

4-24-2019

Integrating technology into the literacy curriculum within a first grade classroom

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**INTEGRATING TECHNOLOGY INTO THE LITERACY CURRICULUM
WITHIN A FIRST GRADE CLASSROOM**

by

Christina M. Hargrove

A Thesis

Submitted to the
Department of Language, Literacy, and Sociocultural Education
College of Education

In partial fulfillment of the requirements

For the degree of
Master of Arts in Reading Education

at
Rowan University
April 10, 2019

Thesis Chair: Marjorie Madden, Ph.D.

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Dedication

I would like to dedicate this thesis to my mom, the woman who taught me to work hard, never give up, and always follow my dreams. Thank you for all that you have done for me, Mom. If it were not for you, I would not be where I am today. I love you.

Acknowledgements

First and foremost, I would like to express my sincere appreciation to Dr. Marjorie Madden for her help and guidance throughout this research study. Thank you for always pushing me to do my best and for helping me to truly understand what it means to be a teacher researcher.

I would also like to acknowledge the wonderful group of ladies I met during this program. We shared so much together throughout our journey as graduate students. I am beyond grateful to say that I am leaving this program with more than just a master's degree; I am leaving with lasting friendships, and I look forward to making more memories with you in the future.

To my supportive principal and colleagues at the school in which I teach—thank you for all of your encouragement throughout this endeavor.

Last but certainly not least, I would like to thank the wonderful, inspiring group of children I worked with during this study. I owe them my utmost gratitude, as all of this would not have been possible without them.

Abstract

Christina Hargrove
INTEGRATING TECHNOLOGY INTO THE LITERACY CURRICULUM
WITHIN A FIRST GRADE CLASSROOM

2018-2019

Marjorie Madden, Ph.D.
Master of Arts in Reading Education

Technology is ingrained in almost every part of our culture, affecting the way we live, work, play, and learn. Most careers in this day and age require professionals to be proficient in the new literacies of 21st-century technologies. Thus, it only makes sense that technology be used in classrooms with even our youngest learners to help prepare our students to be successful in their futures. This research explores what happens when technology is integrated into the literacy curriculum within a first grade classroom. To this end, technology was integrated into a multitude of literacy lessons and classroom routines. Results revealed that the use of technology can have a positive effect of student motivation and engagement as well as overall classroom productivity. Results also showed that technology led to deeper meaning-making among students and helped to foster a student-centered learning environment in which students' confidence with technology motivated them to take on leadership roles. Overall, the findings from this study are consistent with current research and advance the understanding that technology can aid in producing positive learning outcomes when employed appropriately and meaningfully by teachers and students.

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Chapter 1

Scope of the Study

“If we teach today as we taught yesterday, we rob our children of tomorrow.”

– John Dewey

Introduction

It was a typical Thursday morning in Room 16. We had just wrapped up our morning meeting, and it was time to get started with reading. With all of my first grade students gathered on the carpet, I looked at them enthusiastically and said, “Friends, I have something to tell you. It is big news! You are never going to believe it!”

Wiggling with excitement, they began asking, “What! What! Tell us, Miss Hargrove! Tell us!”

“Okay, okay!” I said. “Are you ready?”

“Yes, yes!” they responded.

“Alright...well...I have to be honest,” I told them. “Yesterday, I had a bit of a brag-moment when I was eating lunch with the other teachers. I was telling them all about the amazing job you did hunting for nonfiction text features in your *Scholastic News* articles. I couldn’t help it; I just had to share how impressed I was with how many text features you were able to find. Well, Mrs. Wolfe jumped into the conversation and told me that she just taught her Kindergarten students all about what the word *nonfiction* means. She went on to say how she would love for her students to learn about nonfiction text features, but there was one problem—she has never taught about them before. She told me she wasn’t sure where to start, and that is when it happened, friends. Mrs. Wolfe asked me if *you* could

teach her students about nonfiction text features since you are such experts! She thought it would be polite if she asked you herself, so check this out.”

I reached behind me to double-tap my SMART Board. Thanks to a little fancy animation in PowerPoint, a box appeared on the screen with words that read “Click Here for a Message from Mrs. Wolfe’s Class”. My class gasped in astonishment. I touched the box, and a video of Mrs. Wolfe and her class appeared on the screen. My students were beside themselves. It was in that very moment that they had completely bought into the task I was asking them to do. After all, how could they not? The video was real; Mrs. Wolfe and her class were right there before their very eyes. I played the video which ended with Mrs. Wolfe asking my class if they would teach her students more about nonfiction books. When the video ended, every single one of my students were focused in on me and waiting to hear what I was going to say next.

I looked at them and asked, “What do you think? Do you think you can do it?”

All of their faces lit up, smiles stretching from ear to ear. With their heads eagerly nodding, I heard their little voices saying, “Yes! Yes!”

“I knew it!” I said. “I knew you would be up for the challenge.”

“Are we going to do it today, Miss Hargrove?” one student asked.

“We are!” I said. “And guess what app we are going to use to help us?”

With a few quick maneuvers on my SMART Board, I displayed the app that my students would be using to take photographs enhanced with voice-overs to explain nonfiction text features. As soon as they saw the app appear on the screen, in unison, they all shouted, “Seesaw!” They were ready to get started.

~ ~ ~

What I just described took place in about five minutes. The excitement that stemmed from those five minutes radiated off of our classroom walls. It was exactly the kind of excitement I always want my students to feel toward their learning. It is no exaggeration when I say that the video played a tremendous role in helping to create that excitement. It took my lesson to a whole new level and truly helped me set the stage to engage. If someone would have walked into my classroom after I sent my students off to work that day, they would have seen twenty-one first graders bustling around the classroom to complete their very important job of teaching Mrs. Wolfe's class about nonfiction text features—iPads in hand, photos being snapped, voices being recorded, and much more. If I am completely being honest, I do not think this lesson would have been as effective if it was not for the use of one thing—technology.

Research Problem

There is no denying the fact that technology is becoming more and more prevalent throughout society, and as teachers, we cannot stop it from spilling over the walls of our classrooms. From all levels, we are pushed to incorporate technology into our instruction to better prepare students for their futures in a technological age. The rapid evolution of information and communication technologies has brought forth a change in the way literacy is defined. This means that our literacy instruction must also evolve if we are going to reach the needs of our twenty-first century learners. In 2009, the International Literacy Association (ILA) released a position statement emphasizing that:

[t]o become fully literate in today's world, students must become proficient in the new literacies of 21st-century technologies. As a result, literacy educators have a responsibility to effectively integrate these new technologies into the curriculum, preparing students for the literacy future they deserve. (n.p.)

Although the term *new literacies* is used differently by many people, there are at least four common principles that apply to almost all perspectives: 1) the Internet and other ICTs require new social practices, skills, strategies, and dispositions for their effective use; 2) new literacies are central to full civic, economic, and personal participation in a global community; 3) new literacies rapidly change as defining technologies change; and 3) new literacies are multiple, multimodal, and multifaceted; thus, they benefit from multiple lenses seeking to understand how to better support our students in a digital age (Coiro, Knobel, Lankshear, & Leu, 2008, ILA, 2009). It is my belief that teachers who are not yet using technology in their classrooms understand the growing need to help our students become proficient in new literacies, so what exactly is stopping them? The answer to this question is not a simple one, as it could be caused by a number of contextual factors. Here, I will address some of the factors that I myself have seen within my own school district.

Much of what affects teachers' ability to effectively integrate technology into the curriculum has to do with knowledge bases. Some teachers lack what Koehler and Mishra (2008) call technological content knowledge (TCK) and technological pedagogical knowledge (TPK) bases. TCK is an understanding of how a particular subject area can be influenced by technologies (Koehler and Mishra, 2008). As in the case of this study, teachers could be wondering how literacy practices can be affected by technology and which technologies are best suited for the literacy content their students are exploring

within their classrooms. TPK has to do with an understanding of how to use digital tools to support instructional methods in order to reach desired learning outcomes (Koehler and Mishra, 2008). For example, not all programs are designed for educational purposes, but teachers with high levels of TPK can look past common uses of technology and customize them for their own pedagogical purposes (Koehler and Mishra, 2008).

It is also important to point out that hesitation among teachers to use technology in their classrooms can also stem from a lack of technology knowledge (TK) (Koehler & Mishra, 2008); in other words, they have a weak understanding of how technology works or how it can be used in learning contexts—especially when technologies are constantly evolving. Perhaps they do not feel comfortable having their students use a tool they do not fully understand or they do not understand. On the other hand, there are teachers—especially those of younger students—who shy away from the integrating technology into instruction because they feel as though their *students* aren't equipped to handle the technology. Additionally, since time cannot be added to the instructional day, teachers face the problem of trying to find ways to infuse technology into daily activities that are already taking place (Calvert, 2015); they may think too much time will be spent on students learning new technologies instead of learning the actual content they need to deliver. In this case, teachers must remember that today's students are what Prensky (2001) refers to as digital natives. Today's students were born into the digital age, and when technology is accessible, the use of it comes easily to most of them regardless of their age.

