ABSTRACT

Dr. Timothy Murnen, Advisor

The key to improving reading education is to continually assess the best methods and forms of reading. Paper based text has been the primary method of reading instruction for the last hundred years. Thus it is important to evaluate the effectiveness of electronic text in terms of reading comprehension. Given this issue, this study was developed to answer the following driving question: Does reading electronic text on an iPad impact third grade students’ silent reading comprehension? Data was collected and compared from two comprehension assessments given to students after they read from two chapters on the same paper-based text and the electronic text. Another exploratory question examined was: Which features of the iPad did the students take advantage of? Data was collected through a short survey and observational field notes to answer this question.

The study took place over the course of two days during an hour of in-class instructional time. On the first day, half of the class read from an iPad, and the other half read from the same paperback book. Then all students took a short six-question comprehension assessment. The next day students switched groups and the students reading the iPad read the book and vice versa. The same procedures as day one were implemented on day two of the study. However at the end of day two, once all students were finished, they answered a post survey with four questions about their experiences with the iPad. Data were collected and compared.

After analyzing the data across both groups of students using the iPad and paper-based text, results showed that the difference in comprehension was not statistically significant. These findings should be taken into consideration when planning and implementing future research comparing the iPad and paper-based text. The exploratory observational field notes and survey
data provided insightful information to take into account when considering future use of the iPad in the reading classroom.
DEDICATION

The efforts of this thesis study are dedicated to all educators who devote their lives to benefit their students’ reading education. May this study encourage future research in the areas of technology and reading education. I hope this study is useful for current teachers and inspires future research.
ACKNOWLEDGMENTS

This thesis would not have been possible without the guidance of the chair of my committee, Dr. Timothy Murnen, as well as members of the committee, Dr. Cindy Hendricks, and Dr. Mark A. Earley. Your knowledge and suggestions have helped to complete this research study. I would also like to thank the participants, principal, and classroom teacher of the participants who supported this study and permitted it to be implemented within their educational community. Thank you to each and every individual who made this research a possibility.
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CHAPTER I. INTRODUCTION

Throughout the history of reading, educational books have changed a multitude of times through style, format and purpose. In the mid-15th century colonial reading began in America with the hornbook made of translucent cow or ox horn (Monaghan & Barry, 1999). As reading progressed, the Primers—the first books made of paper—were introduced in the 1800s. Shortly after, the McGuffey readers quickly became popular (McGuffey Eclectic Primer, 1909). In the early 1900s basal readers emerged, the most notable being the Dick and Jane series from Scott Foresman (Hendricks & Rinsky, 2007; Venezky, 1990). Today basal readers have evolved to become an anthology of author’s printed books, including teacher manuals with activities, websites and opportunities for differentiation. By the late 20th century, an explosion of excellent children’s literature worked its way into the classroom. Now, at the beginning of the 21st century, electronic books (e-books) are beginning to compete with or potentially replace paper-based forms of text.

Throughout history each of these reading materials has somehow led to readers comprehending text. Thus when considering any new materials that should be adopted in reading instruction, such as electronic reading devices, comprehension should be considered a primary factor. If electronic reading devices are to be adopted, they should lead to better comprehension than the previous paper-based text materials used.

With advancements in technology, the format and style of reading text is in the process of evolving. New forms of multimedia have become, “a unit of communication that may take the form of something written down but also a chunk of discourse, for example, speech, a conversation, a radio program, a TV advert, text messaging, a photo
in a newspaper, and so on” (Evans, 2005, p. 8). One form of multimedia—the e-book—allows readers to use different modes such as listening, speaking, and viewing to comprehend what they are reading. The era of digital text is upon us, which means the materials being used to read and comprehend are evolving.

New 21st century technology reading devices now have the capability to engage readers through multimodalities. Progressive changes are beginning to take place within classrooms. Electronic devices such as computers, laptops, Smart Boards, electronic-books, Kindles, and iPods are being introduced to students and in many cases teachers as well. One of the newest electronic devices on the market is the iPad. This is essentially a giant iPod that operates with the touch of a finger. It has capabilities such as the Internet, music on iTunes, and multiple other applications, one of which is iBooks. However, unlike the tiny iPod, the iBooks application is a large virtual bookcase that allows the reader to download books, some of which are free and some which cost money. These books are not the traditional paper-based books; they have features such as sticky notes, instant definitions, and the capability to read the text out loud to the reader. These are new features that have not been seen or used before by students. They may allow students to more efficiently and effectively read a piece of text that they may not have been able to understand if not for these quick convenient applications. The introduction of handheld e-book readers such as the Kindle or iPad suggest that the approach to reading is changing; because of technology readers are coming to comprehend through engaging new and multiple modalities. Therefore education needs to assess reading materials and their effectiveness, and if necessary, adapt new materials in order to progress.
Statement of the Problem

The key to improving reading education is continually assessing the best methods and forms of reading. Paper based text has been the primary method of reading instruction for the last hundred years. There are currently many alternative forms of print incorporated into technology. One example is reading print from digital devices such as the iPad or the Kindle. It is the educator’s job to adapt to changes in technology and determine whether new forms of reading materials, such as the iPad, will increase students’ comprehension in comparison to paper-based text. The issue at hand is whether this technology is beneficial to reading instruction and should be adapted or if the current state of reading instruction is sufficient. Further research is required in order to understand how these technologies benefit reading education. Before educators adapt new methods and break away from traditional reading orthodoxy, there must be evidence-based research that shows improvement in comprehension (Grant, 2004).

Research Question

This study was developed to answer the following research question: Does reading electronic text on an iPad impact third grade students' silent reading comprehension? There have been many studies done about the effect e-books have on motivation and research supports the theory that technology does motivate students (De Jong & Bus, 2003; Doty, Popplewell, & Byers, 2001; Shamir & Korat, 2007). However, if teachers are to incorporate e-books into their classrooms, they should be sure they also have an increased positive effect on reading comprehension. Reading comprehension is a core component to being an effective literate reader. Reading is an act of making meaning. Reciting text on a page is only one aspect of reading; a true reader is able to
make meaning of what he/she reads and interact with the text (Rosenblatt, 2005). Therefore, to bring e-books into the classroom and revolutionize education, research must be conducted to determine whether features of the e-books help students to comprehend text more effectively and efficiently than traditional paper-based text.

Another exploratory question asked was: Which features of the iPad did the students take advantage of? This question was explored and noted throughout the study through a short survey, as well as observational field notes. The data collected were used to justify claims about how and why the iPad did or did not increase reading comprehension.

