presenting the e-storybook *Ethan's Superpower*, Mrs. Jones had the students share with their neighboring students what superpower they would like to have. Later, while the students were coloring their own copy of "My Color Monster Book", some students in the same table talked about their coloring.

4.2.4.2   Problems Encountered

Mrs. Jones encountered the connection problem when she first began to use e-storybook and the design problem embedded in a few e-storybooks. About one week before Mrs. Jones used the first e-storybook *The Train*, she and the researcher tried out the

equipment. Since Mrs. Jones had not gotten her own iPad from her school yet by then, she was provided a second-generation iPad by the researcher. However, when the iPad was connected to the smart board, there was no picture projected to the smart board, and this iPad also did not work with the small projector brought by the researcher. They assumed the problem might lie in the iPad, and thus Mrs. Jones was provided a fourth-generation iPad by the researcher later. The newer iPad worked initially but the connection problem appeared intermittently. The connection between the iPad and the smart board was not stable, which made the picture on the smart board disappear occasionally and the screen image of several pages turned up-side-down.

She encountered two other problems. One was that an embedded game didn't work and trying to quit the game led to shutdown of the story. In the use of the first e-storybook *The Train*, a problem occurred to the game on the interior design of a carriage. In that game, the door between two carriages was supposed to open once being clicked. However, although a boy clicked the door repeatedly, it didn't move. Mrs. Jones also tried but it didn't work either. She tried quitting the game, but the whole story was shut down. Since the teacher did not click something wrong, it seemed to be the problem in the story itself. The other problem was that during Mrs. Jones' preparation, an e-storybook on the second-generation iPad provided by the researcher stopped working in the middle, and she never figured out why. All the six e-storybooks were originally put on the second-generation iPad provided by the researcher, and Mrs. Jones used it for preparation.

4.2.4.3   Ways of Overcoming the Problems

Mrs. Jones' initial solution to the connection problem was to change the old iPad to a newer iPad. When the newer iPad worked but the connection between this iPad and the smart board was not stable, she adjusted the connection between the equipment, restarted the iPad, and adjusted the position of the iPad. She unplugged the VGA adaptor from the iPad and plugged it to the iPad again, and at the same time she strengthened the connection between the VGA adaptor and the connection line of the smart board. She even restarted the iPad once. After all these efforts, the screen image came back, but it turned up-side-down. Mrs. Jones adjusted the position of the iPad until the page images turned to the right position. Before using other e-storybooks in the following sessions, she also tried out the equipment before class to check if everything worked well, and the researcher always brought a small projector as a back-up option. Such connection problems never happened after the 1st e-storybook.

To overcome the shutdown of the game in the e-storybook *The Train*, Mrs. Jones had to restart the story, return to the game and try the game again. She did not ask a student to try opening the door again. Rather, she touched it herself and this time the door opened, so her students were able to see what was inside a carriage. When an e-storybook on the second-generation iPad from the researcher stopped working in the middle during her preparation, she tried several different times first but it did not work correctly. She then downloaded the e-storybook on her own new iPad from her school and it worked well.

4.2.4.4   Attitudes towards Adopting E-storybooks

After the evaluation of the examples identified from the interview data, two codes were generated for the theme "the teacher likes the idea of adopting e-storybooks as a resource for her reading block". The two codes were "being positive before using the e-storybooks" and "being positive about using e-storybooks and planning to continue using them after the study". The first code was supported by the examples that the teacher was positive about using e-storybooks and was also willing to try new technology. The code "being positive about using e-storybooks and planning to continue using them after the study" was supported by the examples that the teacher was pretty positive about using e-storybooks and she was willing to continue using e-storybooks on her own. The second example was supported by three instances that displayed the teacher's future plan of using e-storybooks.

Throughout the study, Mrs. Jones liked the idea of adopting e-storybooks as a resource for her reading block. Even before using those e-storybooks, she was positive about adopting them as a resource for her reading block and was willing to try new technology, as she commented: "I would say positive. I'm willing to try new things with technology, so I would say generally pretty positive".

After using the first three e-storybooks and all the six e-storybooks, she was still positive about using this resource and planned to continue using it after the study. When asked about her attitudes towards adopting e-storybooks after she used the first three of them, she noted: "I'm pretty positive. Like I said I'm willing to do the technology thing and

spend the time that it takes to do that. I'm open to that". After using all the six e-storybooks, she expressed that she "would have a positive attitude towards it" and would be willing to search for stories that would go well with their teaching objectives and still do them on her own with the iPad she obtained from her school.

As to her plan on how to use e-storybooks, she expressed that she would use them with both large group and small groups, and she would like to use them on her students' reading level and she could choose stories based on theme rather than specific skill. In the future, she plans to continue using e-storybooks with the whole class once a week, at which frequency she thought would probably keep children's attention best. In this study, they were doing it once a week and Mrs. Jones found it keep her students' attention very strong. She thought that "if you used it too much, like multiple times a week, then it wouldn't be as novel and their attention would start to wane". After using an e-storybook with a large group, she would like her students to read and listen to it again and do the activities such as trying out the games on their own on an iPad during their learning center time, just as what they did in this study.

Mrs. Jones would like to have e-storybooks on students' reading level for both small and large group activity. After using three e-storybooks for this study, Mrs. Jones implied that they were a little beyond her students' reading level so they could understand them but were not able to read all of them. Since reading is a key task for kindergarteners, she thought it was good to use a story at students' reading level. She expressed that if there were e-storybooks that were more at students' reading level, she would plan to use them

with a small group of one or two children once or twice a week because she wants students to read e-storybooks themselves instead of being read to. In her opinion, small group activity "would be a little more frequent because it's a little more direct practice of their skills and you would have more variety". As was observed, in the follow-up activities, she gave out her students paper books that they could read themselves.

As for her future plan on selecting e-storybooks, she thought she could choose stories based on either specific skills they need to practice or themes. For this study, the researcher and the two teachers selected the six e-storybooks based on their weekly reading themes, but when she uses e-storybooks on her own in the future she would like to expand her sphere of story selection. She said: "If I had a specific skill that we needed to practice, kind of looking for a story that would kind of match and be able to make activities related to that specific skill that we needed to practice". She thought that she could also select theme-related e-storybooks "just based on the content of the story rather than the specific skill that I would want to practice afterwards". According to Mrs. Jones, once she follows the scope and sequence of the reading curriculum of her school, she has the freedom to decide what books to use and how to use them in her classroom.

CHAPTER 5. RESULTS OF CROSS-CASE ANALYSIS

As stated in Chapter 3, Stake (2006) has proposed three tracks of making cross-case

analysis, among which Track II was selected for the purpose of this study. This track

focuses on merged findings across cases and allows researchers to make generalizations

about cases. In this chapter, the common findings across the cases were identified and the

differences among the cases were also presented. The themes among the two cases

emerged from the cross-case analysis concerning the teachers' pedagogical strategies of

using e-storybooks, problems in e-storybook use and solutions, and their attitudes

towards using e-storybooks are described as experienced by the two teachers, with

examples and quotes presented.

5.1   Pedagogical Strategies of Using E-storybooks

Both teachers' pedagogical strategies of using e-storybooks include identifying

pedagogical objectives, analyzing attributes of e-storybooks, designing instructional

activities around using e-storybooks, and evaluating the benefits and cost of using them.

These strategies matched the major considerations on how to achieve pedagogical

effectiveness of technologies proposed by Salaberry (2001). Both teachers first identified

the teaching objectives of the literacy block and then used those objectives to direct their

use of the e-storybooks. Mrs. Willow indicated that "the main thing is what can you take from the story and use for different skills", and Mrs. Jones said that "I just kind of know how it would fit in with the objectives that we still had to cover".

Both teachers went through those e-storybooks in advance and analyzed the attributes of the e-storybooks in a similar way, but Mrs. Jones explored the attributes more carefully than Mrs. Willow did. Mrs. Willow checked if the e-storybooks' content and language were appropriate and if the visuals, audio, drop-down text, animations, and the hotspots were helpful. Mrs. Jones checked the story content, length, visuals, audio, drop-down text, hotspots, and the other affordances such as "Read to me" and "Record". Both teachers viewed an e-storybook in advance and decided what hotspots to use. Mrs. Willow mentioned: "I know we don't use them a whole lot in some of the stories where it's not as much help, helpful tools". Similarly, Mrs. Jones pointed out that:

> For the hotspots I try to go through the story a day or two before to make sure that I know what's going to happen and to make sure that any of them are essential to telling the story and not just something that's fun.

Designing instructional activities around using an e-storybook is a common practice for both teachers. They both planned on how to use an e-storybook first, presented an e-storybook to the whole class on the smart board, and then carried out instructional activities that tied to the e-storybook and the target skills. Mrs. Willow conducted postactivities that followed each e-storybook presentation, and Mrs. Jones carried out both pre- and postactivities around each e-storybook presentation. Mrs. Jones' activities

before an e-storybook presentation were mainly an introduction and/or narrative conversations with her students that intended to activate their relevant cognitive structures for the new story.

It is notable that the two teachers varied in their styles of presenting an e-storybook, though they both used an e-storybook as an introduction to the activities that followed the story presentation and turned on the automatic reading mode. During e-storybook presentation, with the automatic reading mode on, what Mrs. Willow mainly did was to turn over one page after the automatic reading of it. She did not click many hotspots in an e-storybook, even though some hotspots are fun and can help facilitate students' story comprehension and engage them. She seldom talked about the story content of each page and just occasionally gave explanation to the story plot. Obviously, she had little communication with her students during e-storybook presentation such as raising questions. In addition, when she applied hotspots, she herself operated the hotspots instead of giving her students opportunities to experience them. Usually she completed the presentation of an e-storybook within ten minutes, and then proceeded to the follow-up activities designed to allow her students to practice specific skills such as spelling, reading, and writing. By contrast, although Mrs. Jones also used an e-storybook as an introduction to some other topics and the target literacy skills, she liked to talk about each page with her students after the automatic reading of it to try to help them fully comprehend the story, and she had her students use many hotspots themselves, even though some hotspots were not so helpful in revealing the story plot. She explained the content of one page, provided the background information, related to life examples and

students' prior learning, raised questions, offered guidance and support, and encouraged her students to make predictions about the story plot. In this way she did get her students to be actively involved in comprehending the story. As she said:

> I think that there has to be things that the kids can make connections with. So if they have heard the story, like something like *Around the World in 80 Days*, which isn't a story that they would necessarily have been familiar with, that they still need to be able to make that, personal connection to that story in order to understand it and fully comprehend."