Keeping all of this in mind, we need more *teacher* research that shows how technology can be integrated into the curriculum to increase student learning outcomes

and help our students become skillful in using new literacies. The acquisition of new literacy skills is important if we are to successfully prepare our students to participate in a constantly evolving technological landscape (ISTE, 2016). I stress *teacher* research because it tends to appeal to a wider audience of teachers in comparison to education research; it is often more relevant to teachers' needs, and it is written in a way that better connects to their classroom practices (Shagoury & Power, 2012). This is why teacher research is emerging as a source for school change (Shagoury & Power, 2012). Thus, perhaps further teacher research would help reluctant teachers better recognize the positive impact technology can have on their students' learning and in turn, motivate them to set their own professional development goals for integrating technology into the curriculum in a way that works for them. I believe that when teachers begin experimenting with technology in their classrooms, they will quickly realize that our students, our digital natives (Prensky, 2001), are our greatest resources, and some of the best learning about technology and instruction can take place alongside them.

Research Purpose

The purpose of this study is to find out what happens when technology is used to help meet literacy curriculum goals in a first grade classroom. Sub-questions that stemmed from my initial inquiry include the following:

- How can literacy instruction be enhanced and/ or redefined using technology?
- In what ways can using technology throughout literacy instruction impact motivation and engagement among first graders?
- In what ways can using technology throughout literacy instruction impact productivity within the classroom?

- How can technology be integrated into the literacy curriculum for the purpose of improving reading proficiency?

Story of the Question

All elementary school teachers have that one subject they are incredibly passionate about teaching. It is the subject they feel the most comfortable and confident teaching—the one they look forward to teaching each day, and the one they want their students to love just as much as they do. For me, that subject is literacy.

I myself have always loved reading and writing, but it was during my undergraduate studies when I realized that I have a true passion for *teaching* reading and writing. Before graduating, I decided to complete an endorsement program to earn an additional certification as a Teacher of Reading. I was told that the certification would stand out to potential employers, so I went for it. What I did not realize was that it would be one of the most rewarding experiences of my entire educational career, and the program would prepare me for my role as an elementary school teacher in ways I never would have imagined. I am beyond thankful for that chapter in my life, and guess what? It did in fact help me to land my first teaching job, and I am now in my fourth year of teaching first grade.

My passion for teaching reading and writing makes it clear where the literacy component of my research inquiry comes into play, but where does the technology piece fit in? Well, that leads me to the next part of my story. It was at the end of my third year of teaching when I was sitting at a district in-service listening to one of our administrators present World Class Learner, a new strategic plan centered around preparing our students to be critical thinkers, producers, and change agents. He explained that a large focus of

the plan would be on innovation and technology. I guess this would be a good time to say that another passion of mine is technology. It is an integral part of both my personal and professional lives, so despite the fact that I was teacher-tired from a busy school year and ready for my summer vacation to start, he had my undivided attention.

After explaining the World Class Learner strategic plan, my administrator began introducing the Substitution, Augmentation, Modification, and Redefinition (SAMR) model (Puentedura, 2006), a model that the district would be using to evaluate how technology is being used. It was a brief introduction, but I wanted to learn more. That same day, I went home and researched it. This led me to begin reflecting on how I was using technology in my own classroom. Was I using technology for the sake of “checking it off the list” or was I using it in a way that was truly making a difference in the learning outcomes of my students? Was I enhancing my instruction or was I transforming it with technology? I wanted to explore this further, particularly in the area of literacy, and that is precisely how my research inquiry blossomed.

Laying Out the Remaining Chapters

Chapter two of this thesis looks at a review of literature regarding technology integration into the literacy curriculum. Chapter three describes the context of the study, providing details about the community, school, and classroom in which the study took place. It also focuses on the study participants as well as the methodology and data collection plan. In chapter four, specific findings from the study are revealed accompanied by an analysis of the collected data. To conclude, chapter five provides the conclusions that were drawn from the study. Implications for classroom practice and recommendations for future research are also discussed in this chapter.

Chapter 2

Review of Literature

An in-depth review of literature suggests that integrating technology into the literacy curriculum has the potential to lead to positive learning outcomes. Research shows that digital tools have been shown to improve the ways teachers and students approach major components of literacy such as comprehension, fluency, and written expression (Larson, 2009; Hutchison, Beschorner, and Schmidt-Crawford, 2012; Leathers, 2016; Arens, Grove, & Abate, 2018; C. Baker, 2014; E. Baker, 2017).

This chapter synthesizes existing literature and research that focuses on the use of technology to help meet literacy curriculum and instructional goals. The first section looks at standards and frameworks that address technology use throughout the literacy curriculum. The second section describes the growing need to use technology with even our youngest learners, and the third section looks at the impact of digital tools on literacy proficiency.

Technology and the Curriculum

Standards & frameworks. There are several sets of standards published by professional organizations and the state of New Jersey that serve as guides for literacy curriculum development and outline what students should know and be able to do as a result of their educations. Some of these standards include the Standards for the English Language Arts (ILA & NCTE, 1996), the International Society for Technology in Education's Standards for Students (ISTE, 2016), and the New Jersey Student Learning Standards (2016). Upon review of these standards, one can easily see that technology should play an essential role in student learning. It is important to point out that the

standards have undergone many revisions; they continue to not only evolve alongside technology, but also alongside students' growing abilities to use that technology as it becomes more prevalent in their daily lives. For example, in 1998, the framework for the ISTE's Standard for Students was primarily geared toward helping students learn how to use technology. In 2007, the focus shifted to students learning with technology, and in 2016, the standards were revised to showcase how learning can be transformed with technology.

The SAMR model (Puentedura, 2006) relates directly to the idea of transforming student learning with technology. The SAMR model (Puentedura, 2006) is a taxonomy-based approach that can be used to select, use, and evaluate technology in classroom settings. The model consists of four levels—substitution, augmentation, modification, and redefinition (Puentedura, 2006). Puentedura (2006) explains that instruction is considered to be enhanced when technology use is at the lower levels of substitution and augmentation, and it is considered to be transformed when technology use it at the higher levels of modification and redefinition. At the lowest level, the substitution level, the technology is acting as direct substitute for another tool, and there is no functional change (Puentedura, 2006). Moving up the hierarchy to the augmentation level, the technology is still acting as a substitute for another tool, but there is some functional change and improvement (Puentedura, 2006). At the next level, the modification level, the technology allows for the task to be significantly redesigned (Puentedura, 2006). Lastly, at the redefinition level, the highest level, the technology allows for tasks that were previously inconceivable had the technology not existed (Puentedura, 2006). The levels of modification and redefinition can be challenging to reach—especially at the lower

elementary level, but they can be reached more quickly if students as young as Kindergarten start small and begin replacing tasks with technology (Calvert, 2015). Essentially, this will help to lay a foundation that can be built upon as students become more familiar with using technology for learning purposes. Hamilton, Rosenberg, and Akcaoglu (2016) argue that although the SAMR model (Puentedura, 2006) has strengths and potential for evaluating technology use, it cannot stand alone because it poses the following three challenges:

1. The model does not consider context (resources, teacher knowledge, and support for using technology, etc.).
2. It has a rigid, hierarchical structure which implies that using technology is only effective when in the modification and redefinition stages.
3. It values product over process, focusing too much on the technological tool being used and not the process of student learning.

These are all important factors to consider when thinking about how technology can be incorporated into any curriculum. This suggests that the SAMR model (Puentedura, 2006) should not be the sole model for guiding teachers on their journey to successful technology integration .

Technological Pedagogical Content Knowledge (TPACK) (Koehler and Mishra, 2009) is another framework that embodies a different approach for looking at technology integration. This framework looks past just the technical aspects of educational technology, and focuses on the interplay between pedagogy, content, and technology (Koehler and Mishra, 2008). This differs from the SAMR model (Puentedura, 2006) because TPACK (Koehler and Mishra, 2009) stresses the importance of evaluating the

entire teaching performance instead of just the one aspect of technology (Mishra, Koehler, & Kereluik, 2009). At a time when new technologies are constantly surfacing, TPACK also helps educators decide which technologies are worth learning; they can evaluate a technology in terms of how it might help to present content or facilitate pedagogy (Mishra, Koehler, & Kereluik, 2009). Taking all of this into consideration, this model would be helpful for teachers to look at alongside the SAMR model (Puentedura, 2006) as they select and evaluate technology in their classrooms.