Rationale

The analysis of the iPad’s application iBooks is necessary for future educators to understand the degree to which this technology helps or hinders student reading comprehension. Woody, Daniel, and Baker (2010) state, “It is important to evaluate electronic texts as learning tools before recommending or requiring their use as a substitute for print textbooks (p. 945). This study provides educators with current research and results that indicate whether students’ comprehension improves or drops because of features of the iBooks in comparison to paper-based text. It also explores the impact of these features (i.e. instant definitions, sticky notes, etc.) This investigation will provide insight into the effectiveness of the iPad as opposed to traditional text.

Definition of Terms

The following is a list of terms relevant to this study, their definitions, and an explanation. These will be referenced throughout the study. In order to fully understand
the technical vocabulary incorporated into the topic of the study these terms may be referenced.

**Traditional reading:** Levy points out that until recently there was, “The assumption that the term ‘reading’ relates almost solely to an ability to decode printed text within the context of paper-based media” (Young, 2009, p. 75). For the last one hundred years reading has primarily taken place utilizing the media of paper-based text. Traditional reading in this study may be referenced in terms of reading on paper-based media.

**Multimodal Literacy:** “That meanings are made, distributed, received, interpreted and remade in interpretation through many representational and communicative modes—not just through language—whether speech or as writing” (Jewitt & Kress, 2003, p. 1). Multimodal literacy is how readers make meaning through reading, writing, listening, speaking, etc. —simultaneously—engaging more than one mode at a time.

**Electronic book (e-book):** These are “books available in forms ranging from toy inspired books, CD-ROM storybooks, online text, and downloadable books and documents” (Larson, 2009, p. 255). The simplest definition for an e-book is any book that you read on any electronic device.

**iBooks:** The iPad includes the capability for users to download e-books from an application called iBooks. Some of these books cost money and others are free (Mossberg, 2010).

**iPad:** The iPad is Apple’s newest device which has many capabilities of a computer. Young describes it as a “new tablet computer more like sketching on a notepad
than typing at a desk” (Young, 2010, p. 1). It is important to note that this tablet computer has many applications that are downloadable; some are free and some cost money.

**Interactivity:** This is the ability for students to make connections and interact with the book being read (De Jong, & Bus, 2003).

**Group Comparison Design:** A group comparison design is simply taking two or more groups that are different, and then comparing all of the groups on one thing to determine what may be causing the groups to have different results (Mertler, 2006).

**Non-Directional Research Hypothesis:** Mertler (2006) explains that this is a “hypothesis that states that there will be some sort of effect (or difference or relationship) discovered in the results of the study without stating the nature of the difference or relationship” (p. 235).

**Limitations**

There are a number of limitations involved in this study. For example the location, the number of iPads accessible, the number of participants, and the level of the book selected could all affect the validity of the study. The investigator in this study conducted research in a familiar teacher’s class at a local school. Thus the investigation may be considered a convenience sampling. Although this may seem like a limitation, it can also be seen as a benefit.

The small sample size of individuals involved in this study could possibly make results less valid. The sample size consisted of one class of students in a suburban school district. In addition, there was limited ethnic diversity in this suburban school. Thus the results of the sample may not be a completely accurate representation of all third graders from different backgrounds.
Due to a limited budget and a limited access to new technology, only ten iPads could be obtained from Bowling Green State University. It is possible that results could differ if the entire class were able to utilize all of the iPads at the same time and then all of the paper-based text books at the same time, versus taking turns using the iPads and paper-based text.

Results for comprehension might also differ if each student were able to read a book and i-book at his/her instructional level. However because of constraints with the availability of texts for the i-book, all students read the same text from a book at the average reading level for the class of third grade students. Also, because of the newness of the iPad and iBooks, there was not ample books at a variety of instructional levels for use in this study. Scores will, however, be consistent across paper-based text and the iPad because the students will be reading from the same book on both.

The text used in this classroom was one typically used by the teacher with all students, but the text itself was not necessarily at the independent reading level of every student in the class. As a result the actual classroom teacher was allowed to walk around and answer any questions that students have about the story just as if this were a typical instructional lesson. All students also were allowed to consult their resource binder which had information about key vocabulary and pre-reading notes that the teacher had reviewed with all students before the study began.
CHAPTER II. REVIEW OF THE LITERATURE

In the past 15 years, a significant amount of research has been done on the effect of electronic reading devices on students’ skills and reading motivation, but thus far, there have been few studies done utilizing the latest e-book readers, such as the Kindle and the iPad. This study was developed to answer the following research question: Does reading electronic text on an iPad impact third grade students' silent reading comprehension? Another exploratory question investigated was: Which features of the iPad did the students take advantage of? Grant (2004) claims that, “Whether electronic books, CD-ROMs, or interactive media are beneficial in teaching reading should be determined on the evidence that they aid reading comprehension. Reading is worthless unless one comprehends” (p. 303). This review of literature presents the theoretical orientation, significant historical research, and contemporary research about the uses of electronic text in the classroom to increase silent reading comprehension.

Theoretical Orientation

*Literacy and Comprehension*

Short, Harste, and Burke (1996) define literacy as: “The process by which we, as humans, mediate the world for the purpose of learning….To mediate the world is to create sign systems—mathematics, art, music, dance, language—that stand between the world as it is and the world as we perceive it. These sign systems act as lenses that permit us to better understand ourselves and our world” (p. 14) In this definition, literacy is not merely the ability to read or write at a basic functional level. Essentially, literacy is the process by which readers make meaning of the surrounding world. It is the process by which they come to understand, or comprehend, the world around them. This concept of
comprehension is at the core of reading. Comprehension is a central purpose of reading; thus it was included in the 10 evidence-based best practices for comprehensive literacy instruction (Gambrell, Malloy, & Mazzoni, 2007). It is what makes reading an act of literacy—an act of meaning construction.

One way to understand how students comprehend is through the theory of deep reading. Wolf and Barzilai (2009) refer to reading comprehension in terms of *deep reading*. They claim that, “Little is given to the reader outside the text. For that reason, readers must engage in an active construction of meaning, in which they grapple with the text and apply their earlier knowledge as they question, analyze, and probe. In the process, they learn to build knowledge and go beyond the wisdom of the author to think their own thoughts” (p. 34). In essence, this means that reading comprehension should take on a deeper meaning than just reciting words on a page. If students are interacting with the text, then they are likely to engage in what they are reading and have a deeper comprehension (Larson, 2009; Wolf & Barzilai).

*Multimodal Literacy*

According to Short, Haste, and Burke (1996), “All literacy events are multimodal, involving the orchestration of a wide variety of sign systems” (p. 16). Multimodal literacy is making meaning of the world around through multiple modes, simultaneously. Jewitt and Kress (2003) echo this definition of multimodal literacy by explaining that, “meanings are made, distributed, received, interpreted and remade in interpretation through many representational and communicative modes—not just through language—whether speech or as writing” (p. 1). Multimodal literacy occurs whenever readers utilize more than one mode available to help them better comprehend what they are reading.
Again it is important to stress that all literacy events are multimodal; however, some literacy events provide opportunities for learners to utilize modes more actively and comprehensively than others.

