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THE EFFECT TECHNOLOGY HAS ON STUDENT COMPREHENSION AND MOTIVATION

by

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A capstone submitted in partial fulfillment of the

requirements for the degree of Masters of Arts in Literacy Education

Hamline University

Saint Paul, Minnesota

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To my family and friends for all your continuous encouragement and support. Thank you to Lori, Suzy, and Jill. Your guidance and patience helped me to complete this project. Special thanks to all of my former students who helped make me the teacher I am today. I have learned a great deal from each of you.

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CHAPTER ONE

Introduction

Overview

It is amazing how far technology has come over the years. Personal computers were things that people only read about in science fiction books. Items Jules Verne wrote about in his novels; if only he could see where the human race is now. People are constantly on the move. They want their news, sports scores, and information now. With the invention of personal computers and now electronic devices, humans have access to information and books 24/7. Now more than ever people are reading on their electronic devices. When I started in education over 10 years ago students mainly read from books, magazines, and comics. None of the students read on an electronic device.

Over the last four years I have witnessed more and more students reading on an electronic device. Many students download books from a public library or buy them from an online store like Amazon or Scholastic. Seeing these students read on their devices got my wheels turning. I started to wonder if students that read text electronically would display different reading comprehension or motivation levels as compared to students that read text in the traditional print form. All of this thinking has lead me to my question- Why do students in a sixth grade classroom using an electronic device to read display different comprehension and motivational levels than students with printed texts? Within this chapter, I will review my educational background, including my experiences

with reading early in life. Then I will talk about how motivation, comprehension, and technology have played a role in shaping my question.

Background of the Researcher

Childhood.

Many things can trigger a memory a voice, smell, or a picture. My first memories of books come from being tucked into my warm bed. Before I would fall asleep each night my mom would read to me from the large selection of books on my bookshelf. Most of the time I wanted her to read *Curious George Goes to the Hospital*. I'm not sure why I would select that book, but I think it might have been because in the story George makes a little girl laugh for the first time. I like to make people laugh, then and now.

Another reason why I believe that I enjoyed Curious George books was because of how George always found trouble. No matter what the story was George was bound to get into a dilemma. It reminds me of when I was in grade school. I look back and I seem to be a lot like George, curious and finding trouble.

In third grade I lost the privilege to check books out at our school library. I spilled something on the book I had checked out, probably food. Some of the pages were ruined. I should have told the librarian right away, but I didn't. I was like Curious George; I tried to cover up my mistake. This didn't work out very well for me. I eventually told the truth about what had happened to the book and I lost my privilege to check books out. For a while I went away from reading and I think this incident had something to do with it. It was around this same time that I found my next great book.

As I walked down the circular staircase, I remember seeing the books on the bookshelf, there was close to eighty and they took up four shelves. Every one of them had the same mysterious smell, the smell of dust and old paper. It is a smell that I don't smell that often anymore. The smell came from *The Boxcar Children* books. The books were in Grandma's basement. After I would give a hug and say "hello" I would rush to the basement to find the book I was going to read. I read every one of those books twice! *The Boxcar Children* books had everything I was looking for in a book; mystery and suspense. My Grandma has played a large role in my literacy. If she hadn't had those books in her basement I don't think I would have gotten into reading. I only wish that more students could smell the pages of those books. That smell brings back great memories and feelings. I remember feeling safe while reading. It let me escape into new worlds. I loved having a book in my hands. Now with the invention of electronic devices some kids will never get to experience what I did, it breaks my heart to think about it. I don't think you can get much of a smell or the same feeling from a tablet.

Intentions

One goal of conducting this research was to be able to effectively meet the needs of my students. The 2015-2016 school year was the second year that our sixth grade students had access to their own iPads. For the teachers on our grade level this was the first time we had embarked on a technological journey. During my research experience I hoped to find out what certain students find valuable. What motivates them? What drives them? Why do they choose to read on an electronic device or take a chapter book off of

the bookshelf? Does a student's comprehension of a text change while reading on an electronic device?

Technology in the Classroom

Many schools are going to a 1:1 initiative with iPads or other electronic devices. It seems everyday a new school district is willing to spend money on these devices. This topic and question are important because many schools will be investing money into these devices over the coming years and it would be good to know if this research will show that comprehension and motivational levels change. The research may show that students don't display different comprehension and motivational levels. It will be beneficial to find out.

Five years ago was the first time that I witnessed a student reading on an electronic device, it intrigued me. I was intrigued because the student was almost mobbed by others because it was such a new concept. Even I reacted, "Wow, you can read on that?" The screen and text were small, but the student was still reading. This got me thinking about how if a whole class had these devices, the possibilities could be endless. Soon after I talked with my principal about how I had witnessed the student reading on the electronic device and how many of the other students were excited at the idea of reading electronically. I did some fast-talking and luckily I talked the principal into ordering 5 devices to use in my classroom.

When the devices arrived it was like Christmas, the students all crowded around my desk to take a look at the new toy. Little did I know how many of the students would

want to read on them the first few days. All of the students wanted a turn reading on the device, so many so that I ended up having to devise a schedule so no inter-class fighting would occur. A little over a two months after I received the devices I noticed that not as many students were signing up to read electronically. I can't say that I was too sad about not having students constantly asking if they could read on a device, but I was curious about why the decline had occurred. Finally I asked some of the students why they hadn't signed up to read electronically. Their answers amazed me! They said that they liked the feel and smell of "regular" books versus the electronic version. They also said that they liked being able to see how far along in the book they were, instead of just a page number. Both of these ideas I had never thought of before, I figured that once the students started reading on the electronic devices none would go back to a traditional print books. This got me thinking about the motivational aspect of using electronic devices. Obviously some students preferred to read text on the electronic devices and others wanted to read with an actual print text copy. Is there a motivation factor when students read on an electronic device or traditional print text?

Comprehension using electronic devices. My interest in the comprehension aspect of reading with electronic devices versus print text is appealing too. Students comprehend texts certainly in many different ways. The topic, genre, and student's schema can be reasons that the comprehension of texts is different for each student. I first started to wonder if student's comprehension levels varied by medium's a few years ago. Two students happened to be reading the same chapter book in class, *The Tale of Despereaux.* One student was reading the book on a Kindle and the other had the actual print form of

the book, both of the students would be considered to be above average readers. While the students were reading the book I met with them a few times over a span of four weeks. Each time I would check in with them I would ask them to describe to me what was happening in the story. I would also ask them to explain any items they didn't understand that were taking place. Both students were able to talk about the story elements, but I noticed that the student that was reading on the electronic device needed more prompting from me to explain the details of the story. When she finished the book I asked why she thought she needed the extra prompting from me to explain the story. She said that while she was reading on the electronic device she needed to take more breaks because her eyes hurt. She said that because she had to take more breaks it was harder for her to concentrate with the book and remember what was happening in the story.

Summary

Overall, it is evident that technology and electronic devices are here to stay. What is up for debate is how these devices will affect the students in educational settings. If students dislike using an electronic device for reading shouldn't they be given the option to read the same text with a printed version? Maybe students should be given this choice in how they read since many teachers already give them a choice in what they read. The question that I am trying to answer with my research is this- Why do students in a sixth grade classroom using an electronic device to read display different comprehension and motivational levels than students with printed texts? In chapter one, I introduced the topic

of my research and established why I think it is important. I also provided some examples of how the use of technology has affected my classroom over the years.

Chapter Overview

In chapter two I present the professional literature that connects to and supports my research topic. It will contain a review of literature in order to provide background on electronic devices and printed text and how these are becoming more popular every year. The chapter will discuss digital natives and how they use technology, Bandura's Social Cognitive Theory and how it relates to student's schema, student motivation in relationship to choice in the classroom, and reading development and effective ways to use apps with students.

CHAPTER TWO

Literature Review

Overview

Middle school students read every day and utilize two main sources for reading text. Students either read on an electronic device or they read printed text on paper. Students read for a variety of reasons including academic, entertainment, and to gain new information. Reading is not only a skill that is needed in the school environment, but it is a lifelong skill that affects one's life each and every day. Students will be expected to read and comprehend text using a variety of mediums in the 21st century workplace.

In the education setting, teachers see students on a daily basis and observe changes that occur in reading comprehension and motivation over a school year's time. In some cases, the changes are positive while other times they can be negative. The question, Why do students in a sixth grade classroom using an electronic device to read display different comprehension and motivational levels than students with printed texts? will be fully explored throughout this paper.

In this chapter, I present an overview of the research on electronic devices and printed text and how these mediums are becoming more prevalent in the classroom today. I also touch on student motivation and a popular way to get students motivated to read. Next I discuss reading development and comprehension and how electronic devices can

be utilized in both of these areas. These four areas are important to building the background for my inquiry into comprehension and motivation with digital text and whether students display differences in comprehension when reading on an electronic device or printed text.

Electronic Devices and Printed Text

The use of electronic devices in schools has changed the landscape of education during the last 15 years. Students will still need to know how to read thirty, forty, and fifty years from now; however, what they read and how they read will continue to change. A 2011 Pew Internet Project teen survey, 77 percent of 12-17 year olds had a cell phone, which is a major jump up from 45 percent in 2004. All of these kids are reading, but they are reading in a very different way than people did thirty years ago. They are reading in a digital age on cell phones, iPads, Kindles, and Nooks. Put simply, electronic devices are becoming essential to students' daily lives and many will use these forms of technology in post secondary and workplace settings.

Digital natives. In his research, Larry Rosen talks about how today's children are immersed in technologies that gives them opportunities no previous generation has enjoyed. For many people today, learning to use a computer has been a work in progress, but not for digital natives. To digital natives, using an electronic device is not a tool at all, it is simply a way of life. A digital native does not think about breathing just like they don't think about the existence of technology. Twenty-first century learners just expect technology to be there. Rosen also articulates how many digital natives believe that

WWW doesn't stand for World Wide Web, but for Whatever, Wherever, Whenever when they talk about technology. Consequently, the ubiquitous nature of technology truly changes the landscape of the K-12 classroom. Educators are able to extended student's thinking in a matter of seconds. The learning opportunities that used to consist of going to an encyclopedia to investigate a topic can be done with a swipe of a finger.

With information being readily available to almost anyone at anytime because of electronic devices, teachers wonder where does traditional print text fit in with the digital age? In a Pew Internet report released in April 2012 by Rainie, Zickuhr, Purcell, Madden, and Brenner, researchers reported that the percentage of Americans who read printed books decreased from 78 percent in 2011 to 75 percent in 2012. One of the reasons for this decline is that people have more reading options.

E-books. At this time, print books and e-books are essentially the same in terms of content, but may differ in function, or the way people use them. A different study conducted by the Pew Research Center pointed out that in a head to head competition of an e-book versus printed book, the one that people chose depended on the situation. If the reader wanted fast access and portability, they selected the e-book, but if the reader wanted to share the book with children or other people, the printed book was selected. Figure 1, in the appendix, shows that 81 percent of the people surveyed would select a printed book over an e-book if they were reading to a child, while only 9 percent would have selected an e-book. In this situation the reader selected a print text book over an e-book based on personal preference when reading to a child. It is interesting to note that in

certain situations people selected an electronic device over printed text, but when reading to a child the overwhelming choice was printed text.

Printed text. Electronic devices and printed texts have benefits and drawbacks. Most students have their own electronic device or access to one in their home, many with internet. Nann Hilyard was the director of the Zion-Benton Public Library in Illinois and worked in library administration for 40 years. She has seen the growth of electronic devices over these years and has a different perspective regarding these devices. She says that her preference has to do with touching a book and handling it. She enjoys the unique properties that each book has like its size, weight, font, scent, art, and blurbs. Carrying an electronic device could be more convenient for some people, especially since they can hold more information and have easy access to it when they lead fast paced lives. To Nann Hilyard, print books still offer the overall greater reading experience (2012, p.17). For many people they still want to be able to touch and hold a book. Turning an actual paper page can be therapeutic for people, while swiping a finger across a screen doesn't provide that same feeling. In some cases, swiping a screen can be more distracting. Some devices can be particular about how the pages are turned. The Apple iPad has a heat sensitive screen and in order to turn the page the screen senses the heat from a person's finger. If the person has cold hands and fingers, then turning the page can be frustrating at times. When the person becomes frustrated, they are less likely to be involved in the story and more likely to put down the device and select a different activity. The smells that radiate from books can bring back memories of days gone by and stories read and can be one of the sole reasons for continuing to read from traditional print text books.