Successful technology integration. With technologies being in a constant state of evolution, considering which ones to use to present content or facilitate pedagogy can be overwhelming. What educators should remember is that although the actual technologies are changing, the purposes for their use remain the same (Pitler, Hubbell, & Kuhn, 2012). For example, at one time, SurveyMonkey was the leading tool for gathering data, but it is now in competition with newer programs such as eClicker, Socrative, and Poll Everywhere (Pitler et al., 2012). Although these new surveying programs have surfaced, the desired function still remains the same—to gather data. This is also true when considering how to integrate technology into a literacy curriculum. Even though the tools for carrying out literacy functions are changing, the desired literacy functions we wish to see our students employ remain the same (Fisher & Frey, 2010). Thus, instead of placing too much emphasis on the type of technology being used, authentic learning goals should first be considered followed by the instructional practices that will help to meet those goals (Harris & Hofer, 2009; International Literacy Association, 2018). Only then can teachers use their expertise to make the decision of whether or not those instructional

practices can be supported with digital resources and tools (International Literacy Association, 2018).

Another key to successful technology integration is that the technology is not taught in isolation; it is not viewed as separate from the curriculum, but instead, it is viewed as integral to the curriculum (Harris & Hofer, 2009; Hutchison, Beschoner, & Schmidt-Crawford, 2012; Hertz, 2011b). Of course, students may need to spend some time becoming familiar with a new technology, but the end goal is that the technology is *seamlessly* employed in the classroom by students to learn content and show their understanding of content (Hertz, 2011b). When integrating technology into the curriculum, Hertz (2011a) suggests using the Two-Step model (Flynn, 2004; 2013), a teacher-friendly framework for constructivism in the classroom. The Two-Step model (Flynn, 2004; 2013) is made up of two phases—the exploratory phase and the discovery phase. Hertz (2011a) suggests that before asking students to use a digital tool to demonstrate their understanding of a concept, they should first explore the tool. This acknowledges that not all students will be familiar with the digital tools teachers use in the classroom. To ask students to learn the logistics of using a new technology *and* use it purposefully to meet a lesson objective all at the same time would be overwhelming for not only the students but also the teacher. After exploring a new digital tool, students can enter the discovery phase where they are given the task to use the digital tool to show what they know about the content. This whole process seems time-consuming, however, Hertz (2011a) points out the amount of time spent in the exploratory phase varies based on student capability and background knowledge regarding the digital tool being used; sometimes the exploratory phase may only last 10-15 minutes (Hertz, 2011a). The

important takeaway here is for teachers to understand the importance of allowing students to explore technology before asking them to use it meaningfully. Only then will they be able to focus more on the content instead of the tool itself (Hertz, 2011a).

Technology with Young Learners

It is imperative that all students, regardless of their age, are given the opportunity to learn twenty-first century skills in the classroom. However, many teachers are reluctant to use technology with young students. They often question the amount of time it will take to teach students *how* to use digital tools versus the amount of time the students will actually spend using the tools meaningfully and productively (C. Baker, 2014). It is important to remember that today's students are *digital natives*, a term Prensky (2001) uses to refer to students who are born into the digital age. They are "native speakers" of the digital language because they have grown up in a world where technology is prevalent (Prensky, 2001). This cannot be overlooked when considering technology use with young students. When accessible, technology use comes naturally to most of them. Thus, the time it would take to teach them about a new digital tool would likely be minimal. Even if difficulties do arise, research shows that when young students encounter problems when using technology, they successfully use their prior technology knowledge to problem-solve, sometimes even collaboratively with peers (Hutchison et al., 2012). Even more, when it comes to learning new skills, young students' motivation to use technology helps them to persist in learning those new skills (Hutchison et al., 2012).

With that being said, there is concern over whether technology is being appropriately used in early childhood settings. To provide guidance to those working in early childhood education programs serving children from birth through age eight, the

National Association for the Education of Young Children (NAEYC) and the Fred Rogers Center put together a position statement on technology use in the classroom (NAEYC & Fred Rogers Center, 2012). When used intentionally, the authors assert that technology and interactive media can have positive effects on children's learning and development (NAEYC & Fred Rogers Center, 2012). Even more, research shows that young children are naturally motivated to use technology in the classroom, and as they continue to use it, their confidence grows, leading to greater independence and active roles in their learning (C. Baker, 2014). The next section will look at research that explores the impact technology has on the literacy achievement of young students.

Impact of Digital Tools on Literacy Achievement

With technology constantly advancing and more options for classroom use becoming available, new research is beginning to surface supporting the use of technology with young students. The emergence of this research shows that young students are quite successful with using technology to increase their literacy proficiency.

Comprehension. There is no denying the fact that today's students learn much differently than those of the past, and the technologies responsible for that shift must be brought into the classroom to meet those learners' needs. According to Larson (2009), "[T]oday's readers are immersed in multimodal experiences and, consequently, have a keen awareness of the possibility of combining modes and media to receive and communicate messages" (p. 255). She suggests that one way teachers can address the discrepancy between the conventional literacy experiences students have in school and those they have in their daily lives outside of school involving technology is to expand the types of texts they use in the classroom to include electronic books, or e-books

(Larson, 2009). A small case study conducted over the course of three weeks in a second grade classroom focused in on two readers of differing age and reading abilities and their interactions with e-books (Larson, 2010). Findings revealed that the use of digital reading devices does promote new literacy practices and enhances the connections between readers and text due to the engagement and manipulation of text that is made possible with e-books (Larson, 2010). Overall, the tools available when reading the e-books allowed the students to have greater control over their reading than when reading printed text (Larson, 2010).

Technology also offers innovative ways for students to respond to texts they are reading in order to demonstrate understandings. During an exploration of how iPads can be used for literacy learning, Hutchison et al. (2012) focused on ways the device could be used to help teachers meet curriculum goals. The classroom teacher planned lessons with technology around the reading comprehension strategies of sequencing, cause and effect, retelling, and determining the main idea. As an example, one lesson involved student pairs using the app Doodle Buddy to draw illustrations to match the visual images they created when reading assigned portions of a text (Hutchison et al., 2012). After they finished their drawings, they exported them to the teacher's computer; the teacher displayed them for the class so they could see a visual representation of the entire text that they were about to read (Hutchison et al., 2012). Another example involved a lesson that focused on cause and effect. Students drew pictures of a cause and effect from a text they were reading and inserted an audio recording explaining the picture (Hutchison et al., 2012). Overall, an analysis of all the activities carried out in the study revealed that

comprehension strategies infused with the use of technology fostered more engagement, creativity, and deeper understandings of what they read (Hutchison et al., 2012).

Reading fluency. A necessary component to literacy development is *reading fluency* which can be defined as reading at appropriate pace with accuracy, automaticity, and expression—three elements that work together to form a bridge to comprehension (Rasinski, 2006). A well-known strategy for helping students to improve their reading fluency is repeated reading (Rasinski, 2006). However, many students find the task daunting, as they do not see the purpose behind rereading the same text multiple times. To help combat this, Rasinski (2006) suggests that the focus of repeated reading should be on expressive oral performance to help give readers an incentive to practice. Supporting this, Leathers (2016), a reading specialist in New Hampshire, found that allowing one of her students to record videos of his repeated readings to share with his family provided him with an audience and in turn, motivated him to reread familiar texts with proper phrasing, expression, stress, etc. An additional benefit of using this method was that it created a bridge between school and home and allowed the student’s parents to hear what second grade reading should sound like; having a model helped them to encourage fluent reading at home (Leathers, 2016). This is a prime example of how a conventional fluency strategy can be enhanced with the use of technology.

Another study conducted over the course of eight weeks in a second grade classroom explored how iPods could be used to record repeated readings and the effects it had on the development of reading fluency (Arens et al., 2018). Looking more closely at how the study was carried out, a classroom teacher built reading fluency practice into her Daily 5 rotations (Arens et al., 2018). Within their Daily 5 groups, students picked

partners to work with in the center (Arens et al., 2018). At the start of the week, each partnership was given a passage based on their instructional reading level (Arens et al., 2018). Throughout the week, partnerships engaged in a process of repeated readings for practice and audio recordings for progress tracking (Arens et al., 2018). During the process, the partnerships used rubrics for peer- and self-evaluations; the rubrics looked at rate, expression, accuracy, and paying attention to punctuation (Arens et al., 2018). According to Arens et al. (2018), “Through hearing themselves read orally on the iPads coupled with peer feedback, students became motivated to practice and improve their fluent oral reading that research indicates is related to improvement in comprehension” (p. 61). At the conclusion of the eight weeks, post-assessment results showed that the second graders’ reading fluency increased as a result of using the digital tool (Arens et al., 2018).