The term *multimodal literacy* may seem new and mysterious to many in literacy education circles, or it may get equated with multimedia and new technologies; there is certainly a relationship between multimodal literacies and multimedia, which this study will explore. However, the term has been in use since Short, Harste, and Burke (1996), and indeed appears in the their earlier edition of the same text (Harste, Short, & Burke, 1988). Beyond the use of the term, however, the reality is that humans have been multimodal for a long time, and even traditional literacy activities such as classroom story time have always engaged literacy multimodally. For example, when a kindergarten teacher reads a children’s picture book to a class, she or he reads orally, speaking the words out loud as she points to each word on the page. The teacher aims the book outward toward the class so the children can see the pictures while the text is being read. Students hear the word, see the piece of text to which the spoken word refers, and see the picture on the page that reinforces the plot, characters, and themes. The students listen actively and attentively, constructing an understanding of the text with every turn of the page. And when the teacher gets to a key passage—perhaps the tag line that gets repeated throughout the text, (“I do not like green eggs and ham,” for instance)—the students begin to chime in as if on cue (“I do not like them, Sam I am!”) (Seuss, 1960, p. 16). These are all ways in which the teacher is reading the text and working in more than one mode—speaking, listening, viewing, visually representing, tactiley touching, and responding—while engaging the students to read multimodally as well. This is a very
multimodal literacy event, although none of the latest multimedia gadgets are being used in this scenario.

While humans have always been multimodal (Winters, 2009), constructing meaning through multiple modalities such as cave paintings, hieroglyphics, spoken word, text on paper, etc., traditional multimodal literacy events such as the kindergarten teacher reading to the students in his/her class have begun transforming into a new contemporary multimodal literacy events that involve the uses of different forms of media.

*Multimodal Texts*

One of the newest forms of multimodal literacy is in the form of the multimedia technology, e-books. However, the media of the e-book itself does not construct the meaning for the reader. The reader must utilize different modes (listening, responding, viewing, etc.) to construct meaning of the text. The e-book engages the reader through the use of multiple modes simultaneously. The reader reads, sees, hears, touches, asks questions, and receives immediate feedback and information. These books are a very multimodal form of text; they have the capability to engage readers in multiple modes simultaneously, taking the reader to deeper levels of comprehension. E-books engage the reader in a new way that paper-based books cannot. This suggests the possibility that with more modes being used in this contemporary multimedia context, a student’s comprehension will be deeper.

The extensive design and visual elements present in electronic books require a shift in the strategies and skills that readers use (Serafini, 2010). In the recent past, there has been controversy over whether or not these design elements will be distracting or motivating to students; however, there is research (Matthew, 1997) that supports e-books
as being a motivator to students, therefore helping them to better comprehend what they are reading.

Motivation

Motivation to read has also been an important factor in helping students to better comprehend what they are reading. Edmunds and Bauserman (2006) conducted a study in which they asked fourth grade students what motivated them to read. The researchers found that access to books was a primary factor in student success and motivation to read. Access to books could come from a community library, a classroom library, or a library at home. The greater access that students have to books, the larger the assortment of books they will be able to choose from. This means that more than likely each individual student will be able to find something that fits his/her needs and interests. With so many different choices of books that fit students’ interests, students will choose to read more often on their own (Edmunds & Bauserman). Furthermore, new technologies such as e-books allow instant access to a variety of books sorted by genre, author, and ability level. These virtual libraries of e-books are new to students and therefore students are immediately interested and engaged in the technology. The concept of libraries transitioning to a virtual format has become a possibility for the future (Church, 2006).

Technologies such as e-books incorporate many forms of media that excite students to read. Yet, it is not just a gadget that motivates student. It is also a real way to get readers to read and understand what they read.
Significant Historical Research

The Emergence of School Reading Texts

To determine whether e-books are a positive advancement in reading education, it is beneficial to understand the evolution of educational media (books and computers) up until the 21st century technology. Reading has evolved from the hornbook, to the primer, then to the basal; now a new form of basals dominates the reading curriculum. All of these types of reading materials have changed in terms of format and style. For example, originally the hornbook was made from ox and cow horn; then the primer was printed in paper. Later basal readers such as the Dick and Jane series would develop in format to become a compilation of books to serve the purpose of a modern day basal. All of these changes throughout history need to be recognized to understand where new forms of reading media are headed in terms of technology, e-books and the iPad.

In the United States, reading instruction truly began in the colonial era around the mid-15th century (Monaghan & Barry, 1999). The primary source of reading at this time was a hornbook published as early as 1493. Essentially this was a wooden paddle covered with ox or cow hide. On the leather were things such as: the lower and uppercase alphabet, lessons on vowel and consonant combinations, and the Lord’s Prayer (Monaghan & Barry). Religion played a strong role in the reasons people learned to read at this time period; many people learned to read just so that they could read the Bible.

As early as 1655 the Primer appeared. It was a true book with paper pages. “Primer” means primary— beginning to learn how to read (Monaghan & Barry, 1999). The book is true to its name; it was used to learn to read and usually incorporated prayers or Bible teachings in order to teach reading. In the early 1800s The New England Primers
became the main method of learning the alphabet, which eventually leads to learning how to read. Reading instruction focused on learning the alphabet, “Children learned the letters of the alphabet, sounds made by the letters, and words that corresponded to the letters” (Hendricks & Rinsky, 2007, p. 2).

The colonies began using spelling books, also known as Spellers, in the 18th century. These were similar to primers, containing lessons and tables of lists. These spellers were considered the first textbooks within the United States (Venezky, 1990). Along when the speller was introduced a reader was also introduced. The reader was created for people who could already read. Much of the book consisted of essays (Monaghan & Barry, 1999).

In the 1870s, The Monroe Readers were compiled by Lewis Baxter Monroe. They were designed around, “Oral reading and elocutionary principles, and— with their accompanying teacher guide— the last step in the development of the scripted lesson plan” (Venezky, 1990, p. 24). These were one of the last textbook series written and compiled by an author; future textbook series would be built around publisher’s demands.

In the mid 1800s there was a switch to focus on meaning, which meant the format of the reading media evolved again. The McGuffey Eclectic Readers were published. These were available in a series of textbooks with a teacher edition (Monaghan & Barry; McGuffey’s Readers, n.d.; Venezky 1990). Some may consider this the first version of what is now a basal reader (McGuffey’s Readers; Monaghan & Barry). The alphabet was put into sequence and children were taught how to say words. Correct pronunciation and syllabication were emphasized with diacritical markings (McGuffey’s Readers;
Monaghan & Barry). These are markings that distinguish the specific sounds each letter in a word should make.