An added area of debate with electronic devices and printed text is the reading speeds that people display while using each medium. A study conducted by Jakob Nielsen in 2010 found that people surveyed had the highest reading speeds while reading printed text. People that read on an iPad read 6.2 percent slower and 10.7 percent slower when reading on a Kindle 2. The study did acknowledge that the sample size of the study was small with only twenty-four people participating. An interesting finding in a post survey was that people who read on an electronic device felt uncomfortable because the device reminded them of work. This association was made because many of the people who took the survey used some form of an electronic device at their workplace. If this association is a trend, then it will be interesting to see how students react over time with the increased use of electronic devices in the education setting. What will teachers see in student's motivational levels when using these devices?

Social cognitive theory. With each new student that comes into the classroom they bring with them a variety of background knowledge. Some of the students in a class may be well versed in sports, while others have an affinity for fixing broken things. Depending on the type of home they come from, many will have varying experiences with technology. Albert Bandura created a theory of learning known originally as the Social Learning Theory, but later changed to the Social Cognitive Theory. In his theory, Bandura explained how people learn more from observing others than they do from the consequences of experiencing things themselves. In the case of students using electronic devices in the classroom, Bandura's observations have significant implications for the future of technology and learning. The students in a classroom could be working together

in groups and teaching each other how to use a certain aspect of the device while the others are observing. More specifically, a student could model how to complete a task while the others learn through observation. Essentially, this type of learning is the whole premise of the Social Cognitive Theory. Also, the idea of self-efficacy is addressed when examining the Social Cognitive Theory.

Self-efficacy refers to one's belief that he or she possesses the abilities to reach specific goals. Bandura believes that people with highly perceived self-efficacy try more, accomplish more, and persist longer at a task than do people with low perceived self-efficacy. Low self-efficacy can lead people to believe tasks are harder than they actually are. This often results in increased stress. A person with high self-efficacy will attribute failure to external factors where a person with low self-efficacy will blame low ability. This can translate to the classroom in many ways, but can go back to the use of electronic devices and a person's schema. If a student doesn't have a strong background with technology or electronic devices then they may exhibit signs of low self-efficacy when using these devices. Where as a student who has schema with technology and electronic devices would have a feeling of high self-efficacy because they have the confidence when using the device.

Effective teaching with technology. Most people would agree that technology and more specifically electronic devices can't take the place of a teacher. The most effective teachers have discovered how to take tools like an iPad or Kindle and create more meaningful learning experiences for students. If students are taught the proper methods of

using an electronic device in the classroom then these devices have limitless possibilities. Previously teachers had pen pals in classrooms so that students could communicate with each other from distances. Now with the invention of Facetime, a program from Apple, students can connect with each other with the click of a finger and collaborate on varying topics. Or imagine having difficulty with a text or story and being able to reach out and connect to the author and ask them questions about what they wrote. Today's electronic devices make it possible for learners to connect with one another and filter through information in a matter of seconds.

Electronic devices are becoming more prevalent in the education setting. Many of today's schools are moving toward a 1:1 initiative, which means that the goal of the school district is to get an electronic device into each of the student's hands. Apple is leading the charge in getting these devices into schools. The iPad's size makes it fit naturally into many learning environments. The content that can be loaded onto the device can be customized to meet the individual needs of each student. One of the more positive features of any electronic device regardless of brand is the mobility and adaptability. These devices can be loaded with content at the drop of a hat and can be used by kindergartens to college age students. An area of concern with electronic devices is what to do when students do not have access to the internet. Making sure that students have some way of utilizing the device when it is not connected to the internet is something teachers need to be aware of. Many of today's devices allow for articles and some internet pages to be read later when not connected to the internet with the click of a

button. This feature is highly useful for students living in rural areas that have limited access to the internet.

As teaching practices change to include the use of these devices in the classroom it is going to be up to the teacher to make sure these devices are being used effectively in support of student learning. Sometimes an electronic device can be used to raise the motivation levels in students. Some educators use an electronic device as a reward with students. If the student is able to complete a specific task or tasks then they earn the opportunity to use a device. For many students, the time they earn can be highly motivating and help raise their level of motivation.

Motivation

Intrinsic and extrinsic. Motivation comes in two forms, intrinsic and extrinsic. Intrinsic motivation originates from internal desires, interests, and experiences. An example of intrinsic motivation might be playing a game because it is exciting. Many reading experts believe that intrinsic motivation is imperative to lifelong reading. Some reading experts believe that intrinsic motivation is the greatest human resource because of its power to transform the lives of students. In contrast, extrinsic motivation occurs when there is an external reward like playing sports because of the awards. Since everyone has different motivational factors, finding what motivates students is a key to their success. Motivation, whether it is intrinsic or extrinsic, makes reading a reality.

Building motivation. To build motivation in students, teachers need to first be able to define motivation. In 2013, J.T. Guthrie, a leading researcher in motivation, defined

highly motivated readers as those who generate their own literacy learning opportunities, and, in doing so, they begin to determine their own destiny as literacy learners. Guthrie also believes that reading motivation is a prime component of engagement. In other words, when students are engaged as learners then they most likely will be motivated in their education. The real question is what makes a child an engaged reader? The answer to this question isn't a straight forward either/or answer, but, in fact, is multifaceted. The answer lies in each and every individual, what motivates one student may not motivate the next. Therefore, it is imperative that teachers rely on what they know about students and their interests in order to engage them in the learning process.

Student confidence is a factor in whether a student is motivated to read. If a student lacks the confidence to read on his or her own, then he or she will find other areas in his or her life to succeed. Confidence is tightly connected to success. If a student reads one page fluently in a book then they gain the confidence to continue to read the book, but if that same student struggles with the page, then more than likely they will put the book down and not continue. The student stops because they are frustrated. A student who reads fluently and understands well is also sure of himself as a reader. In and out of school, people like the things they do well. Not many people would continue to do an activity if they are unsuccessful. If a student is unsuccessful at reading over and over then they begin to doubt their abilities to read text well and they start to expect to do poorly at reading. The real dilemma is that low achieving students often exaggerate their limitations; the students start to believe that they are worse than they really are and they stop trying altogether. Since they stop trying to become better readers they limit the

interaction that they have with varying texts and reduce their opportunities to become better readers. This cycle is tough to break and by middle school the teachers have a formidable challenge.

Relationship building. Research has shown that the best way to find out the motivating factors of students is to build relationships with them. A teacher needs to get to know who they are working with and build trust with them. Positive relationships are crucial to a student's success and reading development. Gail Boushey and Joan Moser are passionate educators who co wrote *The Daily Five: Fostering Literacy Independence in the Elementary Grades* and *The Café Book: Engaging All Students in Daily Literacy Assessment and Instruction* have more than 60 years combined instructional experience in K-6 settings. In *The Café Book* Boushey and Moser talk about one of the best ways to build motivation with students and it starts with the foundation of respect. The student needs to feel respected in order to take risks in the classroom. Educators need to treat children as valuable individuals and know that each one is unique and worthy of respect. Even though the push for better test scores is constantly in the news, educators need to remember in order to get better scores students need to feel respected. If students are respected in the classroom they will want to do better for the teacher. If educators take the time to build trust and demonstrate that they care for their students then this is the foundation that everything else in the classroom is built. Sometimes the best way to show students we care is by taking the time just to talk with them and see how things are going in their lives. Ask students how their day is going and show that you care. When teachers take the time to build positive relationships with students they are helping the student

more than they think. Too many students go to schools where they think no one cares for their well being. Believing that their teachers think they are important, students participate more socially in the classroom. Even though students becoming more social in the classroom can sometimes add classroom management challenges, it can be beneficial. Unknowingly, the educator is building confidence in the student and a byproduct of this is a reduction in behavior issues. In many cases, the teacher that has built strong relationships with their students will have limited behavior problems. The students will want to behave and their classroom motivation will increase. As the nation's test scores fluctuate from year to year and we fall further behind those of other countries around the world, we need to be concerned with making sure students understand that reading is a necessity of life, not just what they are forced to do at school. Teachers who foster positive relationship building with their students are more likely to promote higher levels of achievement in the students they teach.

Although intrinsic motivation is desirable, this type of motivation is not always possible in school. Not every assignment that is given to students is going to be desirable to them, but yet the assignment is part of the curriculum. There are books that do not appeal to some people, yet at a given moment in a given school, it is necessary to read them. What motivation enables students to read in this situation? What about giving students a choice in what they read. Can teachers give students a choice in what they read? Yes.

Student choice. Another important aspect in increasing motivation and engaging students is providing choice in reading. Research steadfastly states that choice must be

prevalent in the reading curriculum. Providing students with choice not only allows students to have power over what they read, but also students are more likely to be engaged in the material they are reading. Donalyn Miller discusses the importance of choice:

> Providing students with the opportunity to choose their own books to read empowers and encourages them. It strengthens their self-confidence, rewards their interests, and promotes a positive attitude toward reading by valuing the reader and giving him or her a level of control. Readers without power to make their own choices are unmotivated. When students are able to choose what they are reading, we are giving them the opportunity to play an active role in their learning, and promoting a partnership in the process. (2009 p. 23)

Students display interest when they are given the opportunity to have choice in the classroom. By giving the student choice, they get to feel like they are part of the decision making process and trust is built, thus increasing their motivation. Nancy Allison emphasizes, “If the goal of instruction is to arm students with the skills they need to become proficient independent readers who are committed to a lifetime of reading, then students must be able to choose their own books”(2009, p.5). Nacie Atwell shares, “Students who read only a steady diet of assigned titles don’t get to answer, for themselves, the single most important question about book reading: why does anyone want to?” (2007, p. 27). Students need to be taught that as they get older they are the ones who decide what and how they read. If educators instill choice in their students then this

concept will be easier for them to tackle later in life and, hopefully, will get students to read for pure enjoyment.

Some teachers struggle with letting students have choice over reading in the classroom. Guthrie, (2011, p. 188) says that one way teacher can be effective at giving choice in the classroom is by giving mini-choices. He says that when appropriate, give the students a list and let them know they need to select one of the tasks to complete. An example list may be as follows:

1. Select a story.
2. Select a page to read.
3. Select a section to explain to a partner

By making a list and having the students select one from the list; it makes them feel like they have a voice in the classroom. The teacher can take these small steps toward giving students the overall choice in what they read on a daily basis.

While it is a great idea to provide students with a choice of what they want to read, this same idea of choice could be utilized in how a student reads. Teachers could give students the option of reading on an electronic device or reading printed text. This option could raise the reading motivational levels of some students. By providing students with the added choice of reading printed text or electronically they are going to feel valued in the classroom. Some students prefer the feel and smell of a paper copy of a book. Other students like to read on an electronic device and prefer swiping, dragging, or clicking to turning a page. If educators give their students the added level of choice in how they read, this choice will inevitably create a sense of belonging in the classroom. In

other words the students are going to feel valued. Consequently, student motivation and reading choice go hand in hand. It is imperative that educators provide students with choice in reading materials if they want student motivation to increase.

Reading Development

Teachers today face more challenges in reading than ever before. They have to negotiate pressure from parents, administrators, and state officials. While doing all of this they need to push their students to become lifelong learners. Teachers need to know what good reading entails and this starts with knowing where their students fall on the literacy development spectrum. The levels are early literacy, emergent reader, early reader, transitional reader, self-extending reader, and the advanced reader. Once these levels have been determined the teachers can move forward with reading instruction. Some teachers have started to incorporate the use of apps on electronic devices to help aid in the teaching of literacy development and skills.

Today's classrooms revolve around teaching and technology. The explosion of electronic device adoption by schools creates a new opportunity to use technology to build student's literacy skills. Many students have access to these devices at home and schools which creates a great opportunity to connect home and school learning activities. If integrating electronic devices into the classroom is done correctly, students can make gains in their reading.

Effective teaching with technology.