Written expression. A study conducted within a first grade classroom showed that the use of interactive technologies—including a SMART Board, document camera, and classroom computers—had a positive impact on students’ oral and written communication skills (C. Baker, 2014). For example, digital storytelling, a practice that involves telling stories through voice, text, images, audio, and/ or video, allowed students to improve their fluency skills (C. Baker, 2014). C. Baker (2014) also found that when her students completed written assignments conventionally with pencil and paper, they would skip words that were difficult to spell and use “easier synonyms” (ex. *bad* instead of *horrible*); not only did this hinder their flow of writing, but it also hindered their will to take academic risks (C. Baker, 2014, p. 11). On the other hand, she found that allowing her students to use word processing programs for written assignments led to “stronger,

more clearly organized, and better-elaborated writing, while honing in on standard conventions of grammar and mechanics” (p. 11). C. Baker (2014) credited these positive outcomes to the fact that word processing programs offer greater functions such as spell check. She explains that her students began to notice that a red squiggly lines meant they had to check the word for spelling (C. Baker, 2014). Eventually, checking their work for spelling errors led to them revising their work—adding to and deleting words and sentences which led to greater organization of their writing (C. Baker, 2014). C. Baker (2014) asserts that although it took her students a bit longer to type than write on paper, the growth in their writing skills made it worth it.

Another study conducted in a first grade classroom showed that integrating the Language Experience Approach (LEA), an early literacy intervention strategy that involves dictation, with speech-recognition software has the potential to support struggling writers (E. Baker, 2017). Standing alone, the LEA has been criticized for being cumbersome, as it can be difficult for teachers to take dictation from one student and also be available to provide any necessary support to their other students (E. Baker, 2017). Using speech-recognition software makes it possible for young students to dictate their own compositions without having to rely on the teacher to do the transcribing; instead, the software does the work (E. Baker, 2017). Using this method led to an increase in confidence among the students because it allowed them to see themselves as authors (E. Baker, 2017). Not only were the students showing success with composing meaningful stories, but the method also helped them with their reading (E. Baker, 2017). Since the students said what was being transcribed, they would read back their writing (E. Baker, 2017). Data analysis also revealed an increase in sight word vocabulary; at the end of the

study, students were able to read words that had appeared in their published compositions with an average of 97.4% accuracy (E. Baker, 2017).

Conclusion

The reviewed literature suggests that technology has the potential to enhance and transform literacy instruction to maximize student learning outcomes. Although there is some research supporting technology use throughout literacy instruction with younger students, it is an area that would benefit from further study. It would be valuable to gain more insight into what happens when technology is used with young students, more specifically first grade students, to support the goals of a literacy curriculum. Much of the research described above showcases instances when technology is used to address isolated components of literacy. This study differs in that it looks at what happens when technology becomes a part of daily routines in a first grade classroom and is used to address multiple areas of literacy.

The next chapter will address the organization of the study. It will provide details about the community, school, and classroom in which the study took place. It will also describe the research design as well as lay out the procedures of the study.

Chapter 3

Research Design and Methodology

Shagoury and Power (2012) define research as a “process of discovering essential questions, gathering data, and analyzing it to answer those questions” (Chapter 1, Section 1, para. 5) This study is an example of teacher research, a form of research that is characterized by qualitative inquiry carried out by classroom teachers (Shagoury & Power, 2012). Typically, teacher research inquiries stem from problems teachers are trying to solve in their own classrooms which in turn, can help them to better understand their students as well as improve their practice (Shagoury & Power, 2012). The research process not only involves teachers collecting and analyzing data within their classrooms, but it also involves them presenting it in a systematic way (Shagoury & Power, 2012). The following sections will provide the context of this particular study, detail the procedures, and give an overview of the collected data sources and how it was analyzed.

Context of the Study

Community. The geographical location of this research study was in a large suburban community situated in southern New Jersey. According to the United States Census Bureau (2017), the population is estimated to include 20, 540 residents. The community is comprised of 7, 176 households of which the median household income is \$133, 902. Looking at the level of educational attainment of the members within the community, 96.5% of the population has received a high school diploma or higher. Since this thesis focuses on technology, it is interesting to find that the percentage of households with computers is 93.1%, and the percentage of households with access to the Internet is 88.7%. The public school district in the community includes three elementary

schools (PreK-3), one upper-elementary school (4-6), one middle school (7-8), and one high school (9-12).

School. Sunnyside Elementary School (pseudonym) was the study site where the research took place. The school serves approximately 400 students from preschool to third grade. The student population is comprised of 47% females and 53% males. Looking at the racial breakdown of the school's population, 60.7% of students are white, 22.9% are Asian, 3.6% are African American, and 8.6% are of two or more races.

Classroom. The first grade classroom in which the study was conducted is one of four at Sunnyside Elementary School. Within the classroom, there is one classroom teacher (myself) and one paraprofessional. Although there is a total of 23 students enrolled in the class, parental consent for participation in the study was only granted for 20 of them. Of the 20 participants, there are 10 females and 10 males, ages six through eight. Looking at race, there are 16 white students, 3 Asian students, and 1 African American student.

Technology in the classroom consists of a SMART Board, SMART Document Camera, 3 student desktop computers, 1 teacher laptop, and 6 iPads. Soon after the study began, a one-to-one iPad model was implemented within the classroom since I am a part of the district's Apple Pilot, a pilot focused on integrating technology into curricula at the early elementary levels. Thus, each student had his/ her own iPad; I was also equipped with my own iPad.

Procedure of the Study

When I thought about how I wanted to approach this study, I knew I wanted to experiment with different ways technology could be used during literacy lessons to

improve student learning outcomes. I also wanted to focus on ways it could be built seamlessly into classroom literacy routines. I decided that iPads would be the primary device used throughout the study by both my students and myself. This decision was based largely on the fact that the devices were highly accessible since I was piloting a 1:1 iPad model for first grade. It was also due to the fact that iPads offer unique capabilities in comparison to desktop and laptop computers; these capabilities include a multitouch screen and a wide array of applications that offer many learning possibilities (Hutchison, Beschoner, & Schmidt-Crawford, 2012). Additionally, I find iPads to be highly appropriate devices for younger students.

The study took place over the course of fifteen weeks. At the start of the study, I introduced my students to the expectations for using iPads in our classroom (See Appendix B). After outlining the rules, I used the app Flipgrid to prompt each of my students to create a video response naming one rule and explaining its importance. This activity was experimental in nature. My main objective was to observe and measure my students' comfort levels with not only using an app for the first time, but also with using the iPads in general. Since all students showed exceptional skills with using the iPad as well as innate problem-solving skills for using a new app, it was decided that it would not be necessary to teach them the basics about iPad usage.

From there, I began implementing technology into lessons and classroom routines. Prior to the start of each week, I would spend time looking at upcoming literacy lessons to determine whether technology could be used to enhance and/ or transform student learning. The overall planning process was as follows: 1) learning outcomes or content, were chosen; 2) activity types, or how the students were going to learn the

content, were chosen; and finally, 3) technologies that could support the activity types and aid students' learning were chosen (Harris, Hofer, Schmidt, Blanchard, Young, Grandgenett, and Van Olphen, 2010). Once I deemed a technology as appropriate for facilitating student learning, I conducted brief surveys to determine whether my students were familiar with the specific apps I would be using. The collected survey data helped to decide whether my students would need an exploratory phase (Hertz, 2011a) before using the tools to meet desired specific learning objectives. From this planning process, the various technology-integrated, literacy-based activities that I developed to take place throughout lessons and classroom routines are as follows:

Technology integrated into classroom literacy routines.

- **Listen to reading.** My reading centers are broken up into five rotations—“Teacher Table”, “Read to Self”, “Listen to Reading”, “Word Work”, and “Work on Writing”. For the “Listen to Reading” center, students listened to “Read to Me” books using the app Epic; “Read to Me” books are eBooks with audio and a follow-along word highlighting feature.
- **Fluency practice.** Each morning, I met with a small group of students for a fluency mini lesson. Students were grouped based on instructional reading levels. Each group was assigned a day of the week to meet with me at my small-group reading table in the morning; this replaced their morning work. My below-level readers worked on automaticity with Fry sight words, and my on-level readers worked on reading Fry’s phrases with proper phrasing. To practice reading the words and phrases, the students watched videos that I created. In the videos, the words or phrases would appear on the screen, and

after a few seconds, I would say them. When watching, students were asked to try and read the words or phrases before they heard my voice saying them. If they did not read the words or phrases before me, they were asked to repeat them. I uploaded the videos to Seesaw, a student-driven digital portfolio application, along with templates that featured the sets of words and phrases the students were working on. After watching their assigned videos, students edited the templates with voiceovers of themselves reading. Their performance determined whether they would move to the next set of words or phrases. My above level readers' fluency goals were slightly different; for them, it was more about practicing and maintaining their fluency, so they worked with Reader's Theaters scripts. Within their groups, they were broken into partnerships and issued the scripts. The partnerships practiced reading the scripts and recorded videos of their final performances using the app Seesaw. It was ultimately their decision when they wanted to record. There were only two stipulations; they could only record during downtime such as snack time or when they finished a class assignment early, and it needed to be done by Friday of that week. After recording, the partnerships played their videos and used a fluency self-assessment rubric to judge their performance. From there, they set goals for what they thought they should work on for the next Reader's Theater script they were assigned.