In addition to her own interaction with her students, she encouraged her students' interaction with the e-storybooks by asking them to touch the hotspots as the stories progressed. In each e-storybook, she tried to have each student to come to the front to touch at least one hotspot. In their learning center time, Mrs. Jones had her students independently explore each e-storybook that they had already listened to, and her students did want to try all the hotspots. Similarly, during each e-storybook presentation, the students in the two classrooms were given few opportunities to talk to each other, though they had chance to interact with their neighboring students or the others in the follow-up activities.

While utilizing those e-storybooks, both teachers evaluated whether it was worthy to use e-storybooks over traditional storybooks in terms of effectiveness and time availability. They thought that there were only pros of using e-storybooks but no cons of using them. Both of them thought that e-storybooks draw kids in and help develop their

comprehension skills, and they all enjoy using them. However, they had slightly different opinions on whether they would need to spend more time, efforts, and resources for incorporating e-storybooks into their reading block than incorporating traditional storybooks. Mrs. Willow mentioned that e-storybooks are easy to use and using them is not more time-consuming for her than using traditional storybooks. She said: "I wouldn't think it would be any more difficult than finding a book from the library that's a hardback book". Mrs. Jones thought that she does not need to spend more time on familiar e-storybooks but needs to spend a little more time on new e-storybooks. As she pointed out:

> I think the only reason that I have to spend more time is because I'm not familiar with them. Since they've been new to me and I've had to check out all the different little activities within the story, it's taken more time. But in the future, if I were to use them again, I'd say about the same….since I'm already familiar with those particular stories…but any time I would choose a different story, I'd say yes, it would take a little more time.

5.2   Problems in E-storybook Use and Solutions

Both teachers encountered a few problems in utilizing those e-storybooks, but they found ways to overcome them. Perhaps due to programming issues in some e-storybooks themselves, being kicked out of certain e-storybooks was a common problem for both teachers, though they went through the stories in advance to decide what to touch. Since they used different features in each e-storybook, this problem happened to them in different e-storybooks. To be specific, in class, Mrs. Willow was kicked out of the e-storybooks *Animal Planet Hide & Seek Pets* once and *Place to Grow* twice respectively,

and Mrs. Jones was kicked out of the e-storybook *The Train* once. Both teachers solved this problem by restarting the e-storybook, returning to the specific place where they were kicked out, and trying again. When Mrs. Jones reviewed an e-storybook (she did not mention which it was) during her preparation time, the e-storybook stopped working in the middle. She tried to restart it at several different times, but it did not work. Later she used a different iPad and it worked. Another problem in the same e-storybook happened to both teachers. When Mrs. Willow began to use the first e-storybook *The Train* in class, the last page of this story popped up. She quitted that page and moved back to the first page of the story. Mrs. Jones encountered the same problem in this e-storybook during her preparation time.

The other problems the two teachers confronted vary due to the equipment issues and even the researcher's mistake, but they dealt with their challenges flexibly. For instance, when Mrs. Jones began to use the first e-storybook, she found that the connection between the iPad and the smart board in her classroom was not stable, which caused the screen images to disappear sometimes and even turn up-side-down. She solved this problem by adjusting the connection between the VGA adaptor and the iPad and the connection between the VGA adaptor and the smart board, restarting the iPad and adjusting the position of the iPad. If she had not solved that connection problem, she would have used the projector that was always brought by the researcher as a back-up option. One problem Mrs. Willow faced was caused by the researcher's carelessness. Once the researcher forgot to charge the loud-speaker before going to Mrs. Willow's reading block. When Mrs. Willow turned on the loud-speaker, it was out of power so it

could not increase the story's volume. Mrs. Willow asked her students to listen very attentively to the e-storybook and she also showed the drop-down text. She told the researcher that she did not consider it as a problem because she thought her students could hear it.

When those technology glitches happened, both teachers were patient and focused on seeking solutions. Their students were also patient and easy-going about it, and they just waited. Overall, it seemed that both teachers took those technology glitches as minor problems or even no problems, and they did not feel disappointed or upset at all about using e-storybooks. After using the first three e-storybooks, Mrs. Willow considered being kicked out of one e-storybook as "the only thing". She commented: "I wouldn't say it's a problem. It's probably user error, so it's my problem, not the books". She also emphasized her point: "It just takes a little bit to get it just for me, but it's been very good. I like it. No problem". Mrs. Jones saw the connection problem as "the only problems we've had". After using the last three e-storybooks, Mrs. Willow did not think she had any problem with using them, as she said: "I think they all ran smoothly and they were user friendly and I didn't make any mistakes […] No problems that I ran into". Mrs. Jones mentioned that one e-storybook stopped working in the middle during her preparation, but she stressed it as "the only problem" in using the last three e-storybooks.

5.3   Attitudes towards Using E-storybooks

Both teachers have been positive about adopting e-storybooks as a resource for their reading blocks, and they planned to continue using this resource after the study. Even before using those e-storybooks, both teachers were positive about adopting them as a

resource for their reading blocks. Mrs. Willow expressed her excitement by saying: "My attitude is really positive now […] I can see what it will bring to the classroom in that aspect of really engaging the children and getting more out of it than maybe a traditional setting would". Mrs. Jones noted: "I'm willing to try new things with technology, so I would say generally pretty positive".

After using the first three e-storybooks, both teachers expressed that they enjoyed their new teaching experience with such resource and plan to continue using it. Mrs. Willow indicated: "I really like it, even though I could see just the ones that we went through, I could see, even if we wouldn't adopt it, I would buy some and then introduce more into my program myself". Mrs. Jones commented: "I'm pretty positive. Like I said I'm willing to do the technology thing and spend the time that it takes to do that. I'm open to that". She also noted that since her school just began to have iPads available for classroom use, she could and she would use e-storybooks after this study.

After using all the six e-storybooks, both teachers kept and even strengthened their positive attitude. Mrs. Willow emphasized that she enjoyed the whole process and her students liked it. She commented: "I really like it. I hadn't really done it as a whole group before, and through me and doing more activities around it, of just had an option for station […] I would do it in the future for sure". Mrs. Jones noted: "I would have a positive attitude toward it. I would be willing to look for stories and still do them on my own".

In respect to their future plan of adopting e-storybooks, both teachers planned to introduce more e-storybooks to their programs and use it with both large group and small group in their reading blocks. They planned to use e-storybooks with the whole class as they did in the study. Mrs. Willow may choose to do it more than once a week, while Mrs. Jones would still choose to do it once a week, which she thought would best keep students' attention. Mrs. Jones explained: "We're doing it once a week and we're keeping their attention very strong. I think if you used it too much, like multiple times a week, then it wouldn't be as novel and their attention would start to wane".

For small group activity, both teachers intended to use e-storybook as an individual learning tool to review what they would have learned and to learn new stuff. Within the time frame of this study, in addition to using the six e-storybooks with the whole class, Mrs. Jones used each one of them in the learning center time for her students to review and explore individually, and she planned to continue this activity with new e-storybooks. Mrs. Willow planned to either let her students review the existing six e-storybooks in the same way as Mrs. Jones had already done, or review them together with her students. Besides, Mrs. Willow would like to set up e-storybooks in her stations so that an individual student can listen to a story being read to him/her. Mrs. Jones planned to have one or two kids read e-storybooks themselves if she could find stories at students' reading level. Unlike Mrs. Jones, Mrs. Willow would also consider using an e-storybook as a one on one tool between two children who could use it and talk about it, or between a child and an adult to read the story together, discuss it or do comprehension activities. For small group activity, Mrs. Jones planned to do it once or twice a week, while Mrs.

Willow planned to do it more frequently, depending on how she would use this resource. She explicated:

> If I can get it to where we can set up stations or set up one on one work and plus the whole group activity, we could use it daily easily because if we're running a block, or running stations, or running different types of work throughout the classroom, it could be incorporated easily, so I would think daily at least, if not more than once daily for the kids.

In this study, there were three themes that were not salient across the two cases. The first theme is about using affordances. Both teachers used the "Read to me" mode and some of the hotspots in each e-storybook, but Mrs. Jones made use of some other affordances that were available in an e-storybook to meet her teaching needs. For instance, when reviewing what they had learned in the e-storybook *A Place to Grow*, Mrs. Jones used the electronic crayons to draw the four steps of planting grass seeds in the "draw" part of the game "Learn & Draw". The game "Learn & Draw" integrates the "learn" part and the "draw" part. The "learn" part serves as content review and knowledge check, and the "draw" part provides story-related images for users to color. Mrs. Jones must have tried all the buttons available and found the button that clicks to provide a blank drawing board. Another example is that in the e-storybook *Three Little Pigs*, which had the "Record" affordance, she had her class do the dubbing for the story characters. It was a very creative and engaging activity for her class. Just as Mrs. Jones said: "Since they've been new to me and I've had to check out all the different little activities within the story".

The second theme is about ways of using e-storybooks in the future. In addition to using e-storybook with a whole group and individuals, Mrs. Willow would also consider using an e-storybook as a one on one tool between two children who could use it and talk about it, or between a child and an adult to read the story together, discuss it or do comprehension activities.

The third theme is about future plan of selecting e-storybooks. Mrs. Willow seemed to be satisfied with the selection of the six e-storybooks and did not mention how she would choose e-storybooks differently in the future, but Mrs. Jones expressed that she would select e-storybooks that would better meet her teaching needs in the future. Mrs. Willow always said that the six e-storybooks were great and match their themes and fit well into her curriculum. , such as "they worked well and you picked out great stories to match our themes. It was great". Mrs. Jones thought the six e-storybooks were a little beyond her students' reading level. Although they could understand them, they were not able to read all of them by themselves. Since reading is a key task for kindergarteners, she thought it was good to use a story at students' reading level so that they can actually read themselves. In the future, for either small group or large group activity, she would prefer to select e-storybooks at her students' reading level. In addition, instead of choosing stories merely based on the weekly reading themes for the purpose of this study, she plans to choose stories based on either specific skills they need to practice or theme.