Erin Killeen and Laura Northrop developed a framework for effective teaching with apps. Their framework involves four steps. Step one is to teach the targeted literacy skill without the app. The students need to be taught

the skill before they are asked to put the skill to work. If the students are taught a skill without the prior knowledge base they won't be applying the literacy content knowledge in a meaningful way. The second step is to explain and model the app the students will be using. The teacher needs to explain that the app is used for practicing skills that have already been taught and what literacy concepts the app is targeting. After the teacher is done explaining the app, it is crucial that teachers model how the app works on the device. The teacher should model all of the aspects that the app has to offer and explain what to do if they run into trouble with the app. The third step is to offer students guided practice with the app. During this step the teacher should be checking to ensure that students understand how to use the app, but also that they understand the literacy concept that app is using. The fourth and final step is to give students independent practice with the app itself. Once the students have a solid understanding of how the app works and the literacy skill it is trying to build they are ready to try the app on their own.

Some of the apps that Northrop and Killeen recommend are iCard Sort, Toontastic, and Doodle Buddy. iCard is an app that can focus on two aspects of reading phonics and comprehension. The app is focused around the idea of blank cards. This app can be useful when having students complete word sorts with weekly spelling words to work on the student's phonics skills. The app could also be used for upper level students to create sequence of event cards that lay out the important details of a story. Toontastic is a storytelling app that students could use to create their very own stories. The app has premade characters for students to use or if the students wish they can create their own characters. The other exciting feature of this app is that students can annotate and record

their own voice while creating their story. Doodle Buddy is another app students in a classroom and out can use to increase their understanding or comprehension of a particular story. The idea behind this app is that the app allows students to draw and doodle. Students in a classroom using this app could easily read a story and use the app to draw a picture from the story. The app is a fun way to get the students engaged in the story. Word Joust is an additional app that allows students to learn and master vocabulary words using their iPhone, iPad, or iPod. The students get to go on knightly quests, do battle with trolls, and learn vocabulary words to win points. This site is effective in teaching students that are reluctant readers. A useful web based site for teachers and students to use at the middle school level is polleverywhere.com. This site is an audience response system app built on text messaging that lets the teacher ask a question to their students and get immediate responses. This site is great for formative assessments. It allows students to respond using texts from their cell phones, smart phones, computer browsers, or Twitter account.

Northrop and Killeen also stated that in order for the app to be effective with students in the classroom the teacher needed to be aware of the limitations of the app itself. Many of the apps they used in their classroom had several positives, but also had numerous negatives. It is up to the teacher to be diligent and familiarize themselves with the app before teaching it to their students. The teacher needs to take the time and figure out how the app is going to best serve their students. A great way to help figure out the positives and negatives of specific apps is to have groups of teachers collaborate on how they work. Many times teachers will see the same app differently and in a collaborative

environment this can be useful. Electronic devices when used appropriately and effectively and in the context of a high quality literacy rich environment can offer students multiple ways to practice literacy development.

Comprehension

According to dictionary.com, the definition of reading is "to have such knowledge as to be able to understand things." If reading truly is the understanding of a text, then reading on an electronic device certainly is acceptable. Understanding the importance of teaching decoding skills as children are learning to read is an important part of being an educator, but students also need to understand how to pick apart the message of a text, think critically about the content, use their imagination, and make connections.

Some may argue that reading using an electronic device does not count as real reading. Before considering that thought, it is important to determine the definition of reading. Comprehension of text is not only the putting together of words and sentences, but it is also putting together the story as a whole. Reading is a complex process that is never ending.

Comprehension is vital for successful reading, without it the reader will struggle with understanding the text. Many students struggle with comprehending text for a myriad of reasons, but it is up to the teacher to teach students strategies to help with the comprehension of texts. Recent research has also indicated that teaching strategies one at a time was not as effective as teaching them as a set as in transactional strategies instruction (Reutzel, Smith, & Fawson, 2005).

In the past teachers helped struggling readers comprehend text by focusing instruction on what "good" readers did while reading. These teachers took this knowledge and turned it around and tried to help struggling readers. Many times this turned into the teacher teaching reading intervention strategies one at a time in isolation. They usually were taught quickly and sometimes over the course of a few lessons or a few weeks. Many students did not benefit from this practice and still struggled to understand the text. An unintended consequence of teaching the strategies in isolation was that the teachers were prompting students to employ the strategy instead of having students make their own decision about when to use a specific strategy. Many studies have shown that students are able to learn to use strategies such as visualizing, comprehension monitoring, identifying story grammar, and summarizing to improve short-term comprehension, but over time these gains were not sustained. Recently research has shown that the ability of such short term strategy instruction to yield long term benefits and transfer to other reading contexts is questionable at best.

Reading strategies. Proven research over the last decade has shown that when a teacher teaches reading comprehension strategies as a set to students they become more successful. These interventions have proven successful with readers at various age levels, and some have shown that they lead to sustained and significant growth in comprehension over time. Teaching reading comprehension strategies as a set makes students consider where, when, and why they might use a strategy while reading. Students will need plenty of guidance and practice with the various reading comprehension strategies. Almasi says that in order for students to be successful they

need explicit instruction with the reading comprehension strategies. Explicit instruction is instruction that the teacher should be conducting in the classroom on a daily basis. This explicit instruction is systematic, direct, and engaging for all students. To be the most effective teachers should giving student's daily guided practice with the strategies. Then over time there should be a shift from direct guided instruction to the students taking responsibility for their own strategic thinking actions. If students are provided the time to practice their reading skill then slowly they will become more independent with their reading skills.

If teachers are going to provide authentic learning texts for students to practice their comprehension skills, then having students practice reading comprehension strategies on an electronic device seems logical for the twenty first century learner. Students need to spend time reading. Struggling readers often give up hope by their middle school years because reading has been too hard for too long. These students are looking for something new and different. Many of the features that are found on today's electronic devices provide students with just the thing they are looking for to get excited about reading again. Some of these features that get students excited to read on an electronic device have to do with e-books and enhanced e-books.

Interactive texts. Researchers at the Joan Ganz Cooney Center conducted a study between e-books and print books. Their study focused on parent-child storytelling or co-reading between three different book formats: print books, basic e-books, and enhanced e-books. Each parent and child read a print book and an e-book, half of the group was given a basic e-book and the other half and enhanced e-book. A basic e-book is just the

book itself in an electronic format. An enhanced e-book is an electronic version of a book that may have audio, video, or interactive content. One interesting finding that the study had was that children who read the enhanced e-books recalled significantly fewer narrative details than children who read the print version of the same story. The researchers attributed this finding to the features of the enhanced e-book. They concluded that the added content affected the children's story recall or comprehension because they focused more of their attention on the added features the enhanced e-book had to offer.

Today's teens are reading more and more electronically and need to be able to transfer reading strategies from printed text to an electronic device. Teachers will need to model these strategies in action on an electronic device so that students can see there isn't a difference in how the strategies are used. The students will hopefully be able to connect with the strategies and transfer their learning from one medium to another.

Chapter Summary

Today's classrooms are nothing like they have been in the past. Technology is constantly changing and evolving. Electronic devices are being used more than ever in the classroom and out of them. In this chapter, I have discussed how electronic devices are becoming more popular in the school setting and how certain situations dictate whether a person will read printed text or on electronic device. Secondly, I discussed how Bandura's ideas correlate with a student's schema and what they bring to the classroom. Next, I focused on student motivation and the elements that can improve or hinder their levels. Student choice in reading is an important way to get some middle school students interested in reading again. I touched on reading development and some useful apps that

could be used in the classroom. Followed by comprehension and how the current research states when teaching reading comprehension strategies they are most effective when taught as a set instead of individually. Lastly, I focused on a study that dealt with the reading comprehension of students while they read using printed text, e-books, and enhanced e-books and the differences that were shown.

In Chapter Three, all of this research is utilized in the methods to evaluate the question, Why do students in a sixth grade classroom using an electronic device to read display different comprehension and motivational levels than students with printed texts? I first describe the research paradigm and the reason why I selected the mixed method approach to my study. Then I talk about the research methods used in the study. Next, I focus on the research tools used in the study. Finally, I illustrate the setting and the participants taking part in the study.

CHAPTER THREE

Methods

Introduction

This chapter addresses the methodology used to answer the question, Why do students in a sixth grade classroom using an electronic device to read display different comprehension and motivational levels than students with printed texts? First, it discusses the rationale and description of the research paradigm and how a mixed method approach to research was decided. Second, the research methods are presented, as well as an overview of the instruments used. Finally, it focuses on the participants and the setting of the study and the data analysis used.

Research Paradigm

This study was set up as a mixed method approach that employed a variety of qualitative and quantitative aspects. The field of mixed method research was relatively new with major work developing in the late 1980's. The idea of a mixed method approach to research resided in the idea that all methods had some bias and weakness. The purpose of mixed method research was to build on the synergy and strength that existed between qualitative and quantitative research methods. Qualitative research is research that seeks understanding and findings from the perspectives of the participants in the study. Qualitative approaches to research might include conducting face-to-face

interviews, making observations, and video recording (Mills, 2014, p.6). By comparison, quantitative research is the collection and analysis of numerical data to describe, explain, predict, or control phenomena of interest (Creswell, 2014, p 156).

Research Instruments

Student surveys. During the study I administered a pre/post survey to the participants. The survey used a Likert scale of nine questions. This survey can be found in Appendix B. The questions revolved around the reading preferences (electronic or printed text) of the participants. There were also two questions that asked the participants to write out their reasons as to whether the students prefer to read on an electronic device or printed text. Mills (2014) states that by using this approach it allows the researcher to collect large amounts of data in a short amount of time.

Student interviews. During the six week study I interviewed the participants three times. The interviews lasted no more than 15 minutes. The interviews of the participants were conducted away from the others so that I could keep their answers private. The questions are as follows and can be found in Appendix C;

- Do you like reading on an electronic device or printed text better?
- What do you like reading on an electronic device and or printed text?
- Why do you like reading on an electronic device and or printed text? What feelings do you get?
- Is there anything that could make you change your desired reading method?

Creswell (2014), reminds using a structured interview format to allow all participants to answer the same series of questions.

Journals. Throughout the six week study the participants wrote in their journals. The journals were used as a written record of the feelings the participants were having during the study. Geoffrey Mills is a leader in action research and he states that by having students write in journals it can provide teachers with a narrative account of their perspectives of what is happening in the classroom (Mills, 2014, p. 95).

Comprehension quizzes. Over the six week period, the participants read six nonfiction passages and answered comprehension questions that corresponded with the passages. The passages came from the website; www.newsela.com, and can be found in Appendix D. Newsela is a website that contains multiple current event articles. The Lexile level or readability of each article can be adapted for most reading levels of students in a particular classroom. The participants were divided into two groups; Group A and Group B. One group read nonfiction passages on an electronic device and answered comprehension questions electronically. While the other group read the same passage and had the same comprehension questions, but they read a printed text version and answered the comprehension questions using paper and pencil. Group A read on an electronic device during weeks one, three, and five. Group B read electronically during weeks two, four, and six. By alternating the weeks the students read electronically, they had an opportunity to use both mediums, and I was able to track any differences in comprehension and motivational levels. The quizzes can be found in Appendix E.

Setting and Participants

The participants of this study attend a rural middle school in the upper Midwest. The rural town is primarily Caucasian with a population of 10,989. The middle school has an enrollment of 1,149 consisting of students in grades 5-8. 58.6 percent of the student population qualifies for the free and reduced lunch program.

The students in this study were in sixth grade and were eleven and twelve years old. There were 17 students who participated in the study. Of those students, 5 percent were American Indian and 95 percent were Caucasian. All of the students spoke proficient English. Seventeen percent of the students who participated in the study received Special Education services.

The middle school had a program that students attended during the school day; it was called the Reading and Math Academy (RAMA). This program allowed students who struggled with reading and math, and who did not qualify for special education services, to receive support. Students are exposed to a small class environment, where they are able to build confidence with skills in reading as a result of the increased support. A structure has been developed where the students benefit from a wide variety of texts at various genres and grade levels. Many of the books provided to the students were given in the electronic format. Typically, the majority of students in the RAMA program have been experiencing learning difficulties due to underachievement within the areas of reading and math, reading being the most significant factor, as these are critical skills that

affect all areas of the curriculum. Of the 17 students who participated in this study, 11% of them were in the RAMA program.