- **Guided reading.** As stated previously, my reading centers are broken up into five rotations— “Teacher Table”, “Read to Self”, “Listen to Reading”, “Word Work”, and “Work on Writing”. For the “Teacher Table” center, a small

group of students meets with me for guided reading. Unfortunately, there are times when I do not have the proper texts to match my students' instructional reading levels. To help combat this issue, I would select appropriate texts from the app Epic, and my students would bring their iPads to the small group table. Guided reading would run as usual; the only difference was that the students were reading eBooks instead of print books.

- **Independent reading.** “Read to Self” (independent reading) is not only a part of my reading center rotations, but it is also an “Early Finisher” choice for when students finish a class assignment early. Each of my students has an individual book box. A great deal of time in the beginning of the year was spent on establishing routines and procedures for “Read to Self”. Throughout this process, students were taught how to self-select “just right” books. Although many of my students were honest with themselves about the books they were able to read, I was discovering that there were quite a few students who were not. Since each of my students had his/ her own iPad, I decided to allow the app Epic to be a choice for “Read to Self”. I had to set forth some guidelines for this because Epic has educational videos and books with audio; the goal of “Read to Self” is for students to be independently reading—practice makes progress! I decided to create folders within Epic for each of my reading groups. I filled the folders with texts that were on their independent reading levels. I shared the folders with my class and explained that if they were choosing Epic for “Read to Self”, they were only to select books from their own reading group folders. I monitored this from time to

time using the Classroom app, an app that lets teachers see all of the iPad screens that are in use in their classrooms as well as the apps that were visited in a given class period.

- **Spelling dictation.** On Mondays, I introduce a new spelling skill for the week. Part of the routine involves dictation. Typically, we do this paper and pencil. However, we started using the app Word Wizard for this portion of the routine. The app features a talking moveable alphabet; when a letter is touched, students can hear the sound it makes, and after they spell a word, they can hear the word read to them.
- **Show what you know.** I did not originally plan for this to be built into the study; the idea came from two of my students. After using Flipgrid for a class assignment, two of my students came to me a few weeks later during free time asking if they could use the app. I told them there needed to be a purpose. They came up with the idea to record videos of themselves explaining something they learned during the week. Naturally, I welcomed the idea, and together, we created a topic in Flipgrid called “Show What You Know”. Many of the students chose this during free time on Fridays. They planned videos (usually in partnerships) and recorded them; they even used their mini-whiteboards to show what they learned as they explained it.

Technology integrated into specific literacy lessons.

- **Nonfiction text features.** For a lesson on nonfiction text features, students took photographs of text features found in printed nonfiction texts. They enhanced their photographs with voiceovers to explain the purposes of the

nonfiction text features. This was done using the app Seesaw. After, their videos were shared with a Kindergarten class to introduce them to nonfiction text features.

- **Story elements.** Students completed digital graphic organizers using the app Seesaw.
 - a. Students completed a story elements graphic organizer with a partner after listening to a read aloud.
 - b. Students illustrated the problem and solution of a story that was read aloud. Then, they enhanced their pictures with voiceovers explaining the problem and solution.
- **Compare and contrast story characters.** In this lesson, students worked in partnerships to read a book that featured two main characters. After reading, the students took photos of the story characters using Seesaw. They labeled their photos to show similarities and differences between the two characters. Finally, they recorded their voices explaining their work.
- **Summarizing.** In a previous lesson, students learned about how good readers summarize texts or parts of texts they are reading. They learned that a summary is a short overview of a text given in the reader's own words that tells the main idea or most important parts. For this activity, students worked in partnerships and read "just right", fiction books of their choice. After, each partnership wrote a book review for their selected book; the book review was broken into three paragraphs-- a summary of the story (one that does not give away the ending), a paragraph explaining why they liked the book, and a

paragraph telling who they would recommend the book to. Students then used the app Seesaw to take photographs of their book reviews and enhanced the photographs with voiceovers of themselves reading the reviews. With Seesaw, a QR code is automatically generated for each piece of student work; this allows the work to be shared with others such as parents. We printed the QR codes for the book reviews and taped them to the inside covers of the books. This way, students can scan the QR codes to see and hear the book reviews when selecting books in the future.

Data Sources

In order to analyze the results of the study, multiple sources of qualitative data were collected. These data sources included a teacher research journal, student artifacts/work samples, student surveys, and student interviews.

Keeping a teacher research journal was my main data-collection strategy. Although I primarily used the journal to record observations while my students used technology, it also served as a place for me to reflect as well as jot down any questions, ideas, and thoughts that came to me throughout the study. The student artifacts/work samples I collected served as a record of the work my students produced throughout the study. These artifacts provided me with a large amount of data regarding student productivity and whether my objectives for lessons and activities were met. Student surveys were used to gain insight into student preferences regarding technology use. To learn more about my students' general perspectives and attitudes toward using technology for literacy purposes, I conducted interviews. The interviews were very informal; some involved me simply talking with students one-on-one and recording

notes, and others involved whole-group and small-group discussions that I audio-recorded.

Data Analysis

To help draw conclusions related to the impact of integrating technology throughout a first grade literacy curriculum, the above-mentioned data sources were carefully analyzed and coded for emerging themes.

Every other week, I carefully reviewed the notes in my teacher research journal to reflect on the progress of the study and look for any noticeable trends. Since the journal was typed using a word processing program, I used the highlighting tool to help me code those trends; each trend had its own color. In my journal, I also kept class rosters on which I used tally marks to track any student disengagement as they completed literacy activities with technology.

Each Friday, I assessed all student artifacts collected throughout the week. For the student artifacts that were tied to specific lessons, I noted which students did or did not meet the learning objectives. Additionally, many of the artifacts contained audio, so I transcribed the audio that I found to be critical to the study. I then created a table to showcase the transcriptions from the artifacts, and I coded them to identify noticeable patterns within the work of my students.

Brief student surveys were given periodically throughout the study to collect data about my students' preferences toward digital literacy tasks and conventional literacy tasks. For example, one survey question was the following: Do you prefer completing story maps digitally or with paper and pencil? Student votes were recorded on a class

roster. Then, I converted the responses to percentages to showcase the amount of students who preferred a digital tool versus a conventional tool.

Several interviews were also held throughout the study to provide me with information about my students' attitudes toward the use of technology throughout instruction, independent work, and classroom routines centered around literacy. The interviews were very informal and conversational in nature; for some, I simply recorded notes of what my students were saying while others were audio-recorded. I took the notes that I recorded and the transcribed audio, and I created a table that featured the questions and student responses. I used a coding system to locate repeating language. At the end of the study, I conducted a final interview within small groups of students to gain a final sense of my students' thoughts and feelings toward using technology for literacy purposes (see Appendix A). I audio-recorded our dialogue and added the transcriptions to the table described above to continue looking for patterns. The next chapter will describe the patterns and findings that were revealed from this data analysis.

Chapter 4

Data Analysis and Findings

As mentioned in previous chapters, this study looks at what happens when technology is used in literacy lessons and classroom routines within a first grade classroom. This chapter is organized into sections based on the recurring themes that emerged from analyzing the data. Six major findings emerged from the research:

- students were highly motivated and engaged when using technology during literacy lessons and classroom routines;
- in comparison to conventional methods, most students preferred the use of technology during literacy lessons and classroom routines;
- the students and I were more productive when technology was employed;
- students created deeper meanings of their learning when technology was involved; and
- technology helped to foster a student-centered learning environment; students took leadership in their learning as a result of their confidence with using technology.

Increased Motivation and Engagement

It is no surprise that getting students to buy in to what you are asking them to do can sometimes be challenging, but my students' natural motivation to complete literacy tasks with technology helped to achieve this goal. They were driven and excited to practice and reinforce literacy skills when technology was involved. Take summarizing for example. To a first grader (or any student for that matter), writing a book summary is typically not very appealing, but writing a summary that will be recorded and turned into

a QR code to put inside a book is a different story. That is precisely what my students did; they wrote book reviews which included a summary component and recorded themselves reading their reviews. Later, we turned their recordings into QR codes and added them to the inside covers of the books they reviewed. The students were beyond excited that their peers and future students would be able to scan the QR codes and listen to their book reviews. It highly motivated them to do their very best work. Student engagement was so high that students seemed unaware that they were practicing summarizing. I was left in awe by how they worked, but also by the work they produced (Figures 1-2).