From 1910-1940 there was again a change in the focus of reading to silent reading, which altered the format of the reading media. After the McGuffey Eclectic Readers came the Scott Foresman basal series; these books, more popularly known as the Dick and Jane series, are widely known and still read occasionally today (Hendricks & Rinsky, 2007; Monaghan & Barry, 1999). These books were small individual books that contained two well-recognized characters, Dick and Jane. The books were written using highly controlled sight word vocabulary that children learned by using the look-say method. Young readers would memorize words by looking at the word, saying the word, and then remembering the whole word rather than sounding out the word. They are commonly known as the first basal series because they were adapted by the majority of schools in the United States at this time period and were used to teach beginning readers to read on their own.

Eventually basals adapted and developed into a textbook style. A publisher, as opposed to an author, writes the basal textbooks used today (Venezky, 1990). These newer basals are a compilation of individual children’s books. They include weekly lesson plans and alternative activities such as online sources, games, and differentiation activities that teachers may choose to use in their classroom (Shannon & Crawford, 1997). These basals are commonly used in the classroom to make sure that all students in the same grade are learning the same materials while meeting the same standards (Shannon & Crawford). Basals have become resources that teachers can turn to for guidance as to what to teach and when to teach it. They also provide different
supplemental materials for teachers to use. Students not only use these books to read, but to define words and complete activities. Basically every school district has purchased some form of a basal for their classrooms today (Shannon & Crawford).

**Overlap of Technology and Education**

While basals are being used at school, students that have grown up around the intermingling of traditional publishing and the personal computer (PC) have begun using e-books and other variations, such as interactive video games, to read and learn within their own homes (Larson, 2009). Larson states that teachers and researchers need to “address the discrepancy between the types of literacy experiences students encounter at school (paper pencil, and print texts) and those they practice in their daily lives outside of the school environment (Web 2.0)” (Larson, p. 255). One example is the *Arthur* book series. Yet, the *Arthur* book series became popular through a TV show series. After it became popular, interactive video games were developed around *Arthur*. The *Arthur* video game has a reader component similar to that of an e-book. Eventually the *Arthur* story was transformed into an e-book. The e-book offers opportunities to learn with *Arthur* that the student does not have from reading a basal at school. It allows the students to utilize modes such as touching, listening, interacting with, and responding to. The e-book is an educational form of multimedia that allows students to engage in multimodal learning (Larson; Levy, 2009). To better understand the e-book and its transformation in reading education, the history of multimedia should be explained.

**The Evolution of Multimedia**

Although the 21st century appears to be the era of rapidly developing technology innovations, in reality technology has been around since 1836 when the printing trade
began transformation. Papermaking machinery, stereotyping ink rollers, the steam press and other inventions were among the first technology innovations that shaped modern literacy practices (Venezky, 1990). Since then, over the past 150 years technology has evolved and begun to find its place inside the home and the classroom. The Personal Computer (PC) was a major innovation that appeared around the 1970s.

The PC was a desktop computer that everyday people could use for typing, but it contained only a sliver of memory that is available to computers today (Valdez, McNabb, Foertsch, Anderson, Hawkes, & Raack, 2000, p. 2). These computers were large and bulky; they sat on a desk and were used to type. Most of these computers looked like a giant box with a black screen and green typing. However, this was truly the beginning of the modern technology evolution for literacy.

In 1971, Michael Hart began the first real step to a public sharing of literature online; it was and still is called Project Gutenberg. Hane describes the Gutenberg Project as “an ambitious effort to develop a free public library of 10,000 public domain e-books” (Hane, 2004, p. 28). The original Project Gutenberg was created to preserve existing pieces of literature, such as the U.S. Declaration of Independence. The project is now 33 years in the making but still continuing to grow. The project has recently transformed into what Hart calls Project Gutenberg 2 or PG2. This world e-book library contains existing books such as literature found in schools, universities, or professional and religious organizations (Hane).

In the mid 1990s, technology transformed again; “Word processing evolved into desktop publishing that allowed information to be shared in ways previously available only to professional publishers. New databases such as Access, FileMaker Pro, Paradox,
and DB2 allowed people to see organizational possibilities available through the use of technologies” (Valdez, ed al., 2000, p. 9). CD-ROMs also became available at this time. The words “interactive,” “hypertext,” and “hypermedia” became commonly used terms. This quickly led to the World Wide Web and public sharing of data.

Technology has now advanced even further. New technology innovations include but are not limited to: Interactive Whiteboards, Smartphones, iPods, and electronic readers. This new technology comes in all different formats and serves different purposes. Some of the changes in the format and features of technology such as e-books may help to promote greater reading comprehension (Matthew, 1997).

Electronic Readers and Comprehension

In the beginning of the 21st century electronic readers started appearing (Woody, Daniel, & Baker, 2010). Electronic readers began on the computer in the form of a textbook similar to that of Project Gutenberg except students would buy a CD-ROM with a specific textbook on it; usually these would be textbooks required for college courses. A few years later the electronic textbook became a downloadable item that could be purchased and then downloaded from the Internet.

Electronic readers are the most current devices that target literacy. These technologies were created to be a new form of book on which the reader can access text. These are the first electronic devices that were created to purposely look, feel, and act like a book (Mossberg, 2010). Hence these reading devices have the potential to be the reading instruments of the future. Books are still made and sold in paper form. However, a new alternative is to read print on a screen (Korat, 2010; Larson, 2009; Levy, 2009; Mossberg).
To fit all of the text on the small screen, the format and style of text had to change on the electronic readers. All changes in format and style were purposely designed by companies to improve the reading experience to promote and sell these products. Matthew (1997) states that, “Changing the medium of presentation from print to electronic impacts the ways students learn and may impact their reading comprehension” (p. 1). In many cases the features, format, and the style of the electronic reader’s design may have an impact on how well the student understands/comprehends what he or she is reading. Matthew created a study to highlight the impact that changes in the medium had on comprehension.

Matthew’s (1997) study involved two experiments that were designed to show whether or not electronic text had an impact on reading comprehension in third grade students. The first experiment compared reading on CD-ROM to print versions of books and then assessed students based upon open-ended questions. The second experiment again compared CD-ROM to print versions of books but then assessed students based upon story retellings. There was no statistical significance found in the first experiment; however, in the second experiment CD-ROM stories were found to significantly increase student reading comprehension (Matthew).

Despite research like Matthew’s (1997), the ability to read digital texts is still unrecognized in the literacy curriculum; many readers have yet to adopt the devices (Marsh, 2003; Pahl, 2002). Some of the changes in format and style as well as the features of e-books are presented in this section to help better understand what reading is evolving to and whether these changes may promote greater reading success and comprehension or not.
Forms and Features of E-books

E-books can be found on different forms of media such as CD-ROM, online, the Kindle, and the iPad. Most e-books contain similar features and formats that will be discussed to understand how e-books might increase comprehension in reading (Larson, 2009).