Many of the study participants were familiar with electronic devices and used them on a daily basis. The middle school, and the district as a whole, encouraged the use of electronic devices for educational purposes during class. The middle school had 6 Macbook computer carts with 40 computers on each cart. The school had an additional 40 iPads for use in classrooms. In the classroom where this study took place, each student had access to an iPad.

Data Analysis

The student surveys were given at the beginning and the end of the research to track any changes that may occur in motivation or reading preference. The use of the Likert scale helped me to determine if any changes occurred. When I conducted the private student interviews I took notes on the form found in Appendix C. By keeping the interviews private and away from other students I was able to get more genuine answers from the participants as to their reading preferences. In addition, the students wrote weekly in a journal. I read these journal entries to see if students showed a change in their mood or motivation during the study. The writing activity benefitted students who found it easier to write their feelings rather than express them verbally during the interviews. The last way that I analyzed data gathered during the study was by giving each student a letter of the alphabet. This was done to keep all of the data on the students participating in the study private. After the letters were assigned the students were divided into two

groups, A and B. These groups alternated weeks reading electronically and answering questions. The scores the students acquired on the tests were put into a spreadsheet.

Ethics

To protect the participants of this study, I followed the procedures of the Hamline School of Education Human Subject Committee. First, I submitted my proposal to the Hamline University Institutional Review Board. Following my capstone proposal meeting, I completed the Human Subject Committee application. Once my application was approved I moved forward with the research. I sent a letter of consent home with each participant explaining the procedures and purpose of the study. The consent form had to be returned before a participant could participate. This document can be found in Appendix A. In addition, student names were changed to protect their identities.

Chapter Summary

This chapter described the research paradigm and the approach that I selected. I also discussed the methods used for this research and the rationale behind why it is suitable for my research. I have given an overview of how I collected the data and the general procedure I followed to analyze the data to help answer my research question. In Chapter 4 the research results and analysis will be presented to gain insights into how comprehension and motivational levels can be affected when reading on an electronic device versus printed text.

CHAPTER FOUR

Results

Introduction

During the six week study period, a variety of research methods were used to compile information on reading comprehension and motivation levels of students reading on electronic and printed text at a rural northern Minnesota middle school. The data collected contributes to answering the question, Why do students in a sixth grade classroom using an electronic device to read display different comprehension and motivational levels than students with printed texts?

Process

The research period began in mid September 2015. A variety of methods were used to collect data on students' reading preferences as it related to reading on an electronic device versus printed text. An initial student survey was given to gauge students' use of electronic devices for reading preferences. This same survey was given at the end of the study to track changes in reading preference. During the six week period, three individual student interviews were conducted in a private setting to track any changes in reading preference or motivation. Also during the six week study period, the students wrote in their journals weekly to record their thoughts about reading electronic or printed text. Finally, the students were placed into two separate groups, Group A and Group B. These groups read nonfiction passages from the website Newsela, which can be

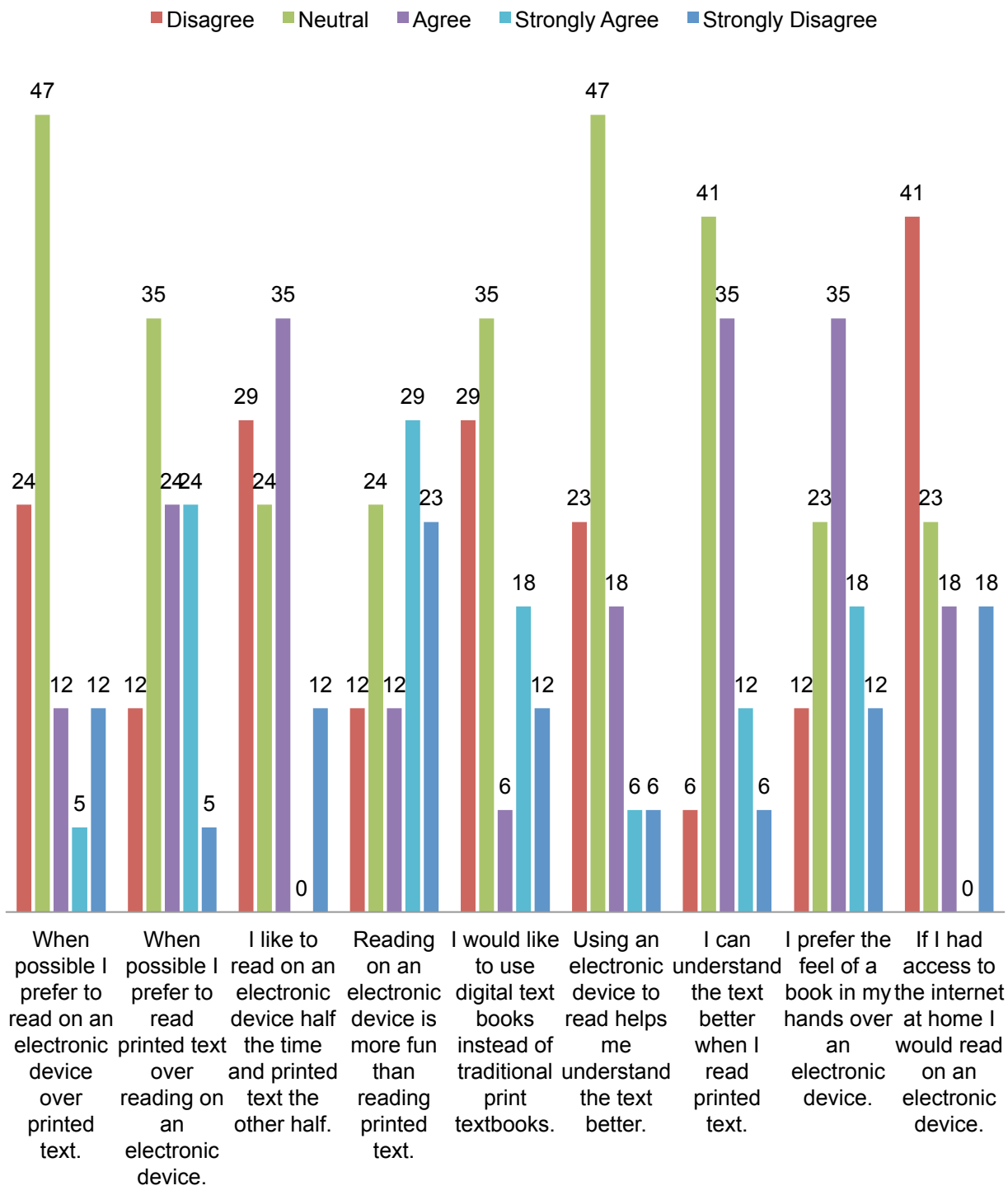
found online at www.newsela.com. Each group read a passage electronically every other week. After finishing the passage, the groups answered comprehension questions either electronically or using paper and pencil. Group A read and answered questions electronically weeks one, three, and five. Group B read and answered questions electronically weeks two, four, and six. Each of the seventeen students participating in the study were given a letter to keep their identities private. The scores the students earned from answering the comprehension questions were documented using a spreadsheet for data analysis purposes.

Pre-Survey

The students were given an Electronic Device/Printed Text survey number 1. Figure 1 shows the results of the pre-survey. By giving students this survey, I was able to determine feelings toward the use of technology. Out of the tested subjects, 52 percent of the students said they preferred to read printed text rather than reading on an electronic device. I was surprised that the percentage was as high as it was. Before asking my students to take this survey, I thought most of my students would prefer reading on an electronic device. Many of the students have their own device and it seemed logical that they would want to read on those devices.

Figure 1-Pre-Survey

Electronic Device/Printed Text Survey #1



Another interesting point gleaned from the survey was that 40 percent of the students disagreed with the statement that they would like to use digital textbooks instead of traditional text books. For this group of students, it is the first year they have had a digital textbook. Students are using a digital copy of their social studies book. When I add in the students who selected neutral on this statement the number jumps to 74 percent.

An additional statistic that presented itself with this pre-survey was that when the students read the statement, I can understand the text better when I read printed text, 87 percent of the students either selected strongly agree, agree, or neutral. This was the highest percentage selected on any statement throughout the survey. In my opinion, the students agreed with this statement so highly because they don't have a lot of background in reading electronic textbooks or reading on electronic devices in an academic setting. The group of students in this survey have only had electronic devices in an academic setting for a year and a half. My theory as to why many students showed a preference to printed text rather than text in electronic form is due to the fact they have not had a significant experience in using electronic devices for academic purposes.

Over the last few years many school districts across the nation have made a push to a 1:1 electronic device initiative, but how the electronic devices are used in the classroom is up for debate. If students aren't taught the proper way to use an electronic device in an academic setting, for an academic purpose, many students may not feel comfortable reading on an electronic device. Then if they students aren't feeling

comfortable while using the device, perhaps they would think they would understand text better in printed form.

The last feeling that was made evident in the pre-survey of students was that 50 percent said they preferred the feel of a printed book over an electronic device. The feel and smell of a book is unprecedented and is something that generations have had at their finger tips. Nan Hillyard was correct when she stated that turning paper pages can be therapeutic for many people. Whether future generations will have this same feeling about books is something that only time can answer.

Student Interviews

Student interviews were conducted three times over the course of the six week study. The students were asked the same questions each time. The following questions were asked:

- Do you like reading on an electronic device or printed text better?
- What do you like reading on an electronic device and or printed text?
- Why do you like reading on an electronic device and or printed text? What feelings do you get?
- Is there anything that could make you change your desired reading method?

In order to build trust and motivation during the study I started each interview by asking the students how they were doing that day. Gail Boushey and Joan Moser are passionate

educators who co wrote *The Daily Five: Fostering Literacy Independence in the Elementary Grades* and *The Café Book: Engaging All Students in Daily Literacy Assessment and Instruction.* One way the authors talk about building motivation with students is by building trust in students. Showing an interest in the student's thoughts and feelings about the day hopefully put students at ease before the questioning process began. I could especially tell during the first interview that by me just asking a few warm up questions put most of the students in a better mood, and they had a more positive outlook.

During the interview process of the students, I received interesting feedback from the questions that were posed. A common theme brought up by more than half the students was the fact that their eyes hurt from reading on an electronic device. Student G said that his eyes hurt after ten minutes of reading on his device at home. He also said that when his eyes started to ache it usually was because the screen brightness was turned up too high. In situations like this he said he turned the brightness down and the aching seemed to lessen. Student K also had this same feeling, but didn't think the eye irritation was from the brightness. She thought it occurred more on her school iPad because the screen didn't have a protector on it which, in her opinion, helps to reduce the glare.

An additional point brought up during the interviews by Student H and Q was that they preferred to read text in printed format versus electronic because they felt tempted to do "other things" while using an electronic device. Student H talked about the temptation to play games instead of read. Student Q talked about feeling distracted while reading on

her device, but it wasn't because she wanted to play a game. Instead, she stated that it was hard for her to avoid thinking about using apps like Facebook and Twitter.

The viewpoints brought up by these two students astonished me! Before hearing their thoughts, I had never thought students may feel distracted while reading on an electronic device. I previously viewed electronic devices as just a different way to present material, but in reality they are so much more. When reading printed text the focus is on the book. With an electronic device, you have the device and everything else that it can do. Today's devices can do everything that a laptop or personal computer can do and some much more. Could students feeling distracted while reading on electronic device be a reason for decreased comprehension levels? The idea that students feel distracted while reading goes against what Larry Rosen talked about in his article, *Teaching the iGeneration*, when he said that digital natives use up to date technologies just as easily as they breath air. The ease at which they use these technologies may be true, but some may prefer to use other methods.

Finally, students expressed how they wished they could have a choice in how they read texts and passages. During the first few weeks of the study, four students expressed the idea of self-selecting the way they read and took the comprehension quizzes. When the students brought this idea up to me I made sure to take note. I asked them why they wished to self select the text. Their response to me was that they felt they could do better on the quizzes by simply selecting how they wanted to read. Each of the four students said they felt they could comprehend the text better when using printed material. At the

conclusion of the research period, the number of students who expressed this same feeling increased to twelve. All twelve of the students expressed how they considered reading printed text would be better for them in the long run. The idea of student choice significantly impacts motivation. The students involved with the research were motivated to use printed material and student choice seems to be a large factor for their feelings. The feelings shared by these students connects with the idea that Donalyn Miller expresses when she says that students feel empowered when they self select texts.