CHAPTER 6. DISCUSSION

E-storybooks on iPad, with easy access, obvious benefits for both monolingual and

second language learning children, and the potential to be used at home, should hold a

place in the language arts education for kindergarteners. This qualitative multiple-case

study was designed to understand kindergarten teachers' experiences with utilizing

interactive e-storybooks for shared reading and their attitudes towards adopting such

resource for their reading block. Two kindergarten teachers and their students

participated in this research study.

As a brief summary of the results, the strategies both kindergarten teachers employed to

try to achieve effectiveness of e-storybooks included identifying pedagogical objectives,

analyzing the attributes of e-storybooks, conducting instructional activities around using

the e-storybooks, and evaluating the benefits and cost of using such resource. Their

strategies were consistent with Salaberry's (2001) four major considerations on how to

achieve pedagogical effectiveness of technologies. However, the two classrooms varied

in their degrees of interactivity between teacher and the students and between the

students and the e-storybooks that supported learning.

The teachers encountered a few common problems in utilizing the e-storybooks, and they also had different problems in using them. The common problems were that both teachers were kicked out of certain e-storybooks and that the last page of the e-storybook *The Train* appeared at the beginning of this book. The two teachers also confronted their own unique problems, such as no power of the loud-speaker once in Mrs. Willow's classroom and the initial unstable connection between the iPad and the Smart Board in Mrs. Jones' classroom. In face of those problems, the teachers found ways to overcome them. Both teachers have been positive about adopting e-storybooks as a resource for their reading block, and they planned to continue using this resource after the research study. They planned to introduce more e-storybooks to their programs and use them with both the whole class and small groups in their reading block, but they would have their own plans on the ways and the frequency of using them.

This chapter is divided into five sections. First, the findings of this study are discussed with relevance to the literature. Second, I describe how this study provides implications for practice, professional development, and future research. Third, I discuss the strengths and limitations of this study. Fourth, a conclusion is provided. At the end of this chapter, I present my final thoughts about this research study.

6.1   Revisiting the Research Questions

6.1.1   Research Question 1

Research Question 1: What instructional strategies did the kindergarten teachers employ to try to achieve pedagogical effectiveness of the electronic storybooks for shared reading programs?

With the intention of making effective use of those e-storybooks, both teachers employed the strategies of identifying pedagogical objectives, analyzing the attributes of the e-storybooks, conducting instructional activities around the e-storybooks, and evaluating the benefits and cost of using such resource. Their strategies are consistent with Salaberry's (2001) four major considerations on how to achieve pedagogical effectiveness of technologies.

In addition to applying those strategies, Mrs. Jones enhanced her interaction with her students by using dialogic reading techniques in her shared reading of the e-storybooks with her class. During the shared reading of the e-storybooks, Mrs. Jones employed a common interactive shared reading method-dialogic reading, while Mrs. Willow adopted non-interactive shared reading method-she let the e-storybooks read aloud. To be specific, Mrs. Jones had narrative conversations with her students at intervals by relating the students to their life experiences or prior learning and raising "wh" context-eliciting questions and providing explanation; Mrs. Willow just had her students view the e-storybook and listen to the audio narration but seldom initiated conversations about the e-storybook. From the social-construction perspective, it is important for an adult reader to make the book interesting and relevant to a child (Bus, 2001). Labbo (2000) commented that "[w]hen children are invited to reflect on how the CD-ROM talking book connects to their own stories and their own experiences, they have occasions to make personally relevant meaning" (p.545).

In response to Mrs. Jones' interactive shared reading, her students were quite active in answering her questions. Usually, once she raised a question, multiple students raised their hands, among whom Mrs. Jones asked one student to answer. By contrast, as a result of Mrs. Willow's read-aloud, her students just listened to the stories but had few opportunities to provide information about the stories. Through the social interactions, Mrs. Jones' students may develop a strong attachment to her and had pleasant reading experiences (Bus, 2001). In addition, Mrs. Jones' use of dialogic reading techniques can lead to children's frequent provision of contextual information about when and where in their own narratives (Lever & Sénéchal, 2011; Peterson & McCabe, 1994; Peterson, Jesso, & McCabe, 1999).

Mrs. Jones also enhanced the interaction between her students and the e-storybooks by allowing her students to experience the hotspots themselves. Mrs. Jones tried to have each of her students check on at least one hotspot in each e-storybook and her students were very interested in doing that. She sometimes called the students who sat straight and be quiet first as a reward to them, which also served as a way of class management. Unlike Mrs. Jones, Mrs. Willow clicked on the hotspots she wanted to use by herself without giving her students opportunities to check on them. Although her students could not experience touching the hotspots themselves, they looked excited when Mrs. Willow were activating the hotspots. Their students' different experiences with the hotspots may affect the students' curiosity and interest in the e-storybooks differently.

In either Kim et al.'s (2007) pedagogical framework for technology integration or the

adapted framework presented in Chapter 2, it is not regulated how much interaction is

adequate for each type of interaction in order to make effective use of the technology.

The interactions between and among the teachers, the students, and the e-storybooks were

not quantified in this study. Nevertheless, more teacher-student interaction and more

students-tool interaction were observed in Mrs. Jones' class than in Mrs. Willow's class.

The strong interaction between Mrs. Jones and her students and between her students and

the e-storybooks may contribute to the effectiveness of Mrs. Jones' use of the e-

storybooks. By contrast, there was little such interaction in Mrs. Willow's class. The two

teachers had different styles of utilizing the e-storybooks, but Mrs. Jones' way of using

the tool made her instruction more informational and fun.

Mrs. Jones' usage of certain affordances in the e-storybooks reveals that she checked out

the features of each e-storybook very carefully and tried to use them to engage her

students as well as achieving her teaching purposes. For instance, when reviewing what

they had learned in the e-storybook *A Place to Grow*, Mrs. Jones wrote and drew the four

steps of planting grass seeds on the drawing board of the game "Learn & Draw", and her

students were drawn to that. Since this drawing board is not easily noticeable, locating it

needs users' careful exploration of the buttons in the "draw" part of the game. Mrs. Jones

could have drawn those on a piece of chart paper or on the smart board, but she chose to

complete it in the game "Learn & Draw" of the e-storybook, which reveals that she tried

to transform her instructional practices in her technology integration. Another example

was that while she was using the e-storybook *Three Little Pigs*, she used the "Record"

affordance to let her students do dubbing for the story characters and then let her class listen to it immediately. Her students felt fresh and excited about this dubbing activity, and they were amused by how their peers' voice came out a little differently through the characters. However, although Mrs. Willow also noticed the "Record" affordance in the e-storybooks and thought it helpful, she never used it in her class.

Above all, Mrs. Jones' use of dialogic reading and her creation of rich interactions in her e-storybook use were consistent with what the literature suggests about effective use of e-storybooks. According to Hughes' (2005) framework on the three stages of technology role in technology-supported pedagogy, Mrs. Jones used the e-storybooks at a more advanced level than Mrs. Willow did. In both teachers' classrooms, e-storybooks as amplification may enable their students to comprehend the stories more effectively. However, in Mrs. Jones' class, e-storybooks were utilized in a transformative way that may change her instructional practices and roles in the classroom as well as her students' learning routines. Mrs. Jones created a real technology-supported class where technology was integrated in her teaching and the students' learning.

6.1.2   Research Question 2

Research Question 2: What problems did the kindergarten teachers encounter in utilizing the electronic storybooks for shared reading programs, and how did they try to overcome them?

Mrs. Willow and Mrs. Jones encountered a few common problems in utilizing the e-storybooks and they also had different problems in using them, but they both found the

ways of overcoming the problems. The common problems were that both teachers were

kicked out of certain e-storybooks and that the last page of the e-storybook *The Train*

appeared at the beginning of this book. The two teachers also confronted their own

unique problems, such as no power of the loud-speaker once in Mrs. Willow's classroom

and the initial unstable connection between the iPad and the smart board in Mrs. Jones'

classroom.

In the processes of dealing with the problems, the teachers used their basic knowledge

and skills concerning classroom equipment and technology-supported pedagogy. Since

they utilized technologies in both their classrooms and their daily life from a computer, a

laptop, a smart board, to a smart phone, they were able to apply their knowledge and

skills in using technologies to handling the problems in utilizing the e-storybooks on

iPad, though they had never used them before this study. For instance, Mrs. Jones

employed her technological knowledge or common sense to stabilize the connection

between the iPad and the smart board in her classroom. Overall, both teachers felt that the

e-storybooks were easy to use.

Mrs. Willow also applied her knowledge and skills in technology-support pedagogy to

overcoming the problems she encountered. For instance, while Mrs. Willow was

restarting an e-storybook and her students were waiting, she sometimes drew their

attention by talking about the error such as "give me a second and let's do this" or she

checked their understanding by asking them questions about the story. By contrast, when

Mrs. Jones restarted an e-storybook in class, she kept her students waiting without

seeking ways to make use of the waiting time. Perhaps she was a little nervous about the technological problem and focused all her attention on solving it. Another example is that when the loud-speaker provided by the researcher was out of power over the entire presentation of one e-storybook, Mrs. Willow showed the drop down text that matched the audio narration in the hope that the text could help her students follow the story.

Both teachers were friendly to the technology glitches they encountered. Mrs. Willow did not see the problems as problems and Mrs. Jones just considered two of the problems as problems. There may be two reasons that explain their thinking. Firstly, those problems did not hinder their e-storybook use. Secondly, their beliefs in technology's positive role in changing teaching and learning helped reduced the effects of the external barriers to their technology integration (Ertmer, 1999).

6.1.3   Research Question 3

Research Question 3: What were the kindergarten teachers' attitudes towards adopting electronic storybooks as a resource for their reading block?

Both teachers were positive about adopting the e-storybooks as a resource for their reading block, and they planned to continue using such resource after the study. CCSS (2015) mentions the use of both print and digital sources throughout the document as it relates to English language arts and literacy in all the other subject areas across all grades. In a technological society, while students are expected to develop concepts of print as early as kindergarten, the ability to analyze and create nonprint texts in media forms is important (CCSS, 2015). However, due to the irreplaceable benefits of traditional books

to children's literacy development, e-storybooks cannot be a replacement for traditional storybooks but a valuable supplement (de Jong & Bus, 2002; McKenna, 1998).