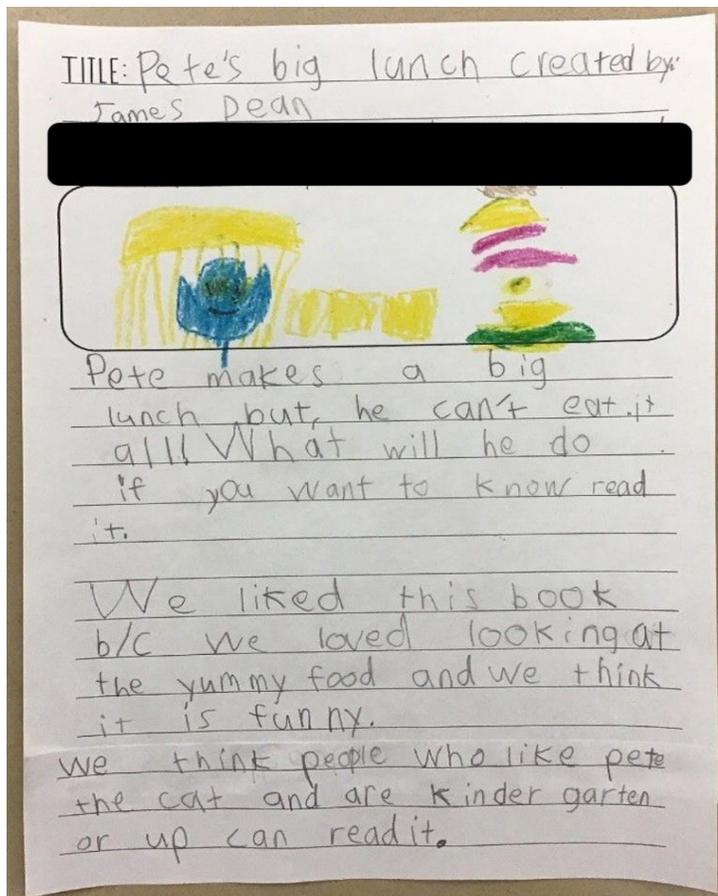


Figure 1. Sample book review.

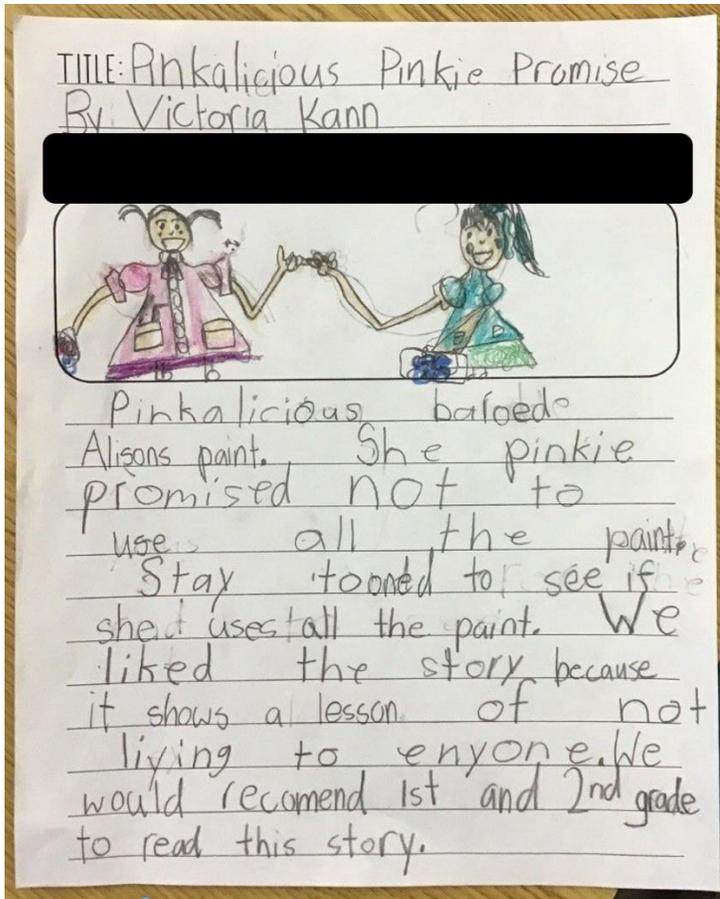


Figure 2. Sample book review.

I especially noticed high levels of motivation and engagement among my students when they were asked to complete tasks that involved recording videos of themselves. I believe this was due to the fact that video recording provides students with an authentic audience; they know someone will be watching the videos they create, and this excites them. As an example, my students were very eager to create videos for the purpose of teaching Kindergarten students about nonfiction text features. When I was walking around the classroom and observing them in action that day, I noticed very few instances of disengagement such as students looking around the classroom. At the conclusion of the activity, one student asked me if the Kindergarten students were really going to watch

their videos. When I told him they were in fact going to watch the videos, he enthusiastically responded, “This is so cool!”

Even at lower levels of technology use as defined within the SAMR model (Puentedura, 2006), my students were still very engaged. For example, my students thoroughly enjoyed reading eBooks, a form of technology that can be seen as a substitute for print books. Allowing my students to read eBooks may not have been a high level of technology use, but it did create high levels of engagement—especially in comparison to when my students read print books from their individual book boxes. A moment that stands out to me is when one of my students was cleaning up from “Read to Self”, and I heard him say, “I want to keep reading”. I attribute his enthusiasm to continue reading to the fact that Epic is an app that offers over 35, 000 eBooks for children to read; this is way more books than I have to offer in my classroom library—especially as a newer teacher. Even more, he loves reading nonfiction, a genre that is lacking my classroom library. When reviewing his activity in Epic, I saw that well-over half the books he read were nonfiction. Thus, the availability of this genre within Epic played a key role in his interest to read. It is worth noting that he was not the only student I overheard talking positively about reading eBooks. On another day when it was time to clean up from reading centers, I overheard a different student (a reluctant reader might I add) say to a peer, “That was a good book I was listening to”. When I asked her about the book, she showed me her iPad on which I saw that she was listening to a book about a scared cat. I noticed that she had added the book to her “Favorites” collection to continue listening to it at a later time. For a student who has demonstrated very little interest in reading, this was monumental to me. Again, I link this engagement to the abundance of books that are

available in eBook platforms, as there is a greater chance that students will find a book that appeals to their interests.

Student Preferences

Another recurring trend that I observed throughout the study was my students' preference toward using technology for literacy purposes versus using conventional methods. Relating back to the use of eBooks in my classroom, over 80% of my students expressed that they would rather read eBooks instead of print books. When asked to share their reasoning behind this choice, many students felt as though it was faster to read eBooks on their iPads because it eliminated the steps of having to get their book boxes, go into the classroom library, and search for books before they could begin reading. Instead, the books were all right there on their iPads. Students responses also revealed that they found the eBooks to be "easier". When asked to elaborate on this, they explained that it was harder to look for "just right" books in the classroom library. It should be noted that with the app Epic, I was able to share folders with each of my reading groups; I filled the folders with eBooks that I knew they would be able to read independently. Students felt as though this was better than having to find books themselves. One student even specified that there were times when she would pick from the classroom library only to find out that it was not a good fit. Then, in an exasperated tone, she said, "Then you have to go *back!*" For me, this spoke volumes. I have always allowed my students to self-select texts, but I have found that some students choose books that are beyond their independent reading levels. Using the app Epic to create folders of books for my students to choose from undoubtedly increased the volume of

independent reading in my classroom. This is what all teachers strive for because we know that increased reading volume leads to increased reading proficiency.

Continuing, when asked about preferences toward completed a story map with paper and pencil or completing a story map digitally, over 70% of students chose digitally. For those who chose paper and pencil, they explained that their reasoning was because of the difficulty they had using the label tool in Seesaw, the app students used to complete the graphic organizers. They further explained that they found it hard to manipulate the labels to fit on the graphic organizer, and they felt as though it would be quicker to just use pencil and paper. I also noticed when reviewing their completed graphic organizers that some students made a label for every single word instead of using one label for a phrase or sentence. This was not something I foresaw as being a problem, so as a result of discovering it, I decided to explicitly teach my class about the label tool and provide them with tips for easier use. The next time my student used the label tool, I noted that the students who were previously struggling with it were saying things such as, “This is so much easier now!” and “I didn’t know you could do this!” Thus, all it took was further teaching and exploration of the tool for students to feel comfortable and successful with it.

Greater Classroom Productivity

It did not take long for me to realize that the use of technology had a positive impact on my teaching which in turn, had a positive impact on my students’ learning. Looking back at my teacher research journal, I often reflected about the effect technology had on the way I formatively assess my students. This is largely due to the fact that when my students were using their iPads, I was able to monitor *all* of them at once using

Classroom, an app that allows teachers to view the screens of all the devices being used in their classrooms. An example of how this increased the efficiency of one of my lessons was when my students were using the app Word Wizard for spelling dictation. Being able to view their screens allowed me to pinpoint specific students who were having difficulty spelling a word and then provide them with immediate support. If more than one student was struggling, I would ask my paraprofessional to assist a student while I worked with another. Prior to using this digital tool, I had to walk around the classroom to monitor students and find those who needed my help. It was far more productive to view what they were doing all at once.