Journals

Another aspect of data collection that I utilized during the study was having the students record their thoughts in a journal. Geoffrey Mills states that when students write down their thoughts in a journal it helps to give an insight into what they are thinking and feeling (Mills, 2014, p.95).

During week one of the study, Student A mentioned he was unsure how to use the highlight option on the electronic device. He stated in his journal that if he would have known how to use this he thought he would have gotten a higher score on his quiz. After reading this entry I could tell that he was feeling down and that his motivation level was down as well. The next day I worked with him and showed him how to highlight text using the highlighter feature on his device. As soon as I went over the steps, I could tell that he was energized and wanted to dive right in and try it out for himself. This seemingly small task, I believe, helped raise the motivation level of this particular student. When he started out during the week he wasn't sure how to operate the text

highlighting feature, but with a little help he thrived during the weeks he used the electronic device for this study. The reason he did well was, in part, because he knew how to use some of the features, thus his motivation to do well was raised after I met with him. Giving student's time to understand all aspects of the technology they are working with is exactly what Killeen and Northrop express in their framework for effective teaching using apps.

Student O had a different outlook which was shared in her journal entries, when it came to using the electronic device. Each of her journal entries during weeks one, three, and five were negative entries. They talked about how she didn't like using the electronic device, the screen was too bright, and how she rushed through the quiz just so she could be done. On the contrary, during weeks two, four, and six when she read the text and took the quiz with printed text materials, her entries were very positive. Each time she expressed how she knew she had done very well on the quiz. Her scores on the weekly quizzes showed the same results. On the weeks she read the text and took the quiz electronically, she did far worse than when she used printed materials.

Test Results

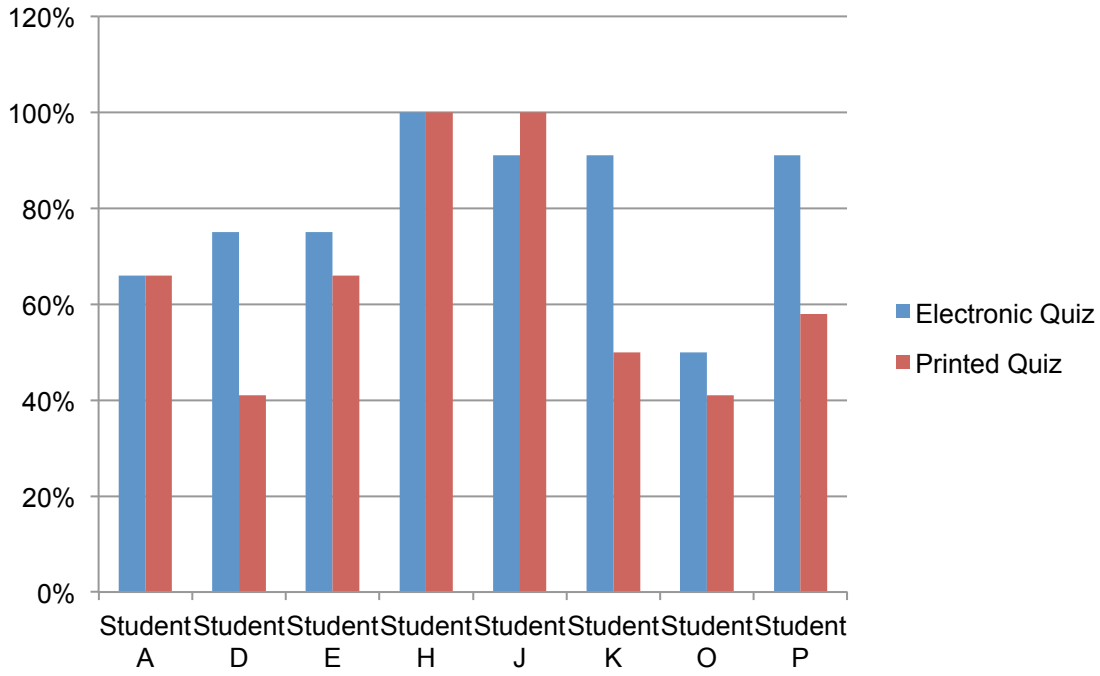
During the research period, the students read six different passages from a website called Newsela. The articles on the website were current event articles and can have the Lexile level adjusted for a particular level. The articles used for this study had a Lexile level ranging from 700-840. After reading the articles, the students took a four question comprehension quiz. All of the passages and quizzes that were used in the study can be

found in Appendices D and E. The students read the articles either in electronic form or printed form. If the students read the article electronically then they took the quiz electronically. If they read the article in printed form then they took the quiz in printed form using a pencil.

At the start of the research period, the students were given a letter number to represent themselves to keep their identities private. The letter ranged from A-R. The students were also divided into two separate groups, Group A and Group B. Students in Group A read the articles electronically during weeks one, three, and five. Group A read the articles in printed form during weeks two, four, and six. Group B read the articles electronically during weeks two, four, and six. Group B read the articles in printed form during weeks one, three, and five.

Throughout the six weeks of study all but one of the students in Group A performed better using the electronic format versus the printed form. Figure 2 shows the results of how Group A performed on the comprehension quizzes. Student J was the only student in this group to perform worse using the electronic form. An interesting note to the results is that Student K talked about her eyes hurting after a short time period while using an electronic device, but her results showed that she actually comprehended more using the electronic format than she did using the printed form.

Figure 2-Comprehension Quiz Results Group A

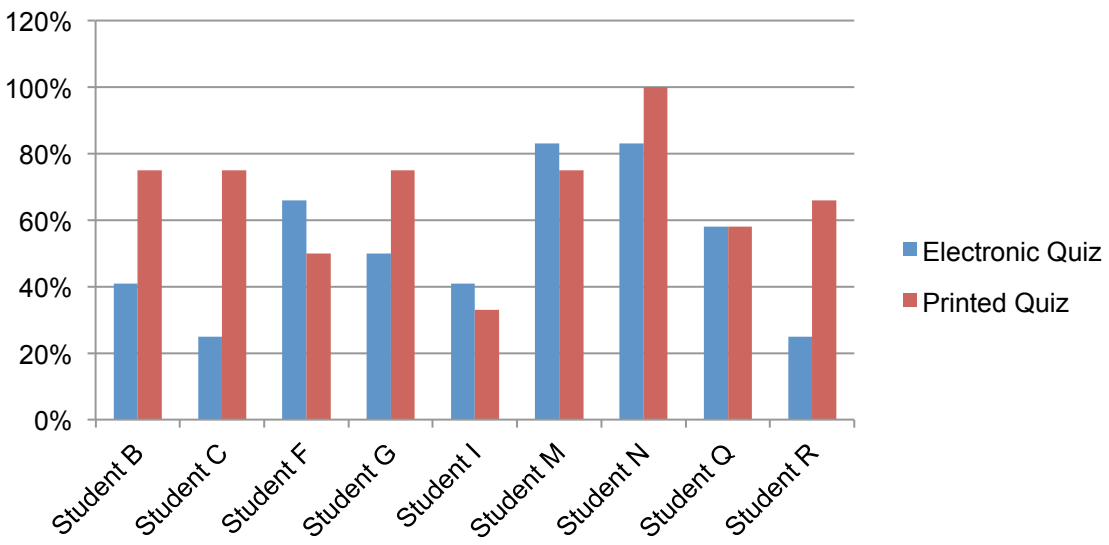


Student H talked with me during one of her interviews about how she didn't like to read using an electronic device because she felt distracted to do other things while using the device. Her results on the quizzes were the same each week throughout the study. For this student it didn't seem to matter which medium was used, she did great with both forms, electronic and printed.

Overall, Group A didn't show a major difference in comprehension quiz scores while reading electronic versus printed text. The students who were in Group A did, however, have higher scores overall during the six week study.

Group B had the exact opposite results from Group A. All of the participants, except one, did better with the printed text and quiz than the electronic format. Figure 3 shows the results of how Group B performed on the comprehension quizzes. Student C did 50 percent better when reading and taking the quiz in printed form. During this student's interview he shared with me his lack of experience using electronic devices. His lack of engagement with electronic devices might have something to do with why he did worse when reading and answer questions electronically.

Figure 3-Comprehension Quiz Results Group B



While Group A showed higher scores taking the tests electronically, Group B showed the opposite with more students performing better with printed texts than electronic. The two students during the study that showed the largest difference in scores on the comprehension quizzes were Student C and Student R. Student C's average percentage using the electronic form was 25 percent, but when he used the printed text

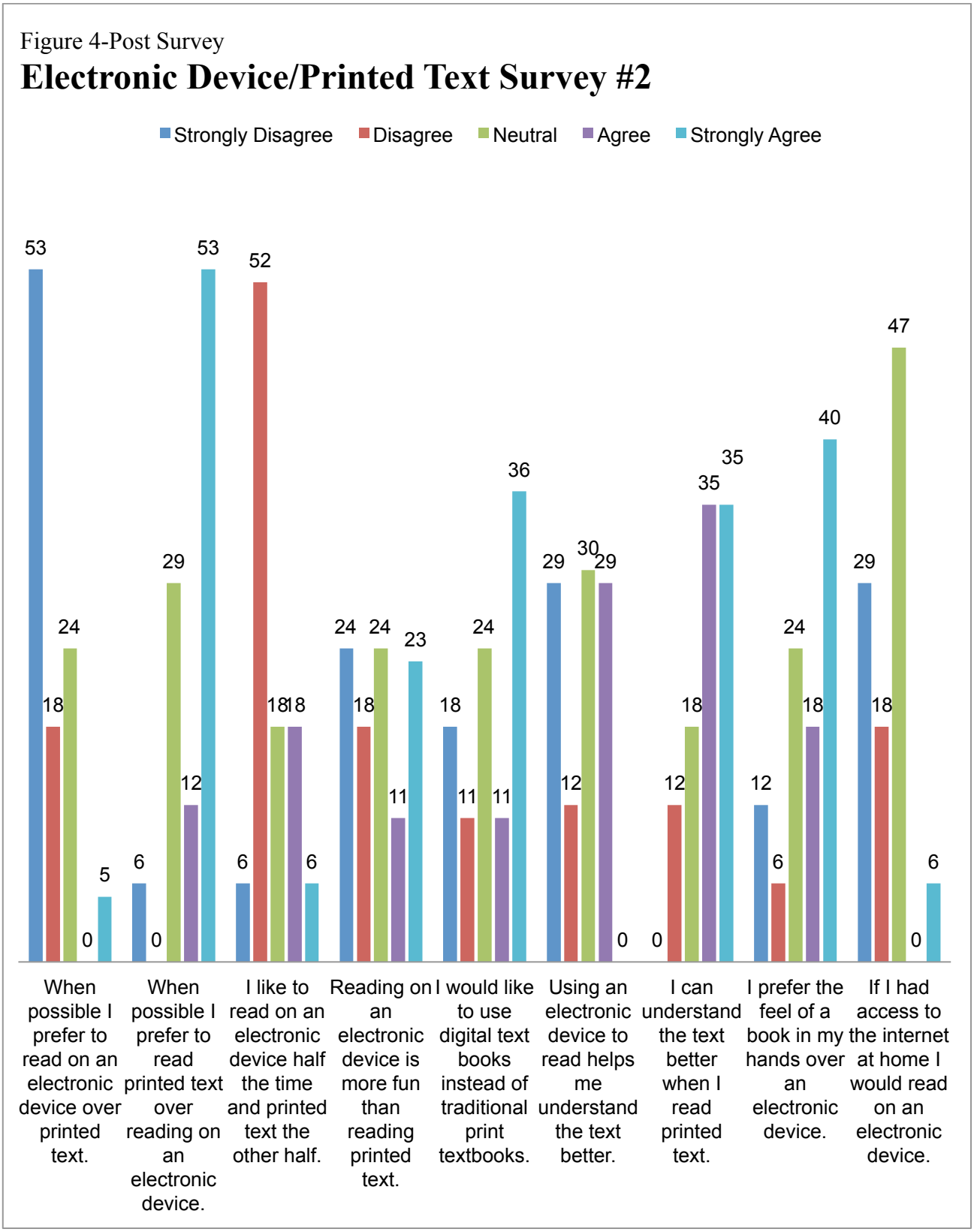
his average score was 75 percent. Student R had similar results as Student C. Student R's average percentage using the electronic form was 25 percent, but when he used the printed form his average was 66 percent. It was very interesting that both of these students performed better when using printed form text.