In addition to employing this tool for shared reading with the whole class as they did in this study, both teachers wanted to have children read e-storybooks independently and within small groups. Independent reading is necessary for kindergarteners, and the support features of e-storybooks such as audio narration and animations make independent reading a reality for emerging readers. Given activating incidental graphics and audio effects may distract readers away from the reading task, teachers need to monitor reader behaviors (Pearman & Chang, 2010). Teachers who use e-storybooks that include games should make certain they are in a separate mode (e.g., read only, read and play, and play only) (Shamir & Korat, 2006), and readers should only be allowed to utilize the games either before or after reading but not during the actual reading process (Pearman & Chang, 2010). After presenting the e-storybooks in class, Mrs. Jones had her students reread those e-storybooks by themselves during the learning center time and allowed them to play the games, which they really liked. She expressed that she chose not to play many games in class in order to keep the story flow.

Mrs. Jones expressed that the six e-storybooks used in this study were a little beyond her students' reading level and she would select the e-storybooks at her students' reading level for their independent reading in the future. This is an important consideration in selecting e-storybooks from the perspectives of effectively using instructional technology (Salaberry, 2001) and promoting children's independent reading, since kindergarten

children are expected to "read texts independently that have been specifically written to correlate to their reading level and their word knowledge" (CCSS, p.32). Among a wide range of multimedia storybooks available for download on iPad, teachers need to select the storybooks that match the students' interest, needs, and language level. The length and difficulty of the storybooks should align with the continuum of students' language development over time.

In addition, Mrs. Jones planned to do the whole group shared reading of e-storybooks once a week and do the small group activities with e-storybooks no more than twice a week, at which frequency she thought would best keep students' attention. According to McKenna (1998), limiting children's range of interactions with e-storybooks may help maximize their engagement and e-storybooks' instructional impact.

6.2   Implications

6.2.1   Implications for Practice

In fall 2013, I volunteered in the reading blocks at three kindergarten classrooms in a public elementary school in a small Midwestern city in the United States. I observed that each of the three classrooms was equipped with Internet connections, a smart board, a teacher's computer, several computers with headphones for student use in the learning center, and a CD-player with multiple headphones. The teachers used the smart board frequently in class for instruction, exercises and fun. During the independent reading time, while a group of students were viewing and listening to the literacy lessons on the computers in the learning center, another group of students were listening to the CD versions of the traditional storybooks and then working on the worksheets prepared by

their teachers, and then they exchanged their work stations. I was impressed by how the teaching and learning at kindergarten level were greatly enriched by the adoption of the instructional technologies.

During the reading blocks, I noticed that the three teachers mainly used traditional storybooks for shared reading, but one teacher once used the song version of a story on YouTube for introduction. From our after-class communication, I knew that she sometimes employed this approach to engage students. I also noticed that some of the traditional storybooks they were using had CD-ROM versions accompanying them, but they were just read aloud stories, without any text, turning of "pages" to control the pace of reading, or other features that facilitated learners' comprehension of the stories. When I asked the teachers if they used e-storybooks with hotspots features, they said that these were too expensive and their school could not afford them, and the teacher who used the song version of the story said that she would love to use e-storybooks. I also learned from her that the kindergarten teachers in her school had the freedom to choose storybooks on their own around the weekly theme, which means that they can choose to use e-storybooks in their reading blocks. However, I do not remember if the three teachers were provided with iPad by their school for classroom use.

In the spring of 2014, when I began to do my dissertation research in a public kindergarten classroom and a private one, I saw that the two classrooms had very similar instructional technologies with the three classrooms where I did my volunteer work. It seems that those technologies are what a standard kindergarten classroom should have. In

addition, the teacher from the public school already had an iPad provided by her school for classroom use, and the teacher from the private school obtained an iPad provided by her school soon after my study started and she told me that a class could check out ten iPads for classroom use. All these gave me the impression that the kindergarten teachers generally have access to iPad and thus they could access to the e-storybooks on iPad.

Currently there are conditions for successful technology integration across many grade levels in the developed countries, including a favorable policy environment, ready access to technology, and increased training for teachers (Ertmer, 1999; Labbo, 2006). As a valuable supplement to traditional storybooks, e-storybooks of different formats (e.g., published software on CD-ROMs, online/web-based storybooks, and interactive apps on iPad) should be utilized in kindergarten classroom settings to enrich children's reading experiences, increase their reading engagement as well as improving their reading capabilities. The authorities at all levels (e.g., state department of Education, schools) should support the use of interactive e-storybooks in kindergarten classrooms by providing funding for purchase of high-quality e-storybooks based on kindergarten teachers' voices and experiences.

6.2.2   Implications for Professional Development

It is necessary to provide sustained professional development both formally and informally through workshops, meetings, and communities. As Justice, Mashburn, Hamre, and Pianta (2008) indicate, teachers' fidelity to the prescribed language and literacy curriculum does not generate high-quality instruction; it is necessary to provide

sustained professional development that emphasizes "the conceptual knowledge and skills that teachers need to provide high-quality instruction to children" (p.66). To have professional development support classroom practices and, reciprocally, to have classroom practices inform professional development will make the successful application of e-storybooks possible.

As emphasized in the literature, the success of technology-enhanced instruction depends more on how teachers use the technology than on the technology itself (Kim et al., 2007; Salaberry, 2001). Thus, teacher knowledge about the reading standards for literature at kindergarten level will help them realize what to expect on their instructional strategies. For instance, it is specified in CCSS that with prompting and support, kindergartens are supposed to have the capabilities to read stories, ask and answer questions about key details in a story, and retell a story with key details. Understanding of this will promote kindergarten teachers to use prompting and support when using e-storybooks for shared reading just as they use traditional storybooks.

Second, teachers need to have a thorough understanding of the e-storybook in order to maximize its potential in the classroom. Knowledge of both the advantages and disadvantages of interactive e-storybooks is necessary for teachers to plan and design instruction (Pearman & Chang, 2010). In this study, the two kindergarten teachers appear to be only aware of the strengths of interactive e-storybooks, which could hinder their optimal use of this tool. Thus, it is important to present teachers with the research results on the potential weaknesses of interactive e-storybooks and the harm of inappropriate use

of them to children's reading ability. Meanwhile, the flooding of e-storybooks on the market demands teachers' careful examination of their quality. An e-storybook may have several versions that are varied in graphic design, animations, technical features, and language level. Knowledge of how to judge the quality of an e-storybook will help teachers select a high-quality one. Teachers' own thoughts combined with a reliable evaluation rubric [see, e.g., the evaluation questionnaire developed by Shamir and Korat (2006)] can help them select high-quality e-storybooks that tend to meet their teaching needs.

Teachers would also need to be trained on how to use the hotspots by an external collaborator with expertise, such as university researchers. Although both teachers in this study knew that not all the hotspots were useful and they should only use what they thought were part of the story elements, they did not always use the hotspots appropriately. In Mrs. Willow's class, she did not use many useful hotspots, including those that could have engaged her students more and helped them better understand the stories. In Mrs. Jones' class, most of the hotspots Mrs. Jones asked her students to check on were helpful to the progression of the stories, but in two e-storybooks she had her students check on some hotspots that were just fun rather than closely relevant to the story plot. Having general concepts of how to use the hotspots is not enough; what is important is that teachers can internalize the basic rules of utilizing the hotspots through training and apply those rules into their e-storybook use.

For the teachers who are not so interested in integrating technologies into teaching, their pedagogical beliefs about technology use could be gradually changed through professional development. Given ready access to technology, teachers' pedagogical beliefs play an important role in applying a technological tool successfully. Displaying the literature about the benefits of e-storybooks is the first step. A link between the instructional strategies of using e-storybooks and teachers' existing teaching practices should be established to increase teachers' confidence in using e-storybooks. E-storybooks can be introduced to teachers to supplement their existing practices of storytelling rather than to replace them.

The approach discussed above is more effective to changing teacher pedagogical beliefs about technology use and consequently changing their practices (Ertmer, 2005). For instance, if teachers originally read traditional storybooks to the students five times a week, during the intervention, they can choose to read traditional storybooks four times a week and utilize an e-storybook once a week. After they get more comfortable using this tool and feel the students are becoming interested in it, they may increase their frequency of including the technology-enhanced approach. Changes in teacher beliefs and successful practices are reciprocal (Calderón & Marsh, 1988; Guskey, 1986; Ruiz, Rueda, Figueroa, & Boothroyd, 1995). Having teacher see the success in their own technology use will help change teachers' beliefs (Ertmer, 2005). During the training processes, teachers' voices and perspectives are valuable and should be considered, since they know about the context of the classroom that grounds technology use (Egbert, Preuss, Huff, Sellen, & McNeil, 2009). Meanwhile, administrators' positive attitudes

towards technology-enhanced approaches and the support of the whole school environment also contribute to changes in teachers' beliefs about technology use in learning (Ertmer, 2005).

Finally, it is necessary to have current and emerging research inform and guide professional development for technology integration. Lawless and Pellegrino (2007) point out that much of the professional development on technology is "driven by a very strong perceived need for action, but it is often not guided by any substantial knowledge base derived from research about what works and why, with regard to technology, teaching, and learning" (p.576). To have the professional development be guided by the research results about the use of interactive e-storybooks, teaching, and learning can improve the quality of professional development.

6.2.3   Implications for Future Research

Based on the findings and limitations of this research study, future research would be needed in the following areas. First, more teachers of diverse backgrounds can be studied to obtain more robust findings. This study involved a beginning teacher and a mid-career teacher who were using technology for instruction, but no technology-using veteran teacher was involved. The participation of technology-using veteran teacher(s) would enrich the research results. To obtain more insights on how technology-using kindergarten teachers use interactive e-storybooks, we would need a qualitative case study that includes more cases (e.g., two cases) representing the technology-using teachers in each professional stage.

Second, it is worthy studying how the teachers who are less and even not interested in technology use utilize interactive e-storybooks and their attitudes towards adopting this tool. Some teachers are not willing to use technologies for instruction or try new technologies. Research focusing on this group of teachers will provide valuable information for professional development and facilitate the adoption of this resource in kindergarten settings.