Continuing, technology essentially allowed me to meet with my students one-on-one. As an example, my students recorded videos of themselves for fluency practice. Not only was this helpful in allowing them to play back the videos and reflect on their own performance, but it was also helping in allowing me to assess their performance and provide them with feedback. It would have been time consuming to meet with students one-on-one during the instructional day to assess their fluency progress. In fact, it simply would not have been feasible with our schedule. The use of technology allowed me to hear each of my students read out loud, and even more, it allowed me to do it on my own time.

Technology saved instructional time in other ways. Another feature of the Classroom app allows teachers to control the devices in their classrooms; they can launch apps for students, navigate them to websites, and more. One example of how I used this feature was when my students were completing a Black History Month research project. To conduct their research about famous African Americans, my students used the website

PebbleGo, an online children’s database for reading and research. I used the Classroom app to launch the website on each of their iPads. Had I asked my students to navigate to the site on their own, it would have taken up valuable time, but with the Classroom app, it was done within seconds. From there, my students had more time to focus on what mattered most—their research.

Technology also allowed me to differentiate more easily. For example, I previously mentioned that I created eBook folders for each of my reading groups. I was able to do this from home, and it was a lot easier than monitoring the students’ self-selected books for their book boxes. I strongly believe in student choice when it comes to independent reading, and while the books in the eBook folders were carefully selected by me to fit my students’ current independent reading levels, students were still able to choose the books that interested them from that selection.

Improved Meaning-Making

I also found that using technology with younger students can be very powerful in helping them to create deeper meanings of their learning. Video technologies, in particular, motivated my students to reflect on their learning and share it with others. On Fridays, my students were allowed to record videos and share something they learned during the week; they used the app Flipgrid to do this. Even though my students and I were the only ones watching the videos, they recorded them as though they were sharing them with the world. Students would begin their videos with, “Hi guys, it’s me (name)!” and end their videos with, “Thanks for watching guys”. Obviously inspired by YouTube, students would also say things such as, “Please subscribe so you’ll never miss out on one of my videos” or “Make sure you subscribe and hit the like button”. One student even

created a name for his “channel”. This inspired other students to create their own “channel” names. Soon, “Brain Pop”, “Learning.com”, “Ninja Stars”, and “Learningsisters.com” blossomed. All of this relates back to the idea of providing students with an audience; my students were clearly recording their videos with an audience in mind.

It is also important to point out that there was a visible difference in the videos at the start of the study compared to the end of the study. In the beginning, students seemed more reserved and shy as they shared their learning. By the end of the study, it was very obvious that my students’ confidence had grown. There is no other way to describe it other than they became true teachers during the time that they were planning and recording videos. At first, the majority of the videos that students posted were math related. However, as time progressed, students began recording reading, grammar, and writing videos. Here is the audio from a video recorded by a student who demonstrated what he learned in writing:

Robert: Hi guys. Today I’m going to teach you how to make stronger sentences.

So first up is “I went down the slide.” [Robert holds up his mini-whiteboard and points to the sentence that is written on it.] Isn’t that boring? Yeah, it’s so boring, but if I add a little more stuff, it’s “I went down the *red* slide.” [Robert holds up his whiteboard again, pointing to the new sentence.] That describes the color of the slide. That makes it more interesting. Add the adjective. Thanks for watching.

Another example features a student who recorded a video about a decoding strategy I taught:

Renee: Hi! Today I'm going to teach you how to use "chunky monkey". So let's figure out this name. [Renee holds up her mini-whiteboard with one of her family member's names written on it.] So, I don't know what this says. I'm going to use "chunky monkey". I see the chunk *Co*. You see *Co*? Circle it. [Renee circles the chunk on camera with her dry-erase marker.] And then I see *Co* over here. [She circles it.] Put it together. It's *Coco*! Bye!

As I watched the videos that poured in, I could not help but feel proud as their teacher because they articulated their learning so well. It was proof that they were soaking up my instruction because they delivered the content very similarly to how I taught it, often using direct quotes from my lessons. This reminds me of a famous quote by Aristotle—"Those who know, do, Those that understand, teach". The fact that my students were able to articulate and demonstrate their learning showed me that they truly understood it.

Student-Centered Learning

It quickly became apparent to me that my students were naturals when using technology. This often led to a shift in traditional teacher and student roles. Throughout the study, there were many instances when my students would teach *me* about something tech-related. I recall a time when I was teaching my students about a tool in the app Seesaw. While they were exploring the app, one student found an easier way to do what I had taught them. The student raised his hand and said, "Miss Hargrove, look. You don't have to do it that way. You can just do this." He then proceeded to show me what he was talking about. I celebrated him during that moment and made sure he knew that he had shown me something I had not previously known.

My students also developed new ways to use technology for learning purposes on their own. As an example, each Friday my students have a period where they are allowed to freely choose from a variety of activities. We call it “Fun Choice Friday”. Below is an excerpt that I retrieved from my teacher research journal that features dialogue between two of my students and me. It depicts how they developed an activity that all of their peers quickly took part in.

Andy: Miss Hargrove, can we use Flipgrid?

Me: What for? Flipgrid is not an app that you can just use. Remember, a topic needs be created and then you respond to it with videos.

Cody: Umm...

Me: Well, what do you want your video to be about?

Andy: Maybe we can make videos to show something we learned this week.

Cody: Yeah...it can be like a “Show What You Know”.

Me: Oooo! I like that! Let’s do it!

Following this conversation, Andy, Cody, and I created a topic in Flipgrid with a video of the boys giving directions to their peers:

Cody: Hi!

Andy: You want to learn about something we learned this week?

They were very simplistic directions, but the video responses that followed were anything but simplistic. In the videos, students thoroughly explained and modeled various things they learned throughout the week. Many of them used mini-whiteboards to help clarify and showcase their learning. Many students even collaborated and produced videos in pairs or small groups of three; together, they would plan their video content and practice

how they were going to deliver it. The best part was that I did not give any direction; students chose the content of their videos and how they wanted to produce them; they were completely in charge of the activity.

Overall, data analysis revealed that technology enriched the literacy experiences of my students. The final chapter will provide a summary of the findings and well as the overall conclusions that were drawn from the study. It will also provide the implications for classroom practice and recommendations for further research.

Chapter 5

Conclusion

This chapter provides a summary of the findings as well as the overall conclusions that were drawn from the study. It also addresses implications for today's classrooms as well as suggestions for further research in the field.

Summary of the Findings

This study examined the effects of using technology throughout the literacy curriculum in a first grade classroom that is situated in a PK-3 elementary school in a suburban community of southern New Jersey. The study data that was comprised from my teacher research journal, student work artifacts, surveys, and interviews suggest that the use of technology with first graders can lead to positive outcomes. The findings show that technology- infused literacy lessons and classroom routines can increase student engagement, student motivation, and classroom productivity. As the study progressed, it was evident that the students' confidence in their learning grew. Video technologies in particular encouraged students to think more deeply about their learning and share it with others. Technology also caused a shift in traditional teacher and student roles; learning was much more student- centered when technology was used. This was most likely caused by the students' intrinsic ability to use technology; it allowed them to feel comfortable with taking greater control of their learning.

Conclusions of the Study

My goal for this study was to investigate what happens when technology is used to help meet literacy curriculum goals within a first grade classroom. I specifically sought to discover the ways literacy instruction could be enhanced and/ or redefined using

technology and the impact it might have on student motivation and engagement as well as overall classroom productivity. I was also curious to learn how technology could be integrated into the literacy curriculum for the purpose of improving reading proficiency. Prior to beginning the study, I immersed myself in literature that supports the use of technology with young learners. This study supports and extends the findings of that research.

It should first be recognized that this study supports current literature that encourages the use of technology with even our youngest learners (Hutchison et al., 2012; NAEYC & Fred Rogers Center, 2012; C. Baker, 2014; Larson, 2009, 2010; Leathers, 2016, Arens, et al., 2018; C. Baker, 2014; & E. Baker, 2017). It was concluded that my first grade students were highly successful when using technology for learning purposes. Their innate ability to work with technology showed that they were in fact what Prensky (2001) calls “native speakers” of the digital language. Due to their high comfort levels with using technology, they did not require a great deal of teacher input when using technology-- even when they were using a digital tool for the first time. It should be stressed that an “exploratory phase” (Hertz, 2011a) was in fact necessary before asking my students to use a digital tool meaningfully for the purposes of demonstrating their learning. Giving my students the time to explore an app that we would be using to show their learning of content allowed them to focus solely on the task at hand without having to worry about the logistics of using the app. Thus, it has been determined that is important to use digital tools students are familiar with before asking them to use for the purpose of meeting a learning objective.