Post Survey

The post survey was given to the students two weeks after completing the electronic and printed comprehension quizzes. I waited for that time period to give the students some time to reflect. It was important for me to let the students have time with their thoughts and to really think about any changes they might have had regarding their reading preferences.

The post survey showed some interesting results. Figure 4 displays the results of the post survey. First, I found that 71 percent of students either disagreed or strongly disagreed with preferring to read on an electronic device over printed text. On the pre survey only 34 percent of students either disagreed or strongly disagreed with this statement. I would attribute this jump to the increase in using electronic devices in schools and also the reading preference of the students surveyed.

Figure 4-Post Survey



A second interesting caveat to the results of the post survey was that while students seemed to overwhelmingly prefer to read printed text, 47 percent either agreed or strongly agreed to using digital textbooks in the classroom. The pre-survey showed that 24 percent of students preferred the use of electronic textbooks. At the start of the school year, the students had never used an electronic textbook, but by the conclusion of the research period the students had had a half year experience. In my opinion, this is why the percentage nearly doubled during this time frame.

The final statement that showed differences from the pre survey to the post was that students felt they could understand the text better when it was in printed text form. In the pre survey 47 percent of students agreed or strongly agreed with this statement. In the post survey 70 percent of students agreed or strongly agreed they could understand text better in printed form.

Many of the student comments were the same as the first survey. Six students stated that they didn't like reading on an electronic device because of their eyes hurting and headaches they get from the device. There were eight students who said they preferred to read printed text because they liked the smell and feel of the paper. One student did say she preferred to read electronically because she often rips the pages of a book and with an electronic version this doesn't happen.

Chapter Summary

During the research process students were surveyed, had the opportunity to share their thoughts verbally and in written form, read passages electronically as well as in

printed form, and took comprehension quizzes. All of the data that I collected and reviewed has led me to this conclusion; the students that participated in my research had higher levels of motivation when using printed forms of text. This was evident by their overwhelming answers on the pre and post surveys. The notion of higher motivation was also upheld while interviewing the students and reading their journal entries. While conducting the interviews the students did not hold back in showing their displeasure with reading on an electronic device.

As for reading comprehension, overall, the students did not show an improvement in quiz scores while reading on an electronic device versus printed text. Most of the students scored about the same while taking the electronic and printed text version quizzes.

In Chapter Five I will reflect on my research question: Why do students in a sixth grade classroom using an electronic device to read display different comprehension and motivational levels than students with printed texts? This final chapter will provide the opportunity for me to evaluate the method of my research, connect it to chapter two's literature review and consider implications of my research for teachers. Then, I review possible limitations to my research and share ideas for future research.

CHAPTER FIVE

Conclusions

Introduction

In this chapter, I share my thoughts and what I have learned throughout this research project, revisit main ideas from my research, provide implications of the research, address the limitations, and include recommendations for the future in order to answer my question, Why do students in a sixth grade classroom using an electronic device to read display different comprehension and motivational levels than students with printed texts? This study enhanced my understanding of student motivation and choice as it pertains to reading. Students having choice in how they read is a critical factor in engaging and motivating them to read and continue reading as they move through life. When students have a purpose and are able to have a choice in what type of device they use to read, whether it is electronic or printed text, they begin to participate in higher levels of thinking, along with meaningful conversations. Throughout this study, daily observation and conversations with the students showed that they were more willing to engage in reading when they were given the option to read printed text.

Reflection

Before the start of my research I thought that the majority of students would choose to read electronically when given the option. It become clear early on in my study

that students preferred to read printed versions of text over an electronic version. The reasons ranged from headaches to being distracted to not liking the glare that comes from an electronic device. The impact of student choice in how they read was a significant finding in the research. Using the information gathered during the interview process, as well as the surveys, illustrated to me that students are more motivated to increase their reading when they are able to choose the format of the text. Teachers can use this information by finding the motivating factors of their students and to provide choice when selecting reading material, whenever possible. When students feel they have a choice about how they read, they are going to be more likely to become motivated to read. Finding how to motivate students is a crucial aspect of providing reading choice to students.

Another finding in my research was that the scores students earned on comprehension quizzes didn't vary significantly based on the medium they used to read and take the quiz. The outcome of the quizzes can be found in Figure 2. The results display that students didn't have large gains in scores earned based on how they read and took the comprehension quizzes. This went against what I initially thought. I previously thought students would perform better using the electronic format because I thought that is how they preferred to read.

Throughout the process, I learned the importance of communicating with my students. I learned how many of my students crave the one-on-one interaction to talk about their reading and their preferences with how they read. I recognized a difference in

attitudes and a willingness to want to read using printed text over that of using electronic devices.

Connecting to the Research

As reported in Chapter 2, Larry Rosen explained how today's children are immersed in technologies on a daily basis and expect those pieces of technology to be integrated throughout their day. Therefore, teachers need to find the balance of how to best use these technologies in the classroom. One way teachers can start to find the balance is to know the reading preferences and motivations of their students.

Building student relationships is a key first step to forming trust and positive relationships, according to Gail Boushey and Joan Moser. The student needs to feel respected in order to take risks in the classroom. If this foundation is built then the teacher is more likely to find out what motivates individual students. Teachers who foster positive relationship building with their students are more likely to promote higher levels of achievement in the students they teach. When trust has been built in the classroom, student choice can take over and have an impact on learning.

In addition, support for students must also be shown through building personal connections with the students, at which point students will display an increased level of ownership and perform at higher levels. One of the most important factors involved in motivating students to learn is engagement that is based upon the foundation of building relationships. With this foundation, students will believe in themselves as readers (Beers, 2003).

Allison (2009) reminds that independence isn't something that is instantly bestowed on struggling adolescent readers; it is something that take time to learn and earn.

Implications

This research facilitated positive conversations amongst students in regards to the best approach to student choice as it relates to electronic or printed text. It allowed for an increased awareness of why students select electronic or printed text versions. As relationships with the students were built, they became more apt to share their true feelings about their reading preferences.

As technology increases, it will become vital for students to have a choice in how they read at school and at home. Many students prefer to read printed text and should be able to continue to read this way even as the push for updated technology in the classroom gains traction.

Schools have to make a sustainable investment in classroom libraries and school libraries, providing books at all interest and ability levels, both fiction and nonfiction, and electronic or printed text. It has been proven that readers benefit from engaging text that offers choice. This is one of the most important components to any reading program and should be the foundation for all classroom reading structures. When students are given the opportunity to select how and what they read, their reading motivation is going to show substantial improvements.

Limitations

The research I conducted provided many positive results and useful feedback, but I did find some possible limitations to some of my results. The research time was limited. For this particular research question, more time would have been beneficial for all areas, especially to see if students would show larger differences in comprehension quiz scores.

An extended period of time would also have allowed me to further track changes in motivation. Even though I did see some change in the reading preference and reading motivation, with a longer time period I would have been able to see if the trends would continue.

The reading passages that were used to assess the participants in this study may not have been of interest to all students; therefore, the lack of background knowledge could affect their comprehension, leaving a disturbance in accurate reading levels.

Future Research

To gather a better collection of data used to monitor student motivation, student choice, and comprehension, the following recommendations could be helpful. First, a longer period of time, preferably an entire school year would be helpful to gather a noteworthy amount of data and information. Beginning research in September is challenging. This is a critical time of year to incorporate routines and model expectations for students. More time could be spent on assessing the reading levels of the students to make sure the reading passages are at an appropriate reading level. Therefore, beginning research after the first month of school may be better.

Second, the research could have focused more on student choice and how it relates to electronic and printed text. The passages could be available in both formats and the students could select the format which best suits their interest. By doing this the students would feel a sense of choice. Then because the students had choice in the selection of their passage format, their score may increase because of the increased motivation to have read the way they wanted.

Finally, when working with middle school students I must consider student interest and background. As I conducted informal interviews with the students I saw varying student's schema. One way to aid in the selection of passages with high interest would be to have students fill out reading interest surveys. Having a wide variety of reading passages would be most advantageous in tracking whether a student scored a certain way because they already knew about the topic or if they truly comprehended the text.

Plan for Communicating Results

Gaining an understanding about the benefits of student motivation and comprehension as it relates to electronic and printed text enables me to share the results with other colleagues. Learning opportunities delivered to staff at an after school workshop or PLC would provide an opportunity to share my results in a way that could help in their classrooms. As a mentor to a new teacher, I will utilize the research data, explain the process of building relationships with students, and share the importance of student choice in reading and how it can raise motivation.

Conclusion

The prevalence of electronic devices in schools today served as the impetus for my Capstone research. I especially wanted to ascertain if there was a difference in student's motivation and comprehension. Since beginning my teaching career, electronic devices have made their way into mainstream society and the classroom. I leave this experience with a completely different outlook about how students perceive reading on an electronic device. Writing this Capstone has been long and often overwhelming experience, but the knowledge I have gained along the way is invaluable.

As I end my Capstone journey, here is a major conclusion I have reached: electronic devices have changed the way humans interact with each other, but many people still have a love for printed text. People need the feel and smell of a paper book in their hands and that feeling may never go away. Choice is a key component in making this a reality.

APPENDIX A

Letter of Consent

August 1, 2015

Dear Parent or Guardian,

I am completing my Master's Degree in Education through Hamline University. As part of my graduate work, I plan to conduct research from September 2015 through December 2015. The purpose of my letter is to ask your permission for your child to take part in my research. The final product will be a printed, bound capstone (thesis) that will be shelved in Hamline's Bush Library.

My research will be based on individual reading comprehension assessments along with student surveys, student interviews, and questionnaires regarding each student's personal reading preferences regarding the use of an electronic device or printed text. My main goal is to see if there is any change in reading comprehension or motivation while reading on an electronic device or printed text.

Your child's participation will take place in my classroom during their daily scheduled class time and take place in a whole group and small group setting. I will also be working one-on-one with the students during this time. Your child will not be asked to do any extra work in the classroom or at home.

I may include samples of student work in my final paper. If your child's work is selected, his/her identity will be kept confidential. No real names or identifying characteristics will be used. Student participants will randomly be assigned a letter to represent them throughout the research. Your child is free to withdraw from this project at any time without negative consequences.

I have already received permission to do this research from my principal and from Hamline University Graduate School of Education.

Please return the permission form that is attached by September 18th, 2015. If you have any questions, please feel free to call me at school or email me at any time. Thank you for your cooperation.

Sincerely,

Paul Holland

September 2015

Dear Mr. Holland,

I have received and read your letter about conducting research in your classroom. I recognize that your goal is to see if there is any difference in reading comprehension or motivation while reading on an electronic device versus printed text.

I give permission for my child, _____, to participate in the research project that is part of your graduate degree program. I understand that all results will be confidential and anonymous and that my child may stop taking part at any time without negative consequences.

Signed,

_____

(Parent/Guardian)

Date:_____

APPENDIX B

Pre/Post Surveys

Electronic Device/Printed Text Survey #1

What are your feelings toward electronic devices and printed text?

Please rate these statements on a scale of 1-5.

Scale: 1-Strongly Disagree 2-Disagree 3-Nuetral 4-Agree 5-Strongly Agree

1. When possible I prefer to read on an electronic device over printed text.

1 2 3 4 5

2. When possible I prefer to read printed text over reading on an electronic device.

1 2 3 4 5

3. I like to read on an electronic device half the time and printed text the other half.

1 2 3 4 5

4. Reading on an electronic device is more fun than reading printed text.

1 2 3 4 5

5. I would like to use digital text books instead of traditional print textbooks.

1 2 3 4 5

6. Using an electronic device to read helps me understand the text better.

1 2 3 4 5

7. I can understand the text better when I read printed text.

1 2 3 4 5

8. I prefer the feel of a book in my hands over an electronic device.

1 2 3 4 5

9. If I had access to the internet at home I would read on an electronic device.

1 2 3 4 5

Why do you like reading on an electronic device? What don't you like about reading on an electronic device?

Why do you like reading printed text? What don't you like about reading printed text?