Traditionally, on paper-based text, the reader reads left to right and top to bottom. Electronic readers work similarly. Many times on electronic textbooks there will be two columns on a single screen to represent the two pages in a book. These digital pages literally appear to look similar to that of a paper page (Mossberg, 2010). Creators of e-books had to create the illusion of a book to assist readers in adapting to these new technologies. The format of reading will be different because it is presented through a new medium, the e-book. Yet, the creators of these devices kept some similar features of the traditional paper-book in order to make reading on these new devices second nature to readers (Mossberg).

Other changes from paper-based text to e-books are features that include visual appeal, audio collections, video clips, activities, and links to supportive material on other websites (Woody, Daniel, & Baker, 2010). All of these features allow students to learn in a multimodal way. Students are able to construct meaning from each of these features and further their comprehension of the text. These features are similar to the suggestions found in basals; however, the features are all accessible on the e-book versus having to find a computer to access the suggestions of sources listed in a basal. Accessibility is an advantage of e-books as well. Absolutely anywhere there is a computer, readers can
access their text. This is much easier and lighter to carry around than the traditional textbook.

All of these formats and features are continually improving, being made more efficient and effective to entice readers. All of the different e-book mediums contain their own features similar to the ones previously mentioned. One of the most improved and adapted e-books is called iBooks. This is an application that can be found on, the iPad.

*iBooks on the iPad*

The iPad, including the application iBooks, is an extremely new innovation; it is less than a year old (Mossberg, 2010). There are several unique features on the iPad. The layout of the page has changed again from other e-books so that on the application iBooks readers can swivel the device to switch layout from portrait to landscape. Text and illustrations are now in color. The text is interactive in that it allows readers to post sticky notes, highlight text, and instantly retrieve definitions with the touch of a finger.

Some of the e-books offered are free and others cost money. There are two basic structures of the iPad’s application iBooks: the bookshelf layout, and the book layout itself, with pages that look and feel like real pages when the reader flicks a finger across it. Mossberg (2010) describes some details of the iPad’s application iBooks: “Its library screen looks like a wooden bookcase, and when you turn a page, it curves like a paper page and even shows the text on the other side bleeding through. When you hold the iPad horizontally, iBooks switches to a two-page view with a rounded rise in the middle, like a page book’s binding” (p. 1). These intricate details that replicate a traditional paper text may finally entice readers to adapt to the electronic device and benefit from its additional features.
Despite all of the changes and benefits noted above, electronic books such as the iBooks application are just now being researched, studied and adapted. Many people still feel comfortable reading paper-based text. There has not yet been enough research provided by anyone showing the benefits, such as increased comprehension and motivation, as a result of the additional changes in format, style, and features previously mentioned. If electronic books do increase reading comprehension, they are more likely to be adopted into the educational field to provide the best reading instruction possible to students. Contemporary research about the usage and benefits of electronic readers will help in understanding what this study has to offer.

Contemporary Research on E-books and Traditional Print Texts

*E-Books and Traditional Print Texts*

The topic of electronic readers is currently being researched within the education and technology fields. The following studies (Korat, 2010; Matthew, 1997; Shepperd, Grace & Koch, 2008; Woody, Daniel, & Baker, 2010) outline some of the differences between electronic reading devices and paper-based text. These studies compare the advantages and disadvantages of electronic reading devices. The conclusion of this section explains how features of the iPad may potentially increase reading comprehension over both paper-based text and other electronic readers.

One study conducted by Shepperd, Grace, and Koch (2008) evaluated electronic textbooks (e-books) used in college courses. Students had the opportunity to purchase the electronic version of their textbooks as opposed to traditional paper texts. The textbooks (both electronic and paper) were used throughout the semester. At the end of the study, an exit survey was given indicating whether the electronic text improved the students’
reading experience or not. Also, the students’ grade point averages were collected to compare academic success with the electronic text versus the paper text. There was no statistical significance in grade point average. However, students did indicate that they did not prefer the electronic text due to factors such as convenience, portability and access. To read this book, students were required to be sitting at a desk due to the fact that e-book was on a traditional computer. Students indicated this made reading the course text seem uncomfortable and not as enjoyable as lying on the couch or in bed and reading a textbook (Shepperd, Grace, & Koch).

Beyond convenience, other aspects of electronic text have been explored and shown an increase in word recognition and vocabulary skills. In fact many researchers believe that electronic text is best used when adding word recognition and vocabulary skills to the reading lesson. Korat (2010) conducted a study which “investigated the extent to which a considerate e-book can support kindergarten children’s language (vocabulary and story comprehension) and word reading compared to first graders” (p. 26). It is important to note that the e-book being referred to in this study was an electronic book displayed on a PC computer. Results from Korat’s study indicated that there was no significant difference in comprehension between students who used the e-book on the PC and who used the paper-based text, although students who read from the e-book did have significantly higher scores for word-meaning (Korat).

Matthew’s (1997) research is another well-known study that yielded results where the reader’s comprehension increased with electronic text. In this study students read from either CD-ROM or print versions of books. Students then retold the story to measure how well they comprehended the story. The study found that reading
comprehension can be increased by the use of electronic text. Matthew states, “CD-ROM storybooks provide a multisensory learning experience that enables students to literally interact with the text and illustrations and to actively process the text, both of which lead to personal understanding of the text” (p. 5). Through retelling students were able to express what they had learned through the multisensory experience they had with the CD-ROM storybook and their comprehension results proved positive. Also, the study found that graphics and sound effects do not distract students’ reading or interfere with student silent reading comprehension but instead allow students to interact with the text and illustrations (Matthew).

In 2010, Woody, Daniel, and Baker completed a study in which participants were college students enrolled in a psychology class. They were trying to determine if there were gender differences in the selection and uses of e-books. Their results indicated that there were no gender differences; however their results did indicate that there was a positive correlation between the students who were familiar with the computer medium and those that preferred to use the e-books (Woody, Daniel, & Baker). Students read on a digital format where they looked at printed text on a screen. Students who were unfamiliar with the e-book format seemed to be hesitant at first with a different format; however, after students became accustomed to the format of e-books they actually preferred to use them.

The iPad

All of these studies lay out some of the pros and cons of using e-books. However, the iPad, may solve many of these issues with its overall size and design (Mossberg,
The following research supports specific features of the iPad and how they benefit readers.

The iPad is small and lightweight which allows for easy access to carry it around or lie around and read comfortably. It is the most convenient portable device on the market today. Rather than going through the tedious process of opening a computer lid and going online, the reader can flip on the iPad in a second (Young, 2010).