Continuing, it can be deduced that technology has the potential to enhance and transform the learning experience. There were many literacy tasks that my students completed that would not have been possible without technology. When I look back at the ways technology was used throughout the study and evaluate it in terms of the SAMR model (Puentedura, 2006), it is clear that many of its uses fell within the redefinition level, the highest level of technology use which allows for tasks that were previously inconceivable had the technology not existed. As an example, without the means of technology, it would not have been possible for my students to create digital book reviews and turn them into QR codes which will be accessible to their peers and future students to come. Technology use during this study did not always align with the highest level of technology use according to the SAMR model (Puentedura, 2006). However, it is important to point out that even at the lower levels of substitution and augmentation, my students' learning still benefited from the use of technology. Take a lesson on comparing and contrasting story characters as an example. My students worked in partnerships to read a book that featured two main characters. After reading, the students took photos of the story characters using the app Seesaw. They labeled their photos to show similarities and differences between the two characters. Finally, they recorded their voices explaining their work. This could have been done with paper and pencil using a Venn diagram, and students could have presented their diagrams to the class. However, I can say with certainty that they would not have been as engaged. Even more, it would have taken up a lot more time to have every partnership share. In this case, students could view other partnerships' work as soon as it was posted through the Seesaw app. Thus, technology at the lower levels should never be viewed as not being good

enough because as Calvert (2015) points out, when small tasks are replaced with technology early on, it can help to set a foundation for more advanced technology use later on.

In terms of whether technology can be used for the purpose of improving reading proficiency, I did not collect assessment data for measuring my students' reading growth in this study. However, an analysis of the data that was collected showed that the use of technology increased motivation among my students and led to high levels of engagement when completing literacy tasks. As a teacher, I know that when my students are motivated and engaged during their learning, it can lead to greater achievement. Looking specifically at reading achievement, when students are motivated to read, the quantity of their reading increases, and this can lead to improved reading skills. As an example, my students showed great motivation toward reading eBooks using the app Epic; the large collections of books that I carefully curated to match their independent reading levels allowed them to choose books that interested them and provided them with meaningful reading practice. It ultimately increased the volume of daily reading in my classroom. Thus, it can be inferred that technology was beneficial to helping to improve reading proficiency among my students.

The final conclusion that I drew from the study is related to the accessibility of technology. At the start of the study, my classroom was only equipped with six iPads. Soon after the study began, my classroom shifted to a one-to-one model, and each of my students had their own iPad. When comparing what it was like to only have six iPads in my classroom to having an entire class set, it quickly became clear to me that the accessibility of devices plays a big role in helping to make technology integration

seamless. After accessibility increased, using the iPads became less of a novelty and more of a norm for learning purposes since the devices were being used by *all* students on a regular basis. This is supportive of current literature which stresses that technology should not be viewed as separate from the curriculum, but instead, it should be viewed as integral to the curriculum (Harris & Hofer, 2009; Hutchison, Beschoner, & Schmidt-Crawford, 2012; Hertz, 2011b). It was also easier to use technology to enhance lessons and literacy routines when each student was equipped with an iPad. Thus, it is determined that the accessibility of devices plays a major role in the success of technology integration and the effect it can have on students' learning.

Implications for Today's Classrooms

It is imperative that we equip students with the necessary skills to enter our increasingly technological society. This study can offer valuable information to teachers and help them to see that when technology is imbedded into literacy lessons and classroom routines, it can lead to a number of positive outcomes. Those outcomes include higher levels of student engagement and motivation toward their learning, greater classroom productivity, increased meaning-making, and a more student-centered learning environment.

Unfortunately, many teachers are not using technology in their classrooms in a way that can lead to the aforementioned outcomes. A national survey conducted in 2009 about teachers' perceptions, challenges, and uses of information and communication technologies found that most teachers do in fact see the value of incorporating technology into their instruction (Hutchison, 2009). However, study results also revealed a discrepancy between those who see the value in its use and those who are actually using

it (Hutchison, 2009). It was revealed that teachers perceived the greatest barriers to technology integration to be lack of time in the instructional day, lack of access to technology, and a lack of meaningful professional development (Hutchison, 2009). Here, I will offer insight into how these barriers can be addressed.

For teachers who are hesitant to incorporate technology into their instruction due to lack of time, it should first be recognized that the time spent on tasks can actually be reduced when technology is involved. This was evident in this study, as technology use led to greater classroom productivity. With that being said, it was previously mentioned that students should be given an “exploratory phase” (Hertz, 2011a) to learn how to use a new technology before being asked to use it to meet learning goals which could in fact take up instructional time. One way to eliminate this is for teachers to collaborate with the technology teacher(s) in their school. By doing this, the technology teacher can show students the proper way to use the technology. Then, students will be more successful when it comes time to use the technology for learning purposes. Understandably, not all schools have a technology teacher, so this suggestion may not be applicable to all. However, even if it is the classroom teacher who is doing the teaching of the new technology, I have found that it does not take up a lot of time because of students’ high comfort levels with using technology. Even more important, the powerful ways the technology can be used for transforming student learning far outweigh the short amount of time it took to teach students how to use it.

As concluded in this study, accessibility plays a major role in successful technology integration, so I feel as though the lack of access to technology is a highly justifiable concern for teachers to have. To help combat this issue, teachers may want to

look into writing grants for the purpose of acquiring technology funding. There are quite a few platforms available online which are geared toward helping teachers find funding including Digital Wish and Donors Choose. If technology shortfalls are a barrier to technology integration, teachers should take action and explore the various ways they can receive funding to get technology for their classrooms.

When it comes to teachers' concern over the lack of professional development geared toward technology integration, districts need to work harder in providing teachers with training that is both meaningful and worthwhile. For teachers who are resistant to change, they must welcome this training with an open mind and willingness to step out of their comfort zones. According to Mishra, Koehler, & Kereluik (2009), if teachers do not keep up with the latest educational technologies, they will most likely fall behind and stay behind. Who else falls behind when this happens? Students. Thus, it is imperative that we teachers seek learning opportunities to not only better ourselves, but to better our students as well.

Suggestions for Further Research

Further research in this area would help to provide more conclusive evidence about the impact of using technology with young students in the literacy classroom. It is suggested that the length of future studies be extended. While fifteen weeks allowed me to gather a substantial amount of data, it might be more beneficial to design a study that lasts from the beginning of the school year to the end of the school year. Conducting a longer study would help to validate the findings. It would also allow for teacher researchers to better measure the effect technology can have on improving students' literacy proficiency. Future researchers may want to narrow the focus of the study to a

specific area of literacy (e.g. comprehension) because it may be overwhelming to collect data to measure growth in all areas of literacy. With only one area of literacy to focus on, the researcher can collect data using an assessment tool that is best suited for that particular literacy component. For example, if the researcher were to look at students' comprehension growth, he/ she may want to use a qualitative reading inventory, a running record, or if accessible, the MAP Growth assessment. The assessment could be administered at different intervals throughout the school year, and the results could be compared at the end to look for possible growth. Lastly, in an effort to broaden the range of data that is collected and better substantiate the findings, it might also be helpful to include a larger sample of students in subsequent studies.

Final Thoughts

In closing, integrating technology into a first grade literacy curriculum can improve the way teachers and students approach literacy in the classroom. This study supports previous research which suggests that technology has the potential to enhance and transform literacy instruction to maximize student learning outcomes. It is my hope that the work done here will contribute to the field in a way that inspires educators to think about the how their own literacy lessons and classroom routines can be supported with technology. Perhaps this thesis will also provide ideas to those who are uncertain of how to begin implementing technology into their instruction. In the end, the most important takeaway to remember is that we must support our twenty-first century learners by giving them the education they deserve to prepare them to be successful in their futures.

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Appendix A

Student Interview



using technology in literacy instruction -Student Interview-

Students will be encouraged to explain their responses for all questions.

1. What is your favorite piece of technology in our classroom? What is your favorite app?
2. Do you think you are good at using technology?
3. Do you like using technology in school to learn?
4. What has been your favorite activity we have done with technology so far?
5. Do you ever tell people about the things we do with technology in our classroom (ex. family)?
6. Do you like using the app Flipgrid?
7. Do you like using the app Seesaw?
8. Do you like using the app Epic?

Appendix B

iPad Rules for Digital Citizens

iPad Rules

FOR DIGITAL CITIZENS

<ol style="list-style-type: none">1 Use two hands when carrying.2 Sit down when using.3 Be gentle.4 Keep in case.	<ol style="list-style-type: none">1 Only use apps the teacher gives you permission to use.2 Keep food and drinks away.3 Keep clean.4 Close and log out of apps.5 Return to holder when done.	<ol style="list-style-type: none">1 Close the cover when the teacher is talking.2 Only touch your work, no one else's.3 Only take photos and videos with consent.4 Use headphones when needed.
Be Safe	Be Responsible	Be Respectful