Third, this exploratory study could lead to several quantitative studies on how to use interactive e-storybooks effectively. In this qualitative study, the two teachers displayed different styles of e-storybooks shared reading: teacher-led non interactive shared reading and teacher-led interactive shared reading. In the former reading style, the teacher touched on the hotspots herself while in the latter reading style the other teacher called on her students to click the hotspots. One possible study could investigate which reading style would be more beneficial to children's reading achievements and motivation. Within each reading style, whether the teacher-touch-hotspot approach and the student-touch-hotspot approach affect students' learning outcomes and motivation differently. An additional study could examine when each of the two shared reading styles is combined with each of the two ways of checking into the hotspots, how the four dyads affect students' reading achievements and motivation differently. These potential quantitative studies, which are different from previous studies comparing e-storybook-based activities with traditional storybook-based activities, would shed light on how to integrate interactive e-storybooks effectively into kindergarten shared reading programs.

6.3   Strengths and Limitations of Study

This study has several strengths in terms of its methodology. First, replication logic was utilized in the study design to help generate robust findings about the similarities and differences in the use of the e-storybooks by the two teachers. Second, the data was triangulated with the three sources of data collected and analyzed. The two teachers were interviewed three times over the study, and six sessions of their reading blocks in which they applied the e-storybooks were observed. Their lesson plans along with their class handouts and worksheets were also collected. Third, the two teachers' variation in their professional stage, which is a major factor that may affect teacher's technology use, made the findings robust.

This study also has its limitations. The small sample size of the study is a limitation. Although having two cases can blunt criticism and skepticism about single-case studies, having more than two cases will produce even stronger results (Yin, 2014). Given the small sample size, the results cannot be generalized to larger population. In addition, despite the adoption of typical-case sampling strategy, the results may not apply to every technology-using teacher of the same professional phases with the two teachers in this study due to individual variations.

6.4   Conclusion

By depicting the kindergarten teachers' experiences of utilizing the interactive e-storybooks, this study has addressed a gap in the research on technology-supported literacy education. E-storybooks, which are beneficial to early readers and the children experiencing difficulties in learning to read, are a good supplement to traditional

storybooks and should be used as a reading source in kindergarten. More research efforts will be needed on how to optimize the use of e-storybooks in kindergarten settings.

<center>6.5   Final Thoughts</center>

This research study gives me an opportunity to see how the use of interactive e-storybooks by different teachers was different and how the application of this tool enriched and even changed the dynamics of the classrooms. This opportunity (after my voluntary experience) once again enabled me to witness the kindergarten teachers' importance and hard work in preparing the young children for their future development. My heart was filled with my respect and appreciation for their wisdom, patience, and efforts.

Looking back, the recruitment of the study participants was tough but it taught me to reach out to the outside bravely. I did not know the two participating teachers before conducting this study. I only heard about Mrs. Willow from my fellow student and then I wrote to her, and she agreed to participate in my research study. After that, I spent quite a long time looking for another participant. I contacted the kindergarten teachers I worked with before, I contacted my acquaintances for their resources, and I sent emails to the teachers whom I found from the school corporation's websites and who potentially met my selection criteria. However, due to some reasons (e.g., no interest, schedule conflict), no teacher participated in my research study. As there was not much time left for searching another participant, I began to call the schools I had not contacted for possible chance. I called Mrs. Jones' school and the call was transferred to the principal and then to Mrs. Jones. Fortunately, Mrs. Jones was interested and her different background from

Mrs. Willow's qualified her to be another participant in my study. If I had not found the second participant anyway, I would have conducted a single-case qualitative study, which would make my study much weaker. Above all, the recruitment process was painful, but it taught me not to lose hope easily if I wanted to do a strong research study.

This study allowed me to apply my knowledge of doing qualitative study, to experience the delicacy of qualitative research, and to reflect on the process itself. I have realized that the key to a successful qualitative study is a sound study design, which requires a researcher's experience and profound thoughts. Although I thought this study was carefully designed at the beginning, I discovered its weaknesses as I wrote it up. Being aware of this is a part of my growth as a researcher.

If I would do this study again, one thing I would do differently would be asking the teachers to brainstorm and list their strategies of utilizing the e-storybooks on a piece of paper at the beginning of each interview. In this way they could have a better idea of what they would talk about in the interview instead of being led by my questions or forgetting to talk about some of their strategies. By using this approach, I could also ask questions based on the teachers' list, which may help reveal more findings. Their lists would also be used as a source of data, which could increase the credibility of the results. In addition, if I would have the resources, I would include more cases to produce a stronger study.

Finally, I think the usability of some e-storybooks needs to be improved to facilitate better user experiences. The problems the two teachers encountered in utilizing a few e-storybooks were due to the design deficiency, and those interactive e-storybooks were paid e-storybooks instead of free ones. Improving the usability of e-storybooks in general could increase users' interest in utilizing them and promote wide adoption of them as a teaching source.

LIST OF REFERENCES

REFERENCES

Agee, J. (2009). Developing qualitative research questions: a reflective process.

    International Journal of Qualitative Studies in Education, 22 (4), 431-447.

Anderson-Inman, L., & Horney, M. (1997). Electronic books for secondary students.

    Journal of Adolescent & Adult Literacy, 40 (6), 486-491.

Andrews, R. (Ed.). (2004). *The impact of ICT on literacy education*. London: Routledge

    Falmer.

Bax, S. (2003). CALL-past, present and future. *System, 31*, 13-28.

Becker, H. J., & Riel, M. M. (1999, September). *Teacher professionalism and the*

    emergence of constructivist-compatible pedagogies. Retrieved from

    http://www.crito.uci.edu/tlc/findings/special_report2/aerj-final.pdf

Beltchenko, L. (2011). *The components of effective read alouds* [PDF document].

    Retrieved from http://www.d118.org/district/curriculum/initiatives/components-

    effective-read-alouds.pdf

Braun, V. and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative*

    Research in Psychology, 3 (2), 77-101.

Brush, T. A., & Saye, J. W. (2002). A summary of research exploring hard and soft

    scaffolding for teachers and students using a multimedia supported learning

    environment. *The Journal of Interactive Online Learning, 1* (2), 1-12.

Bus, A. G. (2001). Joint caregiver-child storybook reading: a route to literacy development. In S.B. Neuman & D.K. Dickinson (Eds.), *Handbook of Early Literacy Research* (179-191). New York, NY: Guildford Press.

Bus, A. G., de Jong, M. T., & Verhallen, M. (2006). CD-ROM talking books: a way to enhance early literacy? In M. C. McKenna, L. D. Labbo, R. D. Kieffer, & D. Reinking (Eds.), *International handbook of literacy and technology* (129-142). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Calderón, M., & Marsh, D. (1988). Applying research on effective bilingual instruction in a multi-district inservice teacher training program. *National Association of Bilingual Education Journal, 12* (2), 133-152.

Calvert, S. L., Huston, A. C., Watkins, B. A., & Wright, J. C. (1982). The relation between selective attention to television forms and children's comprehension of content. *Child Development, 53,* 601–610.

Ciampa, K. (2012). ICANREAD: The effects of an online reading program on Grade 1 students' engagement and comprehension strategy use. *Journal of Research on Technology in Education, 45* (1), 27-59.

Crain-Thoreson, C., & Dale, P. S. (1992). Do early talkers become early readers? Linguistic precocity, preschool language, and emergent literacy. *Developmental Psychology, 28* (3), 421-429.

Crawley, A. M., Anderson, D. R., Wilder, A., Williams, M., & Santomero, A. (1999). Effects of repeated exposures to a single episode of the television program *Blue's Clues* on the viewing behaviors and comprehension of preschool children. *Journal of Educational Psychology, 91,*630–637.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Day, C., & Gu, Q. (2010). *The new lives of teachers*. New York, NY: Routledge.

de Jong, M. T., & Bus, A. G. (2002). Quality of book-reading matters for emergent readers: An experiment with the same book in a regular or electronic format. *Journal of Education Psychology, 94* (1), 145-155.

Doty, D. E., Popplewell, S. R., & Byers, G. O. (2001). Interactive CD-ROM storybooks and young readers' reading comprehension. *Journal of Research on Computing in Education, 33* (4), 374-384.

Dyson, A. H. (1992). *Social worlds of children learning to write*. New York, NY: Teachers College Press.

Egbert, J., Preuss, C., Huff, L., Sellen, J., & McNeil, L (2009). Pedagogy, process, and classroom context: Integrating teacher voice and experience into research on technology-enhanced language learning. *The Modern Language Journal, 93*, 754-768.

Ertmer, P. A. (1999). Addressing first- and second-order barriers to change: Strategies for technology integration. *Educational Technology Research and Development, 47* (4), 47-61.

Ertmer, P. A., Gopalakrishnan, S., & Ross, E. M. (2001). Technology-using teachers: Comparing perceptions of exemplary technology use to best practice. *Journal of Research on Technology in Education, 33* (5).

Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development, 53* (4), 25-39.

Eshet-Alkalai, Y., & Chajut, E. (2007). Living books: The incidental bonus of playing with multimedia. *Journal of Educational Multimedia and Hypermedia, 16* (4), 377-388.

Fisch, S. M., Shulman, J. S., Akerman, A., & Levin, G. A. (2002). Reading between the pixels: Parent-child interaction while reading online storybooks. *Early Education & Development, 13* (4), 435-451.

Fisch, S. M. (2005). Making educational computer games "educational". In Proceedings of the 2005 conference on Interaction design and children (pp. 56–61). NY: ACM Press.

Frijters, J. C., Barron, R. W., & Brunello, M. (2000). Direct and mediated influences of home literacy and literacy interest on prereaders' oral vocabulary and early written language skill. *Journal of Educational Psychology, 92* (3), 466-477.

Gavelek, J. R., & Raphael, T. E. (1996). Changing talk about text: New roles for teachers and students. *Language Arts, 73* (3), 182-192.

Gibbons, J., Anderson, D. R., Smith, R., Field, D. E., & Fischer, C. (1986). Young children's recall and reconstruction of audio and audiovisual narratives. *Child Development, 57,* 1014–1023.

Goodson, I. F., & Mangan, J. M. (1995). Subject cultures and the introduction of classroom computers. *British Educational Research Journal, 21*(5), 613–629.