Electronic Device/Printed Text Survey #2

What are your feelings toward electronic devices and printed text?

Please rate these statements on a scale of 1-5.

Scale: 1-Strongly Disagree 2-Disagree 3-Nuetral 4-Agree 5-Strongly Agree

1. When possible I prefer to read on an electronic device over printed text.

1 2 3 4 5

2. When possible I prefer to read printed text over reading on an electronic device.

1 2 3 4 5

3. I like to read on an electronic device half the time and printed text the other half.

1 2 3 4 5

4. Reading on an electronic device is more fun than reading printed text.

1 2 3 4 5

5. I would like to use digital text books instead of traditional print textbooks.

1 2 3 4 5

6. Using an electronic device to read helps me understand the text better.

1 2 3 4 5

7. I can understand the text better when I read printed text.

1 2 3 4 5

8. I prefer the feel of a book in my hands over an electronic device.

1 2 3 4 5

9. If I had access to the internet at home I would read on an electronic device.

1 2 3 4 5

Why do you like reading on an electronic device? What don't you like about reading on an electronic device?

Why do you like reading printed text? What don't you like about reading printed text?

APPENDIX C

Student Questions

Student Interview Questions

1. Do you like reading on an electronic device or printed text better?

_____

_____

_____

_____

2. What do you like reading on an electronic device or printed text?

_____

_____

_____

_____

3. Why do you like reading on an electronic device and or printed text? What feelings do you get?

_____

_____

_____

_____

4. Is there anything that could make you change your desired reading method?

_____

_____

_____

_____

APPENDIX D

PASSAGES

Article 1

School districts asking families to start paying for the school bus ride

WASHINGTON — Most students on big yellow school buses are getting a free ride. The money that pays for the driver, the bus and the gas to run it comes from tax dollars. People pay taxes to their state. Then the state government gives money to schools.

Some schools say the state is not giving them enough money. Districts are starting to ask parents to pay for school bus service instead.

Dan Domenech says this has been happening since around 2008. Domenech leads the School Superintendents Association. He says money became a problem all over the country at about that time. Schools had to change the way they did things. Instead of cutting school programs, districts started "charging fees for sports events, uniforms, after-school activities, and eventually transportation," he said.

Bus Fares Add Up

Nationwide, school districts get about half of their money from the state. The other half usually comes from their local government.

State money for education has dropped over the last seven years. At least 30 states are giving school districts less money now than they did before 2008.

The move to charge for bus transportation has angered parents in some communities. It has also worried some school officials about children's safety.

Transportation fees are different in every district. In Colorado, some families pay $150 a year for each child. In parts of Massachusetts, families pay $325 for each student, but no more than $975 for a family. Parents in San Diego County, California, must pay $575 a year for each child, but never more than $1,437, no matter how many children ride.

School districts do not charge if students are disabled and need special transportation. Families that take in foster children are not charged, and homeless students do not have to pay. Some districts offer cheaper or free service for poorer families.

Traffic Jams Outside Schools

Charging parents for transportation is not a completely new idea. School districts in some states already charged bus fees for students who live very close to their schools. Their families pay for the bus because it is convenient. Families who live farther away usually get free bus rides.

Now school districts are starting to charge for buses no matter where families live. The bus fees might help make up for lost funding, but they are also causing trouble. Parents are complaining about the charges. Many have stopped using the bus service. Some schools are having big problems with traffic jams because so many people have started driving kids to school instead.

Some officials say that bus fees are unfair to students from poorer families. They worry that the high costs might prevent some students from being able to get to school. Families that cannot afford the bus fees also might not have cars.

Some Parents Pay For Safety

According to Charlie Hood, bus fees affect student safety, too. Hood leads a national group of student transportation leaders. He believes school buses provide top-notch safety. Hood says charging for transportation is a bad idea. He thinks it makes some families choose less safe ways of getting their kids to school.

Safety is one reason some parents support the idea of paying for bus service.

Five years ago, one Colorado school district began a program that charges bus fees. The program uses a GPS system to track students on the bus. Donna Grattino runs the district's transportation program. Grattino said parents were supportive. They liked the way the system helped keep an eye on where kids were. They said it was worth a little extra money for the safety.

Article 2

Keep trying new foods, picky eaters might just like it!

Lots of kids do not like eating certain foods. It is a problem many parents have to deal with. There has not been a lot of research focused on picky eating. For a long time, people thought all picky eating habits were the same.

Now a new study says different kids might have different reasons for being picky eaters. Eating habits can be brought on by different kinds of behaviors. Knowing which type of picky eater a child is may help parents learn ways to change the behavior.

Watching Them Eat

Scientists decided to study a large group of kids. They were between 2 and 4 years old. Half of them were choosy about what they liked to eat. The other half were not picky. The parents fed the family special meals designed by the scientists. They observed and recorded their children's behavior around mealtimes.

Kids who were not picky ate more and did not make a fuss about eating. Picky kids acted differently before and during meals. Some of them refused to even come to the table. Others seemed suspicious of certain foods. A few kids even cringed and gagged.

Sharon M. Donovan is a professor at the University of Illinois. She led the group that was working on the study. Her team talked to parents after observing their children. They saw four different types of behavior that could be called picky eating.

Lots Of Reasons For Picky Eating

Not everyone likes to eat the same food. For some kids, a food like broccoli tastes more bitter than it does to another child. It is impossible to change that. There are always going to be foods some children just do not like eating.

Some children do not want to eat certain food for other reasons. It may not have anything to do with how something tastes. It may have to do with something else entirely. A child may be upset because mealtime takes place at the same time she is playing a game. So she gets angry and refuses to eat.

Lots of children are picky eaters. Donovan says that up to half of all kids under age 2 do not like eating some foods. Parents can play a big part in making sure this behavior does not go on too long.

Keep Trying New Foods

The scientists might not know how to treat each kind of picky eater. But it does not mean their study is not useful. The scientists think it will help parents to recognize that kids may be unhappy at mealtime, but it will probably go away. The scientists say parents should not push their kids to change their behavior every time they sit down for dinner, because picky eating stops for most kids by the time they are age 5.

More studies are needed before picky eating is fully understood. For now experts have some advice to help parents feed their kids. For a child who does not like mixed foods, explain to him or her what each type of food is on the plate the first time it is served. Accept that all children have their own tastes but serve foods they don't like along with their favorites. Don't force your child to eat something new but encourage him or her to take a taste. Most of all, keep trying, Donovan says. Children may need to be served a food they do not like 10 times before they accept it. Parents often give up before then.

Four Types Of Finicky Eaters

Some picky eaters might not like food because of the way it feels or how it smells. They might describe it as yucky or slimy.

Other kids try to avoid new or mixed foods.

Some kids do not want their foods to touch one another.

There are even some kids who will not eat anything at all because they are angry about something else.

Article 3

Florida fern fans fight to save plants that are in danger of disappearing

MIAMI, Fla. — In South Florida, a rare fern is struggling to survive.

The fern was discovered in 2006 near Florida City. Plant experts prefer to keep its location a secret. The fern is the only one of its kind in the wild in North America. The experts worry that if people knew where to find it, they might take it. Then the fern could disappear forever.

Tiny Spores, Big Hopes

Two years ago, Fairchild Tropical Botanic Garden decided to rescue the fern. They sent a team to collect fern spores. Spores are seed-like cells that can become new plants. The spores themselves are no bigger than the period at the end of this sentence.

The team planted the spores and waited to see if they would grow.

Jennifer Possley is a botanist at the botanic garden. Botanists study plants. As she showed off the rare fern, called the Caribbean maiden hair fern, Possley said she had a hard time getting the spores. The fern is about six inches tall. It is one of about 20 now growing at the garden.

The team rescued the maiden hair fern. Still, there is a big fern crisis in the area.

Fern Fan Starts To Sweat

With 124 types of ferns, Florida has more species of ferns than almost anywhere else in the United States, Possley said. Only Hawaii and Puerto Rico have more. Of the Florida ferns, 48 types grow in Miami-Dade County in South Florida. Twenty-six are in danger of dying out. Fourteen ferns have already disappeared.

Possley would worry less if the ferns grew in large, protected reserves like Everglades National Park. Unfortunately, seven of the ferns grow in small nature areas. These areas are surrounded by highways, businesses and busy neighborhoods.

“This is where I come in and start to sweat,” Possley said.

"Fairy Gardens" In Danger

Native ferns were once all over South Florida. People used to visit fairy-like caves, filled with thorny vines and spiders, to see rare species. Tours were even led into fern-lined sinkholes, which are big holes in the ground.

Then wild ferns began disappearing. Buildings and roads are now in the places where ferns once grew. Also, people have taken the plants from the wild, which nearly wiped out some species.

Possley says fern spores are everywhere. One plant can produce billions of spores, but ferns can be picky about where they grow. They also grow very slowly.

The brown-hair comb fern is a good example. It was first spotted in 1962, but nearly died out three years ago. Possley and other plant experts collected spores of the fern just before they were almost wiped out.

Slow To Grow

Then the experts had to grow the ferns from the spores. Mike Freedman, who is with the botanic garden, spent months caring for the spores. He made a special container to improve their chances of living. Six weeks after the spores started growing, the ferns were still tiny. Their heart-shaped leaves could be seen only under a microscope. At three months, they measured about an inch tall, looking a little like parsley. At about a year, the ferns were finally 2 to 3 inches tall and large enough to be put in pots. They were sent to a greenhouse where Possley and other botanists have been growing about 300 rare ferns.

The brown-hair fern managed to hold on, Possley said.

Spores In The Bank

Ferns face another threat. The sea is rising because the earth is growing warmer and this can change the fern's habitat. Fairchild garden is now working to figure out where rare ferns used to grow so they can be replanted there. The garden is also sending spores to the nation’s seed bank. The National Center for Genetic Resources Preservation in Colorado saves seeds that are important for U.S. agriculture.

Possley would love to see the “little fairy gardens” planted once again with ferns. She knows the challenges, though.

“Now most of them are buried underneath Miami" roads and buildings, she said.

Article 4

Urban farmers ride the elevator, not a tractor, to check the crops

CHICAGO, Ill. — Rooftop farms are popping up all around Chicago. People want to use the roofs of buildings to grow food. It is an idea many other cities are interested in as well.

The McCormick Place convention center has grown tens of thousands of pounds of produce since 2013. A historic factory in the Pullman neighborhood is planning to have the world's largest rooftop farm. They expect it to be ready this summer. Even small businesses and schools have rooftop gardens in Chicago.

It is too early to tell what kind of effect rooftop farming will have on food farming overall. It is still a very new idea.

Future Of City Farming

Peter Strazzabosco works for the city of Chicago. He believes there are at least 13 rooftop farms in Chicago, although he said there could be more.

Other cities are also known for being green. Washington, D.C., has three rooftop farms and Toronto, Canada, has two, people in those cities said.

Michael Bryson is a professor at Roosevelt University in Chicago. He thinks rooftop farms are a very good idea because farming in cities can help us to improve how we grow and share food.

Bryson said rooftop farms make sense in Chicago. It is a city that already had many rooftop gardens, called green roofs.

Chicago has really gotten behind "the practice of city farming," he said.

The last mayor of Chicago, Richard M. Daley, got the idea after seeing rooftop farms during a trip to Germany. He returned with a mission to turn Chicago into a leader among cities that were trying to become more green. He built the city's first green roof on top of city hall in 2000.

Other Big Cities Quickly Catching On

In the years since, green roofs have gotten a lot of attention. Chicago has been recognized as one of the leaders in North America. The city has more than 5.5 million square feet on more than 500 rooftops, Strazzabosco said.

No one knows the total number of green roofs in North America. It is known that Washington has been adding them the quickest over the past four years.

Washington officials said the city has 2.3 million square feet of green roofs. Philadelphia reported more than 1 million square feet.

To encourage city farming, Chicago passed a law in 2011. It allows rooftop farms to be built in the city.

Gotham Greens is set to open a rooftop farm in August in the Pullman neighborhood of Chicago. The company says it will be the world's largest.

Gotham Greens is building it on top of a factory owned by Method, a soap company.Method began a partnership with Gotham Greens last spring. When the farm opens, it will be 75,000 square feet. This is nearly 2 acres in size.