It also has features such as sticky notes, highlighting, and instant definitions (Mossberg, 2010). These are new features that have not been seen or used before by students in the form of a digital reader. They allow students to more efficiently and effectively interact with a piece of text that they may not have been able to understand if not for these quick convenient applications (Grimshaw, Dungworth, McKnight, & Morris, 2007). These are tools that may very well lead to better comprehension.

One feature of iPad, which may lead to better vocabulary comprehension, is the ability to instantly define any word while reading. Aust, Kelly, and Roby (1993) make the claim that students are more likely to consult an electronic dictionary than a paper dictionary. The iPad gives the reader the definition of a word with the tap of a finger, eliminating the process of going online to look up a word. Ultimately this could very well increase students’ reading vocabulary and comprehension of the passage.

Mossberg (2010) compared e-books such as Amazon’s Kindle, iPad’s iBooks and the Nook. He reviewed each of the devices and stated that although they are all similar they have slight differences. Overall he claimed,

Apple’s iBooks application visually is the slickest of the three. Its library screen looks like a wooden bookcase, and when you turn a page, it curves like a paper
page and even shows the text on the other side bleeding through. When you hold
the iPad horizontally, iBooks switches to a two-page view with a rounded rise in
the middle, like a paper book’s binding (p. 9).

All of the contemporary research presented discusses the pros and cons to
utilizing e-books for reading in education. Contemporary research on the newest features
of the iPad support the use of the iPad in determining whether these new innovative
features have an impact on reading comprehension or not.

Summary

Teaching students to read and understand what they are reading is not a simple
process. It is helpful to look at previous and current research and theory as to what
methodology should be used. Motivation and comprehension are two of the most
important components to take into consideration when teaching students to read.

Research lends that specific features of e-books may increase student silent reading
comprehension. The iPad is the most current and seemingly most advanced e-book to put
to this test. If proven successful then awareness of the positive attributes of these
electronic-books may increase and be utilized to their full potential in the classroom.

Ultimately the goal is to increase student motivation and comprehension to make a world
of literate readers who read for pleasure and knowledge.
CHAPTER III. METHODS AND PROCEDURES

Framed against the evolution of reading in print and electronic media illustrated in chapter two, this study was developed to answer the following driving question: Does reading electronic text on an iPad impact third grade students’ silent reading comprehension? Another exploratory question asked was: Which features of the iPad did the students take advantage of?

The study involved comparing the comprehension level of reading paper-based text as opposed to reading the same book in electronic form on the iPad. There have been many studies conducted about the effect e-books have on motivation and research supports the theory that technology does motivate students (De Jong & Bus, 2003; Doty, Popplewell, & Byers, 2001; Shamir & Korat, 2007). However, if teachers are to incorporate e-books into their classrooms, they should be sure they also have an increased positive effect on reading comprehension. Reading comprehension is a core component to being an effective literate reader. Therefore, to bring e-books into the classroom and revolutionize education, research must be conducted to determine if features of the e-books help students to comprehend text more effectively and efficiently than traditional paper-based text.

The PC-based electronic textbook currently does not meet all of the needs of students in the classroom. However, the iPad’s application, iBooks, is a new alternative to the electronic textbook, which will allow the classroom to enter the 21st century. This study was designed to compare paper text and the iBooks’ electronic text.
Methods

Research Design

This study used a switching replications research design, which Trochim (2007) argues is one of the strongest types of experimental research designs. In a switching replications design, there are two groups. One group is the control group and the other group is the treatment group. After implementation, the groups switch roles and the control group becomes the treatment group, and vice versa. The study is then replicated within these new groups. The goal here is that all students have an opportunity to be in the treatment group (Trochim). In the switching replications experiment for this study, one group was a control group, where the students read paper-based text. The second group was an experimental group, where the students read on the iPad. Both groups took a post-assessment after reading Chapter 1 of the study to determine how well they understood what they read (See Appendix A). Also, both groups took a post-survey to determine previous experiences with the technology and reactions to using the iPad (See Appendix B). The roles were then switched for Chapter 2 and the experimental group became the control group and vice versa.

Participants

Participants in this study included one class of third graders. This class represented a range of below average, average, and above average readers. By using a switching replication research design, each student in the class had the opportunity to read using the iPad as well as with paper-based text. Within the time frame for the completion of this thesis, one classroom provided an acceptable amount of data for this study. The classroom used in this study was selected based upon a familiar teacher’s willingness to
participate; thus the sample used could be considered a convenience sample. This classroom included students with a large range of ability levels.

This study also required both student and parent permission before any assessment could take place. Therefore the entire class received a letter of consent (See Appendix C), which had to be signed and returned by the parent before the study could begin. Also, student participants signed their own letter of agreement (See Appendix D), verifying that they were willing to participate in the study.

Instrumentation

iPads

In this study iPads were utilized. The iPad is a thin electronic tablet that measures 7.5 by 9.6 inches and is just half an inch thick. It weighs about a pound and a half and has a flat touch screen. The iPad is similar to a computer; however, there are things the iPad can do that a computer can’t and vice versa. The iPad runs applications—small programs that differ from the typical programs found in computers. These applications range from games, to multimedia entertainment (music and video), to utilities such as alarm clocks and weather information and applications to track health and fitness, to social networking applications that enable a person to read email and interact with others instantly, to music, and much more. It also includes an e-book reader application called iBook that enables the user to read books on the iPad. Obviously, these applications are designed to allow the iPad to serve multiple purposes. The iPad also has wireless Internet access. While it has capabilities of creating documents, it does not yet have the same word processing components as a computer.
iBooks Application

iBooks is Apple’s version of an e-book reader application that enables the user to select a book from a virtual bookshelf of titles and read the text as if he or she were turning pages in a real book. It also allows readers to download books, some which are free and others which cost money. While it replicates the look and feel of a traditional paper textbook, it has added features to enhance and scaffold the reading experience, such as virtual sticky notes, instant definitions, and highlighting.

The e-book (the electronic version of the children’s book being read in the class) used in this study was pre-selected for students rather than allowing them the option to choose. To be consistent with the teacher’s curriculum, the book chosen for students to read was one typically selected to be read independently by the class. The book was at the third grade reading level, which was a limitation of this study; ideally students in third grade would independently read a book at the second grade level. Due to this limitation, the classroom teacher walked around the classroom and answered any questions that students had about the story just as if this were a typical instructional lesson and students were allowed to use their reading binders.

Reading Binders

Reading binders are a way of taking notes. Students’ reading binders are used in this classroom as a pre-reading, during reading, and post-reading resource. The teacher in this classroom often has students take notes and review important vocabulary words from books before students begin to read the books. In this case, most students had taken notes and reviewed some important vocabulary words from Ramona with their teacher that
pertained to chapters one and two before beginning to read the chapters. All students in both groups had access to their reading binders to assist them while reading this text.