Gottlieb, M. (2006). *Assessing English language learners: Bridges from language proficiency to academic achievement*. Thousand Oaks, CA: Corwin Press.

Graves, D. H., & Hansen, J. (1983). The author's chair. *Language Arts, 60* (2), 176-183.

Guba, E. G., & Lincoln, Y. S. (2005). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (3rd ed.) (pp.105-117). Thousand Oaks, CA: Sage Publications.

Guskey, T. R. (1986). Staff development and the process of teacher change. *Educational Researcher, 15* (5), 5-12.

Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: current knowledge gaps and recommendations for future research. *Educational Technology Research and Development, 55*, 223-252.

Higgins, N. C., & Cocks, P. (1999). The effects of animation cues on vocabulary development. *Journal of Reading Psychology*, *20*, 1-10.

Higgins, N., & Hess, L. (1999). Using electronic books to promote vocabulary development. *Journal of Research on Computing in Education*, *31*, 425-430.

Horney, M. A., & Anderson-Inman, L. (1999). Supported text in electronic reading environments. *Reading & Writing Quarterly, 15*, 127-168.

Hughes, J. (2005). The role of teacher knowledge and learning experiences in forming technology-integrated pedagogy. *Journal of Technology and Teacher Education, 13* (2), 277-302.

Hutchison, A., & Reinking, D. (2011). Teachers' perceptions of integrating information and communication technologies into literacy instruction: A national survey in the United States. *Reading Research Quarterly, 46* (4), 312-333.

International Society for Technology in Education. (2015). *ISTE Standards*. Retrieved

from http://www.iste.org/standards/iste-standards

Jewitt, C. (2008). Multimodality and literacy in school classrooms. *Review of Research in*

Education, 32, 241-267.

Justice, L. M., Chow, S., Capellini, C., Flanigan, K., & Colton, S. (2003). Emergent

literacy intervention for vulnerable preschoolers: Relative effects of two

approaches. *American Journal of Speech Language Pathology, 12,* 320-332.

Justice, L. M., Mashburn, A. J., Hamre, B. K., & Pianta, R. C. (2008). Quality of

language and literacy instruction in preschool classrooms serving at-risk pupils.

Early Childhood Research Quarterly, 23, 51-68.

Kaderavek J. N., & Sulzby, E. (1998). Parent-child joint book reading: An observational

protocol for young children. *American Journal of Speech Language Pathology, 7*,

33-47.

Kim, M. C., Hannafin, M. J., & Bryan, L. A. (2007). Technology-enhanced inquiry tools

in science education: An emerging pedagogical framework for classroom practice.

Science Education, 91 (6), 1010-1030.

Korat, O. (2009). Reading electronic books as a support for vocabulary, story

comprehension and word reading in kindergarten and first grade. *Computers &*

Education, 55, 24-31.

Korat. O., & Blau, H. (2010). Repeated reading of CD-ROM storybook as a support for

emergent literacy: A developmental perspective in two SES groups. *Journal of*

Educational Computing Research, 43 (4), 445-466.

Korat, O., & Shamir, A. (2007). Electronic books versus adult readers: Effects on children's emergent literacy as a function of social class. *Journal of Computer Assisted Learning, 23*, 248-259.

Korat, O., & Shamir, A. (2008). The educational electronic book as a tool for supporting children's emergent literacy in low versus middle SES groups. *Computers & Education, 50*, 110-124.

Kress, G. (2003). *Literacy in the new media age*. London: Routledge.

Labbo, L. D. (2000). 12 things young children can do with a talking book in a classroom computer center. *The Reading Teacher, 53* (7), 542-546.

Labbo, L. D. (2006). Literacy pedagogy and computer technologies: Toward solving the puzzle of current and future classroom practices. *Australian Journal of Language and Literacy, 29* (3), 199-209.

Lawless, K., & Pellegrino, J. (2007). Professional development in integrating technology into teaching and learning: Knowns, unknowns, and ways to pursue better questions and answers. *Review of Educational Research, 77* (4), 575–614.

Lefever-Davis, S., & Pearman, C. (2005). Early readers and electronic texts: Factors that influence reading behaviors. *The Reading Teacher, 58*(5), 446-454.

Levy, M. (2009). Technologies in use for second language learning. *The Modern Language Journal, 93*, 769-782.

Leu, D. J. & Kinzer, C.K. (2000). The convergence of literacy instruction with networked technologies for information, communication, and education. *Reading Research Quarterly, 35*, 108–27.

Lever, R., & Sénéchal, M. (2011). Discussing stories: On how a dialogic reading intervention improves kindergartners' oral narrative construction. *Journal of Experimental Child Psychology, 108*, 1-24.

Lewin, C. (1996). *Improving talking book software design: Emulating the supportive tutor.* Bradford, UK: Center for Information Technology in Education, The Open University.

Lewin, C. (1998). Talking book design: What do practitioners want? *Computers & Education, 31* (2), 87-94.

Lonigan, C. J., Anthony, J. L., Bloomfield, B. G., Dyer, S. M., & Samwel, C. S. (1999). Effects of two shared-reading interventions on emergent literacy skills of at-risk preschoolers. *Journal of Early Intervention, 22* (4), 306-322.

McKenna, M. C. (1998). Electronic texts and the transformation of beginning reading. In D. Reinking, M. C. McKenna, L. D. Labbo, & R. D. Kieffer (Eds.), *Handbook of literacy and technology* (45-59). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Miller, L., & Burnett, J. D. (1986). Theoretical considerations in selecting language arts software. *Computers & Education, 10* (1), 159-165.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teacher knowledge. *Teachers College Record, 108* (6), 1017-1054.

Moody, A. K. (2007). *Engagement and communication during shared storybook reading: a comparison of electronic and traditional books for preschoolers who are at-risk*. (Doctoral dissertation). Retrieved from ProQuest. (3280021)

Moody, A. K., Justice, L. M., & Cabell, S. Q. (2010). Electronic versus traditional storybooks: Relative influence on preschool children's engagement and communication. *Journal of Early Childhood Literacy, 10* (3), 294-313.

National Early Literacy Panel. (2008). *Developing early literacy: Report of the National Early Literacy Panel, a scientific synthesis of early literacy development and implications for intervention.* Retrieved from http://lincs.ed.gov/publications/pdf/NELPReport09.pdf

New London Group (1996). A pedagogy of multiliteracies. *Harvard Educational Review, 60* (1), 66–92.

Paivio, A. (1986). *Mental representations: A dual coding approach.* Oxford: Oxford University Press.

Pearman, C. J. (2008). Independent reading of CD-ROM storybooks: Measuring comprehension with oral retellings. *The Reading Teacher, 61* (8), 594-602.

Pearman, C. J., & Chang, C.-W. (2010). Scaffolding or distracting: CD-ROM storybooks and young readers. *TechTrends, 54* (4), 52-56.

Peterson, C., Jesso, B., & McCabe, A. (1999). Encouraging narratives in preschoolers: An intervention study. *Journal of Child Language, 26*, 49–67.

Peterson, C., & McCabe, A. (1994). A social interactionist account of developing decontextualized narrative skill. *Developmental Psychology, 30* (6), 937-948.

Plass, J. L., & Jones, L. C. (2005). Multimedia learning in second language acquisition. In Mayer, R. (Eds.), *The Cambridge handbook of multimedia learning* (pp.467-488). Cambridge: Cambridge University Press.

Pollard-Durodola, S. D., Gonzalez, J. E., Simmons, D. C., Kwok, O., Taylor, A. B.,

Davis, M. J., Kim, M., & Simmons, L. (2011). The effects of an intensive shared book-reading intervention for preschool children at risk for vocabulary delay. *Exceptional Children, 77* (2), 161-183.

Quintana, C., Krajcik, J., & Soloway, E. (2002). Scaffolding design guidelines for learner-centered software environments. Retrieved from http://www.eric.ed.gov/PDFS/ED467503.pdf

Reinking, D., Labbo, L. D., & McKenna, M. C. (2000). From assimilation to accommodation: A developmental framework for integrating digital technologies into literacy research and instruction. *Journal of Research in Reading, 23* (2), 110-122.

Roblyer, M. D., & Doering, A. H. (2010). *Integrating educational technology into teaching* (5th ed.). Pearson.

Ruiz, N. T., Rueda, R., Figueroa, R., & Boothroyd, M. (1995). Shifting instructional paradigms of bilingual special education teachers: Complex responses to educational reform. *Journal of Learning Disabilities, 28* (10), 622-635.

Salaberry, M. R. (2001). The use of technology for second language learning and teaching: a retrospective. *The Modern Language Journal, 85*, 39-56.

Schnotz, W., & Heiß, A. (2009). Semantic scaffolds in hypermedia learning environments. *Computers in Human Behavior, 25* (2), 371-380.

Scott, S. M., Chovanec, D. M., & Young, B. (1994). Philosophy-in-action in university teaching. *Canadian Journal of Higher Education, 24* (5), 1-25.

Selwyn, N. (1999). Differences in educational computer use: The influences of subject cultures. *The Curriculum Journal, 10* (1), 29–48.

Sénéchal, M. (1997). The differential effect of storybook reading on preschoolers' acquisition of expressive and receptive vocabulary. *Journal of Child Language, 24,* 123–138.

Shamir, A., & Korat, O. (2006). How to select CD-ROM storybooks for young children: The teacher's role. *The Reading Teacher, 59* (6), 532-543.

Shamir, A., Korat, O., & Barbi, N. (2008). The effects of CD-ROM storybook reading on low SES kindergarteners' emergent literacy as a function of learning context. *Computers & Education, 51*, 354-367.

Sharp, D. L. M., Bransford, J. D., Goldman, S. R., Risko, V. J., Kinzer, C. K., & Vye, N. J. (1995). Dynamic visual support for story comprehension and mental model building by young, at-risk children. *Educational Technology Research and Development, 43,* 25–40.

Stake, R. E. (2006). *Multiple case study analysis*. New York, NY: The Guilford Press.

Sulzby, E., & Teale, W. (1991). Emergent literacy. In R. Barr, M. L. Kamil, P. B. Mosenthal, & P. D. Pearson (Eds.), *Handbook of reading research* (Vol. 2, pp. 727-757). New York: Longman.