Technology Will Help Out

Chicago is like New York. It has lots of tall buildings with flat roofs. They are perfect for rooftop farming.

Better technology has also helped with the growth of rooftop farms.

At the Method factory, a greenhouse will have sensors. They will be able to track things like temperature, light and air quality. This means Chicago's cold winters will not be a problem for growing. A computer system will be used to change those conditions when needed.

Article 5

Students put aside their tablets to read through their school yearbooks

CHICAGO, Ill. — Students at Prospect High School set aside their smartphones and tablets for a few moments. Instead of reading on a screen, they read the paper pages in their yearbooks.

With social media, like Facebook, "the pictures and messages we post kind of go up, and then they go away," said Caroline Chengary. She is a high school senior and the editor of the Prospect High School yearbook.

She said hard-copy yearbooks are something "that you can keep with you, and look back at when you're older."

Surprisingly, many high school students don't want digital yearbooks. They still like hardcover yearbooks better.

Students Prefer Hard Copies

Students, teachers and other experts agree that hard-copy yearbooks remain very popular with students.

It seems a bit unusual. Because of improvements in technology, that fewer textbooks are being printed. Yet this is not true for yearbooks. Yearbook sales have stayed high over the past five years. Experts say it is because class sizes have been getting larger at schools.

Kevin Miller works at a company that makes yearbooks. He said that his company had tried making digital yearbooks. But the company decided to stop making digital yearbooks because students wanted hard copies. He said there's something special "to actually feel the book in your hand."

Tagging Photos With Video Links

That is not to say the yearbook hasn't changed.

Some high schools use technology in their hardcover yearbooks. The technology uses smartphone apps. The yearbook tags photos with links to videos of special events. The smartphone app can then be used to watch the videos that are linked to those pictures. The videos may show clips from the prom or an exciting football game, for example.

Experts still think that many high school students will want the traditional style of yearbook. They say technology may change, but books can last forever.

"It's Always Exciting"

Pete Macabobby works at Wheaton Warrenville South High School. He helps students put together the school yearbook. He said that last year the school sold 1,300 yearbooks. The yearbook is made by 10 students who are in the yearbook club.

The students want a traditional yearbook, Macabobby said. He also thinks that views toward technology are changing. He believes that today's students do not want to use technology all of the time.

New Trier High School has a special ceremony each year for seniors. The school has a jazz band perform while students gather to write in each other's yearbooks.

Kevin Bond works at New Trier High School. He says that yearbook sales there are as strong as they've ever been. He also said that many students he has talked to still want to read hardcover or paperback books.

At Prospect High, junior Brady Schwartz smiled as he picked up his yearbook. “It’s always exciting to see your pictures in the yearbook," he said. "And when the yearbooks are handed out, you know it’s that much closer to the end of the school year.”

Article 6

Do vision problems mean trouble reading?

BALTIMORE — Eye doctors in Baltimore are trying to help students read better.

The doctors are from Johns Hopkins Hospital. They are testing the students' vision. It is part of a study to figure out if students are having trouble reading because they cannot see.

It seems like a simple question. Even so, doctors at Johns Hopkins say it has never been answered with a study like the one they are doing.

Alexander Dominguez is one of the students who could be helped. The third-grader zoomed through worksheets at school. He quickly became one of the best students.

Then he could not read a simple sentence on the board. His teacher, Maygon Thompson, was puzzled.

“I thought he was kidding,” Thompson said. “But he’s so serious about his work."

"We Were Very Surprised"

Megan Collins is a children's eye doctor at the hospital. For the past six months, she has been checking students' vision, or eyesight, in 12 Baltimore elementary schools. Alexander's school is one of them. Collins is trying to see if vision problems are causing reading problems.

Collins said it would help a lot of students if the doctors found a connection between the two problems.

The doctors will first examine 300 students from 12 schools. The students will be given glasses if they need them.

Doctors tested 250 students between January and March. They found something they did not expect. More than half the students needed glasses.

“We were very surprised,” said Dr. David Friedman of Hopkins. The number was twice as many as would typically have needed glasses, he said.

Glasses Could Make A Big Difference

There are bigger reasons than bad eyesight for why some students cannot read, Friedman said. Still, it would make a big difference if even a few could be helped by wearing glasses, he said.

Maryland tests eyesight in first grade and ninth grade. This leaves a lot of time in between when problems could be missed.

Julie Gray has been teaching at Charles Carroll Barrister for 16 years. Eye problems are the last thing she looks for when a student has trouble reading, she said.

“This is so helpful," she said of the study.

Not Enough Students Who Need Glasses Get Them

The city of Baltimore's health department tests school students eyesight. A 2010 report said that the department did not have enough people to give the tests. There also were not enough people to make sure students received glasses if they needed them.

Dr. Leana Wen runs the city's health department. She said the department has improved since 2010. Almost every student who is supposed to get a vision test gets one.

Still, there are problems, Wen said. Only a small number of students who show vision problems on the test end up getting glasses, she said.

The health department is looking at new ways to get glasses to students. Wen said Hopkins can help solve the problem.

Glasses For Home, Another Pair For School

The Hopkins study includes second- and third-grade students. These are important grades. Students who cannot read by the end of third grade are a lot less likely to finish school on time.

Students who need glasses receive two pair. One is for home. The other is for school. Many students in the study, like Alexander, had been given glasses at some point and lost them or broke them.

Fewer than two-thirds of third-graders at Alexander's school passed a 2014 state test. That means the study could make a big difference.

The school's principal said the vision study was important. It could help show what the students really know, and if poor eyesight is getting in the way.

APPENDIX E

QUIZZES

Quiz #1
Letter _____
Score ____/4

School districts asking families to start paying for the school bus ride

1. Which of the following is a concern about the new bus fees, based on the article?

A) traffic
B) safety
C) fairness
D) all of these

2. What would be another good title for the section "Some Parents Pay For Safety"?

A) "More or Less Safe?"
B) "To Pay Or Not To Pay?"
C) "Different Fees For Different Schools"
D) "GPS A Big Safety Benefit For Students"

3. Why are some schools asking parents to pay for their children to ride the bus to school?

A) because too many students ride the buses to school
B) because many families can afford to pay for bus service
C) because the schools are not getting enough money
D) because state do not give any money to schools anymore

4.) Which of the following would be MOST likely to solve the bus fees problems described in the article?

A) if parents only sent their kids to schools that give free bus rides
B) if bus drivers knew more about keeping kids safe
C) if state governments started giving more money to schools
D) if parents from poorer families drove their kids to school

Quiz #2
Letter _____
Score ____/4

Keep trying new foods, picky eaters might just like it!

1. Which of the following sentences is MOST important to include in a summary of the article?

A) Parents often have difficulty getting their picky eater to try new foods

B) Scientists studies young children and found there are four different types of picky eater
C) Some children won't eat certain foods because they think they taste bitter or feel slimy
D) Children who are not picky eater eat more food and have less problems at mealtimes

2. Which of the following sentences from the article BEST relates to the articles title?

A) There are always going to be food some children just do not like eating.
B) Donovan says that up to half of all kids under age 2 do not like eating some foods.
C) Children may need to be served a food they do not like 10 times before they accept it.
D) Accept that all children have their own tastes but serve foods they don't like along with their favorites.

3. Based on the article, how can understanding reason for picky eating help parents of picky eater?

A) Parents can start trying to make their picky eaters eat all kinds of foods.
B) Parents can learn what type of picky eater their child is and help them change.
C) Parents can learn which foods cause the picky eating and not serve those foods.
D) Parents can start to make special meals for picky eater so they get enough nutrition.

4.) According to the article, which of the answer choices below describes a parent who is following Donovan's article?

A) a parent who forces their child to eat every type of vegetable
B) a parent who serves only a few kinds of foods to their child
C) a parent who describes a new food to their child and encourages them to try it
D) a parent who feeds their child a food the child does not like at each meal for several months

Quiz #3
Letter _____
Score ____/4

Florida fern fans fight to save plants that are in danger of disappearing

1. Which of the following sentences from the article is LEAST important to the main idea?

A) In South Florida, a rare fern is struggling to survive.
B) The fern is the only one of its kind in the wild in North America.
C) People once visited rare fern caves.
D) buildings and road are now in the places where ferns once grew.

2. Why did Mike Freedman care for the fern spores?

A) He wanted to keep the spores for a personal science study.
B) He wanted to make sure rare ferns only grow in Florida.
C) He wanted to make sure everyone could grow rare ferns.
D) He wanted to keep rare ferns from disappearing.

3. Which answer choice BEST explains why Jennifer Possley cares about saving the ferns?

A) because she wants neighborhoods to grow more rare ferns
B) because she works for Everglades National Park
C) because she uses fern spores to produce fairy-like caves
D) because she works with plants and studies how they grow

4.) What would be another good title for the section "Spores In The Bank"?

A) "Saving The Environment"
B) "U.S. Agriculture Takes A Stand"
C) "Other Threats Remain"
D) "Bust Neighborhoods"

Quiz #4
Letter _____
Score ____/4

Urban farmers ride the elevator, not a tractor, to check the crops

1. Select the paragraph in the section "Future Of city Farming" that describes the history of Chicago rooftop gardens? Please circle the section in the text.

2. According to the article, why are big cities like Chicago good for rooftop gardens?

A) There is no room for large farms in cities.
B) Big cities have lots of tall buildings with flat roofs.
C) People who live in big cities do not want farms in their neighborhoods.
D) Many roofs in big cities already have gardens on them.

3. Read the sentence from the introduction (paragraphs 1-3). ***Rooftop farms are popping up all around Chicago.*** **Which word could replace the phrase "popping up" as it is used in the sentence.**

A) appearing
B) improving
C) missing
D) departing

4.) Read the quotation from Michael Bryson. Chicago has really gotten behind "the practice of city farming," he said. Which word or phrase has the same meaning as "gotten behind"?

A) moved aside
B) pushed out
C) complimented
D) supported

Quiz #5
Letter _____
Score ____/4

Students put aside their tablets to read through their school yearbooks

1.Read this paragraph from the section "tagging Photos With Video Links."

> Experts still think that many high school students will want the traditional style of yearbook. They say technology may change, but books can last forever.

Please circle the paragraph from the introduction (paragraphs 1-4) that BEST supports the above paragraph.

2. Which selection from the article supports the idea that students have enjoyed hardcover yearbooks for a long time?

A) Students at Prospect High School set aside their smartphones and tablets for a few moments. Instead of reading on a screen, they read the paper pages in their yearbooks.
B) Yearbook sales have stayed high over the past five years. Experts say it is because class sizes have been getting larger at schools.
C) Pete Macabobby works at Wheaton Warrenville South High School. He helps students put together the school yearbook.
D) New Trier High School has a special ceremony each year for seniors. The school has a jazz band perform while students gather to write in each other's yearbooks.

3. What does the word "prefer" mean as used in the section titles "students Prefer Hard Copies"?

A) desire
B) favor
C) embrace
D) treasure

4.) Read this sentence from the section "Students Prefer Hard Copies." Yearbook sales have stayed high over the past five years. What does the author mean by the phrase "stayed high"?

A) become normal
B) increased
C) grown bigger
D) remained the same

Quiz #6
Letter _____
Score ____/4

Do vision problems mean trouble reading?

1.Read the following sentence from the article. The third grader zoomed through worksheets at school. He quickly became one of the best students. Which of these words, if it replaces the word "zoomed" in the sentence, would CHANGE the meaning of the sentence?

A) rushed
B) raced
C) dashed
D) slowed

2. Read the following sentence from the article. His teacher, Maygon Thompson, was puzzled. Which of the following is a synonym for the word "puzzled"?

A) enlightened
B) confused
C) informed
D) assured

3. Read the following sentence from the article. A 2010 report said that the department did not have enough people to give the tests. Why has the author included the statement in the article?

A) to show there is a great need for more schools to lower vision problems
B) to imply that there are not enough students for the vision tests
C) to show there is a need for more eye doctors
D) to imply that eye doctors are not needed in the Baltimore area

4.) What purpose does the section "Glasses Could Make A Big Difference" serve in the article?

A) It explains the connections between eyeglasses and reading problems.
B) It describes the difference between different types of reading tests.
C) It describes the types of eyeglasses 9th grade students like to wear.
D) It explains the different types of eye problems first-grade students have.

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