Figure 1

iBook: Apple’s e-book Reader

![E-book](image)

The e-book that was selected was *Ramona Quimby: Age 8*, by Beverly Cleary (1992). To access the e-book, students must touch the icon representing iBooks. Students were then looking at a library bookcase. When they click on the book, it enlarges. The book appears as one page if students hold the iPad vertically, and appears as two pages side-by-side (just like a real book) if students rotate the iPad horizontally. To turn the pages of the book, students merely have to touch the corner of the page they are trying to turn and slide or flip their finger across the edge of the page. The book *Ramona Quimby: Age 8* did contain pictures that still appear in the iBook version. Also, if students are viewing
the table of contents on iBooks, they can touch a page and iBooks will take them to the exact page they touch; or the can touch one of the hash marks across the bottom of any page any quickly move to another page or chapter of the text. Overall the book looks identical to the paperback book; however, the iBook offers applications that allow readers to manipulate the text by making it bigger or smaller, highlighting the text, posting sticky notes, and retrieving the definition of words instantly by touching a word.

Figure 2

Paper-Based Text

The paper-based book selected was identical to the electronic book chosen, *Ramona Quimby: Age 8* by Beverly Cleary (1992). The paperback text was an older version of Ramona; however, it was worded identically to the e-book version. The paper-back book was a series of black and white pages bound in a book. There was a table of contents at the beginning of the book. Students read from the paper-book just as they would any
other paper-back book. It was 179 pages long; this was the same number of pages as the e-book version of the book.

Comprehension Assessments

Identical researcher-constructed comprehension assessments (See Appendix A) were given to students reading paper-based text and text on the iPad. These assessments were identical to analyze results and make comparisons across the groups. The assessments included both literal and inferential types of questions from the text. They contained a series of six questions; three literal and three inferential questions for both chapter one and chapter two of *Ramona Quimby, Age 8*.

Post Survey

A post-survey was given after the students used the iBooks (See Appendix B). There were four questions in this post survey. The questions were developed to help answer the exploratory question in this study: Which features of the iPad did the students take advantage of? This question was explored and noted throughout the study through a post survey and observational field notes. The survey questions were developed based upon relevancy to the exploratory question. The questions helped gain insight on students’ previous experience with the iPad, which features they used on the iPad, whether students felt it helped them to understand the text better, and whether they would want to use the iPad again. The data collected were used to justify informal claims about how and why the iPad did or did not increase reading comprehension and what other implications the iPad might have for reading education.
Procedures

The premise of this study was based on whether the iBooks increased reading comprehension in children in comparison with traditional paper text. Subjects in this study were asked to take home a consent letter for their parents to sign and return expressing their understanding and willingness to partake in this study. Also, students themselves were asked to sign a consent letter expressing their understanding and willingness to participate in this study. Once all of the permission forms had been collected, students who had signed the consent letter partook in a two day study.

On the first day the class was split in half at random. Both halves of the class read *Ramona Quimby, Age 8*. However, half of the class received an iPad with the preloaded book to read and the other half read the paper back book. It was clearly stated that all students would have the opportunity to use the iPad either on the first or the second day of this study. All students were introduced to the iPad and its features such as sticky notes, instant definitons, and highlighting. Then, the group given the iPad for that day had some time to become familiar with the features. The students who were reading from the paper-based text were given access to sticky notes, and dictionaries as well. Due to school policy, students reading from paper-based text were not allowed to highlight in the text. This was one advantage the iPad had over paper-based text.

While reading, the classroom teacher walked around and answered any questions students had about the story just as if it were a typical instructional lesson. All students were allowed to consult their resource binders, which contained key vocabulary words and pre-reading notes that the teacher had discussed with the students before the study.
The researcher was observing, taking observational field notes about what materials and features the students were or were not using for both the iPad and the paperback text. The students were instructed to read chapter 1 of *Ramon Quimby, Age 8*; then they took a short six-question comprehension assessment to see how well they understood what they had read. Testing for Day 1 was finished. This whole process took no more than one hour.

On Day 2, the half of the class that did not get to use the iPad the first day of testing was able to use it the second day, and the other group that did use the iPad read from the paper back book. Students read the second chapter of *Ramona Quimby, Age 8*. The features were then reintroduced to the second group using the iPads and that group was given the same amount of time to become familiar with the features. Again, the group using paper text had the access to materials such as post-its and dictionaries.

All students were allowed to consult their resource binders, which contained key vocabulary words and pre-reading notes that the teacher had discussed with the students before the study. The teacher walked around the classroom and answered any questions the students might have about the text as if this were a typical lesson in the classroom. The students read chapter 2 and then took a short six-question comprehension assessment to see how well they understood what they had read.

Once all students were finished, they answered a post survey with four questions about their experiences with the iPad. At thist time testing was finished and all papers were collected and taken with the researcher to be stored in a safe and confidential place. Data results were collected and compared. These results produced the information
necessary to draw conclusions as to whether or not iBooks influence reading comprehension as opposed to paper text.

Data Collection

The data gathered from the comprehension assessments was quantitative data used to measure whether or not the iPad impacted reading comprehension based upon average group scores. The survey and observational field notes was qualitative data that gave insight into which features of the iPad the students were using which might help increase comprehension.

Data Analysis

The data gathered from the comprehension assessments was quantitative data used to measure whether or not the iPad impacted reading comprehension based upon average group scores. The survey and observational field notes provided qualitative data that gave insight into which features of the iPad the students were using which might help increase comprehension.

Individual results of the electronic and the paper-based comprehension assessments were compared across the two groups. Information was also noted as to how students scored on an individual basis. To determine the impact of the iPad versus the paperback book for the entire class on both days, statistical significance was also calculated using a t-test of independent samples.

The qualitative data collected from the post survey was also put into excel and categorized according to the questions that were asked. Descriptive summaries were generated from the analysis of variables that may have contributed to higher comprehension scores. This helped in determining whether students’ comprehension
assessment results were higher while using paper based text or the iPad. Data were organized into a chart format.

The data for the observational field notes were organized according to the features and resources that some of the students were observed using during both days of the study. For example, the researcher recorded the number of students using the highlighting tool, instant definitions, and sticky notes on the iPad on both days of the study. Likewise, the researcher recorded the number of students that picked up a dictionary, asked for teacher assistance, used sticky notes in their paperback books, and used their resource binders on both days of the study.