Tracy, S. J. (2010). Qualitative quality: Eight "Big-Tent" criteria for excellent qualitative research. *Qualitative Inquiry, 6* (10), 837-851.

Trushell, J., Burrell, C., & Maitland, A. (2001). Year 5 pupils reading an "Interactive Storybook" on CD-ROM: Losing the plot? *British Journal of Educational Technology, 32* (4), 389-401.

Trushell, J., Maitland, A., & Burrell, C. (2003). Pupils' recall of an interactive storybook on CD-ROM. *Journal of Computer Assisted Learning, 19*, 80-89.

Trushell, J., & Maitland, A. (2005). Primary pupils' recall of interactive storybooks on CD-ROM: Inconsiderate interactive features and forgetting. *British Journal of Educational Technology, 36* (1), 57-66.

Tudor, I. (2003). Learning to live with complexity: towards an ecological perspective on language teaching. *System, 31*, 1-12.

Uchikoshi, Y. (2005). Narrative development in bilingual kindergartners: Can *Arthur* help? *Developmental Psychology, 41* (3), 464-478.

Verhallen, M. J. A. J., Bus, A. G., & de Jong, M. T. (2006). The promise of multimedia stories for kindergarten children at risk. *Journal of Educational Psychology, 98* (2), 410-419.

Vygotsky, L. S. (1962). *Thought and language*. Cambridge, MA: MIT Press.

What Works Clearinghouse. (2006). *Intervention report: Shared book reading*. Retrieved From http://ies.ed.gov/ncee/wwc/pdf/intervention_reports/WWC_Shared_Book_092806 .pdf

Whitehurst, G. J., Falco, F., Lonigan, C. J., Fischel, J. E., DeBaryshe, B. D., Valdez-Menchaca, M. C., & Caulfield, M. (1988). Accelerating language development through picture-book reading. *Developmental Psychology*, *24* (4), 552–559.

Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry , 17* (2), 89-100.

Yang, S. & Kim, M. C. (2013). Supporting oral narrative development of kindergarten English language learners using Multimedia stories. Proceedings of *Association for Educational Communications and Technology International Convention,* Anaheim, CA: AECT.

Yang, S. & Walker, V. (2015). A pedagogical framework for technology integration in ESL classrooms: The promises and challenges of integration. *Journal of Educational Multimedia and Hypermedia, 24* (2), 179-203.

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Thousand Oaks, CA: SAGE Publications, Inc.

Zucker, T., Moody, A., & McKenna, M. (2009). The Effects of Electronic Books on Pre-Kindergarten-to-Grade 5 Students' Literacy and Language Outcomes: A Research Synthesis. *Journal of Educational Computing Research, 40,* 47-87.

APPENDICES

Appendix A   Teacher Background Survey

Teacher Background Survey

Dear Teacher,

The purpose of this survey is to inform us whether you meet our selection criteria for participating in the study. Please provide us information that applies to you most. We appreciate your completion of this survey!

Name: _____

Gender   ☐ Female ☐ Male

Years of teaching: _____years

Types of Technology Learning Experiences

☐ Informal (e.g., self, peer, books)

☐ Formal (e.g., inservice, higher education)

☐ Both informal and formal

Do you use any storytelling technologies (e.g., YouTube videos, movies, TV cartoons, free online/web-based stories, CD-ROMs that go with paperback storybooks, electronic storybooks) <u>in your reading block</u>?

☐ Yes ☐ No

What type of storytelling technologies do you use <u>in your reading block</u>? (check all that apply)

☐ YouTube videos

☐ Movies

☐ TV cartoons

☐ Free online/web-based stories

☐ CD-ROMs that go with paperback storybooks

☐ Electronic storybooks

☐ Other types of digital stories (please specify)

_____

How frequently do you use storytelling technologies <u>in your reading block</u>?

☐ Rarely

☐ Monthly

☐ Once a week

☐ More than once a week

In what ways do you use storytelling technologies <u>in your reading block</u>? (check all that apply)

☐ Introducing the topic

☐ Showing a digital story to the class and asking students questions about the story

☐ Reinforcing/reviewing what I have previously read

☐ As a reward

☐ Other (please describe)

_____

How interested are you in integrating storytelling technologies <u>into your reading block</u>?

(Please circle a number)

1	2	3	4	5
Not at All Interested	Not Very interested	Neutral	Somewhat Interested	Very interested

Thank you very much for completing this survey!

Appendix B   Observation Protocol

Name of this e-storybook:			
Number of pages of this e-storybook:			
Features of this e-storybook:			

Instructional activities around using this e-storybook:

Promises, problems and solutions

Interaction	Promises	Problems	Strategies the teacher used to try to overcome the problems (if any)

Interaction between teacher and e-storybook (e.g., Does the teacher operate e-storybook smoothly? What kind of hotspots does the teacher use to aid students' comprehension and engage students?)			
Interaction between students and e-storybook (e.g., Are the students drawn to the e-storybook on the board? Do students operate the e-storybook features, and how?)			

Interaction between teacher and students (e.g., Does the teacher communicate with students smoothly while operating the e-storybook? Does the teacher ask students questions about the e-storybook? Does the teacher provide scaffolding to students, and how?)			
Interaction between student and student (e.g., Do students collaboratively do any activity related to the e-storybook? Do students have opportunity to communicate with each other about the e-storybook?)			

Appendix C   Interview Protocols

Interview Protocol 1

(Before teacher uses the 1st e-storybook)

Opening: Thank you so much for accepting my interview! In my interview, to simplify the name electronic storybook, I will call it e-storybook.

1. Can you tell me something about your teaching experience? How many years have you been teaching as a kindergarten teacher?

2. Did you use e-storybooks before you participate in this study? (If yes) Can you tell me about your experience with using e-storybooks? (If no) Can you tell me about your experience with using other storytelling technologies such as online stories, YouTube videos, or CD-ROMs?

3. What can you tell me about you plan of using an e-storybook?

4. What considerations do you have when you are preparing to use an e-storybook for instruction?

5. How will you try to align the use of e-storybook with the teaching objectives of the reading block?

6. What attributes or features of e-storybooks do you think can be used to achieve your teaching goals?

7. What instructional activities do you plan to develop around using an e-storybook?

8. How long would you like to use an e-storybook in each of the six sessions of your reading block?

9. Have you weighed the pros and cons of using e-storybooks? Do you think it will be worth the time, efforts, and resources to utilize e-storybooks as a supplement to traditional storybooks for the reading block?

10. Before I ask this question, I'd like to introduce the term "shared book reading". Shared book reading is a general practice that involves an adult reading a storybook to a child or a group of children. Do you do shared book reading in your reading block? What kind of resources do you use for shared book reading, traditional storybooks or digital stories?

11. Have you foreseen any possible problems relating to using e-storybooks for shared reading? If so, what could they be? How would you try to overcome them?

12. What are your preliminary attitudes towards adopting e-storybooks as a resource for shared reading?

Interview Protocol 2

(After teacher uses three e-storybooks)

Opening: Thank you so much for accepting my 2nd interview! So far you have used three e-storybooks. In this interview, I'd like to know your teaching strategies for using those three e-storybooks and your current attitudes towards adopting e-storybooks as a resource for shared reading. Please do not hesitate to let me clarify if any question is not clear to you.

1. Looking back, could you talk in detail about your consideration when you prepared to use an e-storybook for instruction?

2. How did you try to align the use of e-storybook with the teaching objectives of the reading block?

3. What attributes or features of those e-storybooks did you find useful to achieve your teaching objectives?

4. Could you describe how you used those features?

5. Would you mind describing how you used the e-storybooks with your students?

6. I observed that except doing sharing book reading with each e-storybook, you designed several instructional activities around using each e-storybook. What were your teaching philosophies or thoughts that led you to design those instructional activities?

7. When you were preparing to use each e-storybook, what did you think of the pros and cons of using it?

8. Compared with using traditional storybooks, did you spend more time, efforts, and resources for incorporating e-storybooks into the shared reading program?

9. Do you think it was worthy to utilize e-storybooks as a supplement to traditional storybooks for shared reading?

10. Did you encounter any problems related to using those e-storybooks for shared reading? (If yes) What were the problems? How did you try to overcome the problems?

11. What are your current attitudes towards adopting e-storybooks as a resource for shared reading?

12. How frequently do you think e-storybooks could be used in the reading block per week?

13. Do you plan to use e-storybooks on iPad for instruction after the study? (If yes) How do you plan to use this resource?

Interview Protocol 3

(After teacher uses all the six e-storybooks)

Opening: Thank you so much for accepting my 3rd interview! So far you have used all the six e-storybooks. In this interview, I'd like to know your teaching strategies for using the last three e-storybooks: Around the World in 80 Days, A Place to Grow, and Three Little Pigs. Also, I'd like to know your attitudes towards adopting e-storybooks as a resource for shared reading. Please do not hesitate to let me clarify if any question is not clear to you.

1. Could you please describe your consideration when you prepared to use the last three e-storybooks?

2. How did you try to align the use of the three e-storybooks with the teaching objectives of the reading block?

3. What attributes or features of those e-storybooks did you find useful to achieve your teaching objectives?

4. Could you describe how you used those features?

5. Would you mind talking about how you used the three e-storybooks with your students? Did you use all the six e-storybooks in the same way?

6. As you did for using the first three e-storybooks, you also designed instructional activities around using the last three e-storybooks to enhance student learning rather than depending on the e-storybooks alone. What are your teaching beliefs that led you to design those activities around using those e-storybooks?

7. When you were preparing to use the last three e-storybooks, what did you think of the pros and cons of using them?

8. Compared with using traditional storybooks, do you think you need to spend more time, efforts, and resources for incorporating e-storybooks into the shared reading program?

9. During your preparation for using each e-storybook, did you ever consider whether it was worthy to utilize e-storybooks as a supplement to traditional storybooks for shared reading?

10. Did you encounter any problems related to using the last three e-storybooks for shared reading? (If yes) What were the problems? How did you try to overcome the problems?

11. After you have used all the six e-storybooks, what are your attitudes towards adopting e-storybooks as a resource for shared reading?

12. Do you plan to use e-storybooks on iPad for instruction after the study? (If yes) How do you plan to use this resource? How frequently would you like to use e-storybooks in the reading block?

13. Would you like to share anything else with me about using e-storybooks?

Appendix D   Examples of Teacher's Lesson Plan

Mrs. Willow's Lesson Plan for Ethan's Superpower

Date: _____ 3/12/14

Teacher: _____

Ethan's Super Power

Title of Lesson:	Ethan's Super Power
Topic or Main Idea:	Using an electronic story in our 90-minute literacy block.
Objectives:	To be able to incorporate our electronic storybook into our 90-minute literacy block.
Standards Used:	
Materials:	Ethan's Super Power electronic storybook Writing Paper Pencils & Crayons
Activity:	1. Teacher will present electronic story book to the whole group at the rug. 2. We will have a mini lesson on different types of super powers, writing on chart paper. 3. Children will go to their desks and begin working on their Super Power Papers Mrs. Wilson. 4. Final lesson – Some children will be asked to present their work to the class.
Assessment:	Informal – teacher will observe as children complete activities, looking for overall understanding. Teacher will report if she thought the electronic storybook worked well inside of their 90-minute block.
Homework:	No homework for this lesson

Ethan's Super Power

Objectives:

- Identify the characters in *Ethan's Super Power*, discuss their super powers and how each super power would be useful to a Super Hero.
- Identify the main character of the story (Ethan) and explain the lesson he learned.
- Have each student choose a super power they would like to have and explain to a partner why they picked that power.
- Practice reading weekly sight words (blue, green, yellow).

Lesson:

- Ask students if they know of any Super Heroes. Have the students explain what super power each hero has.
- Explain that we are going to listen to a story about a baby monster who is trying to learn what his super power is.
- Listen to the e-storybook, *Ethan's Super Power*. Have students interact with the hot spots as the story progresses. Discuss each character that is introduced, what their power is and how it would be useful to have that power as a Super Hero.
- At the end of the story, help the students identify Ethan as the main character of the story. Ask what lessoned Ethan learned in the course of his search for a super power.
- Have the students pick a super power that they wish they could have and explain to a partner why they picked that power.
- Introduce the sight-word reader *Color Monsters* with the Promethean Board. Read as a group.
- Have children return to their seats to read and color their own copy of *Color Monsters*.

Assessments:

- Student participation in discussions about both the characters of *Ethan's Super Power* and the super power that they wish they could have.
- Evaluation of color word identification by checking work in student version of *Color Monsters*.
- If time is available, listen to children read *Color Monsters* independently.

Reading: Literature

3. With prompting and support, identify characters, settings, and major events in a story.

10. Actively engage in group reading activities with purpose and understanding.

Reading: Foundational Skills

3c. Read common high-frequency words by sight.

4. Read emergent-reader texts with purpose and understanding.

VITA

VITA

Sha Yang

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Ph.D. in Learning Design and Technology, 2015, Purdue University, West Lafayette, IN
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M.A. in Intercultural Communication, 2008, Shanghai International Studies University, China
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PROFESSIONAL EXPERIENCE
INSTRUCTIONAL DESIGN
<u>Instructional Designer</u>, University of Houston-Clear Lake, Houston, TX
06/2015-present
- Work with faculty to design, develop, and deploy web-mediated instruction
- Provide technology support to faculty on the use of Blackboard and related technology tools
- Design, develop and deliver instructional technology-related training to faculty and staff

<u>E-portfolio coordinator,</u> College of Education, Purdue University, W. Lafayette, IN
08/2012-05/2014
- Designed and conducted face-to-face and online training programs on how to use the TaskStream LMS to all the users (university faculty, program conveners, TAs and students)
- Provided consultation and support for all faculty and program conveners for instructional design and facilitated university-wide implementation of e-portfolios for students
- Troubleshot and solved problems for all the users in their use of TaskStream
- Created videos for evaluators (faculty, TAs), students, and program conveners on the use of TaskStream
- Developed and maintained documentation for using TaskStream

Instructional Design Intern, INSPIRE, Purdue University, W. Lafayette, IN
Summer 2012
- Searched online professional development courses for P-12 teachers and developed a
  spreadsheet that summarized what those courses were and how they were delivered
- Designed online learning programs for P-12 engineering education
- Modified the existing online learning modules for P-12 engineering education

Course Builder, Learning Design & Technology, Purdue University, W. Lafayette, IN
01/2011-07/2012
- Evaluated online learning modules for military spouses in Military Family Research
  Institute Project
- Designed a lesson plan template for K-12 teachers to integrate educational video games
  into teaching
- Developed a database of the educational video games for engineering education

WEB DEVELOPMENT
Webmaster, Education IT, College of Education, Purdue University, W. Lafayette, IN
08/2012-05/2014
- Collaborated with supervisor to determine the changes to the TaskStream information
  in the Education IT website: http://social.education.purdue.edu/edit/taskstream/
- Edited and updated information about using the TaskStream LMS on the Education IT
  website

TEACHING EXPERIENCE
Faculty of English, Dept. of English, Shanghai Business College, China
02/2008-07/2010
- Designed and taught English courses for English majors and non-English majors
- Evaluated students' achievements in English acquisition
- Advised students for succeeding in academic study and college life
- Tutored students for national English contests
- Collaborated with the other faculty members and staff to facilitate departmental work

English Teacher (part-time), China
07/2002-01/2007
- Designed and taught English courses to all levels of learners (children, teenagers,
  adults) at multiple employment (individual, school, training center, summer program,
  company) to develop their English proficiency for academic purpose and/or general
  purpose

PUBLICATIONS
Journal Articles
Yang, S. & Walker, V. (2015). A pedagogical framework of technology integration in
  ESL classrooms : the promises and challenges of integration. *Journal of
  Educational Multimedia and Hypermedia*, *24* (2), 179-203.

Yang, S. (2009). A brief analysis of free English-Chinese translation of the titles of novels. *Journal of the Northwest Normal University (Social Sciences), 4,* 225-230.

Yang, S. (2008). A brief analysis on how to train interdisciplinary talent of English. *Journal of Shanghai Business College (Supplement), 36*, 87-89.

Yang, S. (2008). Culture teaching in English language teaching in China : status quo, problems and prospect. *Journal of the Northwest Normal University (Social Sciences), 6*,153-156.

Yang, S. (2008). Conceptions of the Spring Festival and Christmas of Shanghai's young and middle-aged people : a qualitative study of similarities and differences. *Intercultural Communication Studies, XVII* (1), 248-259.

Yang, S. (2007). A brief comparison of four cultural dimensions between China and the West. *Journal of Southwest University for Nationalities (Humanities and Social Science),28*, 47-49.

Yang, S. (2007). A brief analysis on application of cooperative learning in foreign language teaching and learning. *Journal of Chongqing University (Social Science Edition) Supplement*, *13*, 126-128.

Book Chapters

Weng, L. P., **Yang, S.**, & Chen, L. L. (2008). Introduction to Dr. K. K. Hwang's research on Chinese indigenous psychology from the cultural perspective. In Feng, Q. & Fu. J. M. (Ed.), *Studies in language and culture* (pp.429-440). Shanghai University Press.

Refereed Conference Proceedings

Yang, S. & Kim, M. C. (2013). Supporting oral narrative development of kindergarten English language learners using Multimedia stories. Proceedings of *Association for Educational Communications and Technology International Convention,* Anaheim, CA: AECT.

Watson, W., **Yang, S**, & Ruggiero, D. (2013). Games in schools : teachers' perceptions of barriers to game-based learning. Proceedings of *Association for Educational Communications and Technology International Convention,* Anaheim, CA: AECT.

Yang, S. & Berndt, B (2012). How digital scaffolds in language video games affect motivation and learning. In Simonson, M (Eds.), *35th Annual Proceedings: Selected research and development papers presented at the annual convention of the Association for Educational Communications and Technology, Louisville, KY, November* (pp. 442-449). North Miami Beach, FL: Nova Southeastern University.

PRESENTATIONS

Yang, S. How to use electronic storybooks to support oral narrative development of preschool English Language Learners: a case study. Paper presented at the 2014 AERA Annual Meeting, Philadelphia, Pennsylvania, April, 2014.

Yang, S. An approach to supporting oral narrative development of kindergarten English language learners using electronic storybooks. Paper presented at the 2013 AECT International Convention, Anaheim, California, November, 2013.

Yang, S. Games in schools: teachers' perceptions of barriers to game-based learning. Paper presented at the 2012 AECT International Convention, Louisville, Kentucky, November, 2012.

Yang, S. How the digital scaffolds in language computer games affect learning and motivation. Paper presented at the 2012 AECT International Convention, Louisville, Kentucky, November, 2012.

Yang, S. How the digital scaffolds in educational computer games affect learning and motivation of learners. Paper presented at the Sixth Annual Graduate Student Educational Research Symposium, Purdue University, March, 2012.

Yang, S. To improve the Business English curriculum of the Department of English at Shanghai Business College, China. Paper presented at the Annual Meeting of the International Association for Intercultural Communication Studies, Kumamoto, Japan, September, 2009.

Yang, S. Culture teaching in English language teaching in China: status quo, problems and prospect. Paper presented at the symposium on Culture Studies in China's English Departments Today, Beijing, China, June, 2006.

PROFESSIONAL AFFILIATIONS
AERA (American Educational Research Association)
AECT (Association for Educational Communications and Technology)
PALDT (Purdue Association of Learning Design and Technology)

HONORS & AWARDS
- Purdue Curriculum & Instruction Graduate Student Travel Award 2012, 2013, 2014
- Purdue Dean's Graduate Student Travel Support 2012, 2014
- Coach of students who won Third Prize in the English Debate Competition for Universities of Science, Technology & Engineering 2008
- Social Practice Scholarship of Shanghai International Studies University 2006
- Excellent Graduate of Huazhong Normal University 2005
- Excellent Graduation Thesis of Huazhong Normal University 2005
- Honorable Prize in the 10th Hubei Provincial Foreign Language Translation Competition for English-majors, Wuhan, Hubei 2004
- Second-Class Scholarship, "triple-A" outstanding student 2003
- Second-Class Scholarship, "triple-A" outstanding student 2002
- First Prize in the Painting Competition of Huazhong Normal University 2002