Summary

The main purpose of this study was to determine whether the iPad impacted third grade students’ silent reading comprehension. Specifically, this study addressed the following research question: Does reading electronic text on an iPad impact third grade students’ silent reading comprehension? Another exploratory question that was asked is: Which features of the iPad did the students take advantage of? Students provided quantitative information through the comprehension assessments taken after reading from the iPad and paper-based text. Qualitative information was also provided through a post survey as well as observational field notes taken during the study. This provided information about student background experiences with technology, the applications they choose to use on the iPad during the study, and whether or not they would choose to use an iBooks or read a paper-based book. Data was then organized and analyzed based on the observational field notes, surveys and assessments collected to determine if there
were any trends that point to an impact of comprehension while using the iPad or paperback text.
CHAPTER IV. DATA ANALYSIS AND DISCUSSION OF RESULTS

One of the central purposes of reading is comprehension, or to create meaning of the words being read. Paper-based text has been the primary source from which people have read for the last century. Recently, electronic readers have gained popularity. It is clear that these electronic reading devices are motivating to adult and children readers alike due to their high demand and extensive popularity. However, if educators are to adapt these readers into their curriculum, then research should be done about how these electronic readers impact students’ reading comprehension.

This study was developed to address the following research question: Does reading electronic text on an iPad impact third grade students' silent reading comprehension? Another exploratory question asked was: Which features of the iPad did the students take advantage of?

Data Analysis

Quantitative data about the whole class were collected and analyzed according to the two days that the study took place—Day 1 (students read chapter 1 of Ramona Quimby, Age 8) and Day 2 (students read chapter 2 of Ramona Quimby, Age 8). The mean scores from post-reading comprehension assessments were calculated for both the iPad and the paperback book for each group on each day. To determine the impact of the iPad versus the paperback book for the entire class on both days, statistical significance was also calculated using a t-test of independent samples. Each student’s individual score was also reported to provide a more detailed and accurate report of how students did on the iPad in comparison to paper-based text (See Appendix F). These results are indicated using a + and a -. The plus meant the student scored higher on their six-question
comprehension assessment with the iPad than the paper-based text and a – means that the student scored lower on the six-question comprehension assessment with the iPad than the paper-based text.

The exploratory portion of the study was also analyzed using two complementary methods: (1) observational field notes taken during Day 1 and Day 2 of the study, as well as (2) the survey that was administered to students at the end of the study. It is important to note that there were 23 participants in the study. However, four of the participants indicated with a star at the top of their paper that they did not have the opportunity to finish one or more of the chapters during the time allotted. Therefore, their scores have been disregarded from this study.

Chapter 1 (Whole Class)

On Day 1 of the study there were 19 students who participated. The nine students in Group 1 who used the iPad scored an average score of 4.27/6.00 points on the post-reading comprehension assessment. The 10 students in Group 2 using the paperback book scored an average of 4.40/6.00 points on Chapter 1 of the post-reading comprehension survey. To calculate statistical significance, a t-test of independent samples was used. The data were entered into SPSS statistics software. After analyzing the data, there was no statistical significance; t(17)= -.204, p=.841, two tailed. The p-values are far greater than α=.05; therefore there is no statistical significance. Raw scores can be found in Table 1.

Chapter 2 (Whole Class)

On Day 2 of the study the students switched groups. Again, 19 students participated. The nine students that read Chapter 2 from the paperback book in Group 1
scored an average of 2.88/6.00 points. The 10 students in Group 2 who read Chapter 2 from the iPad scored an average of 2.90/6.00 points. To calculate statistical significance a t-test of independent samples was used. The data were entered into SPSS statistics software. After analyzing the data there was no statistical significance; \( t(17) = -.020, \) \( p=.984, \) two tailed. The \( p \)-values are far greater than \( \alpha=.05; \) therefore there is no statistical significance. Raw scores can be found in Table 1.

Table 1

**Student Comprehension Assessment Scores**

<table>
<thead>
<tr>
<th>Student</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Ind. Averages</th>
<th>Personal Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>iPad 1</td>
<td>Book 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 1</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>+</td>
</tr>
<tr>
<td>Student 2</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>+</td>
</tr>
<tr>
<td>Student 3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>=</td>
</tr>
<tr>
<td>Student 4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>+</td>
</tr>
<tr>
<td>Student 5</td>
<td>5</td>
<td>2</td>
<td>3.5</td>
<td>+</td>
</tr>
<tr>
<td>Student 6</td>
<td>6</td>
<td>3</td>
<td>4.5</td>
<td>+</td>
</tr>
<tr>
<td>Student 7</td>
<td>5.5</td>
<td>5</td>
<td>5.25</td>
<td>+</td>
</tr>
<tr>
<td>Student 8</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Student 9</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>+</td>
</tr>
<tr>
<td>Average</td>
<td>4.27</td>
<td>2.88</td>
<td>3.58</td>
<td>+</td>
</tr>
<tr>
<td>Group 2</td>
<td>Book 1</td>
<td>iPad 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 10</td>
<td>5.5</td>
<td>4</td>
<td>4.75</td>
<td>-</td>
</tr>
<tr>
<td>Student 11</td>
<td>4.5</td>
<td>5</td>
<td>4.75</td>
<td>+</td>
</tr>
<tr>
<td>Student 12</td>
<td>3</td>
<td>2</td>
<td>2.5</td>
<td>-</td>
</tr>
<tr>
<td>Student 13</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Student 14</td>
<td>4</td>
<td>3</td>
<td>3.5</td>
<td>-</td>
</tr>
<tr>
<td>Student 15</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Student 16</td>
<td>3.5</td>
<td>2</td>
<td>2.75</td>
<td>-</td>
</tr>
<tr>
<td>Student 17</td>
<td>3.5</td>
<td>2</td>
<td>2.75</td>
<td>-</td>
</tr>
<tr>
<td>Student 18</td>
<td>5</td>
<td>4</td>
<td>4.5</td>
<td>-</td>
</tr>
<tr>
<td>Student 19</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Average</td>
<td>4.40</td>
<td>2.90</td>
<td>3.55</td>
<td>-</td>
</tr>
</tbody>
</table>
Survey

Survey results indicated that over half of the students used all three of the features available on the iPad (dictionary, sticky-notes, and highlighting).

Table 2

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th># of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>14/23</td>
</tr>
<tr>
<td>2. Which of these did you use on the iPad (You may check more than one.)</td>
<td>Dictionary</td>
<td>12/23</td>
</tr>
<tr>
<td></td>
<td>Sticky Notes</td>
<td>12/23</td>
</tr>
<tr>
<td></td>
<td>Highlighting</td>
<td>17/23</td>
</tr>
<tr>
<td>3. Which was easier to read—the book or the iPad?</td>
<td>Book</td>
<td>1/23</td>
</tr>
<tr>
<td></td>
<td>iPad</td>
<td>22/23</td>
</tr>
<tr>
<td>4. Would you want to read from the iPad again?</td>
<td>Yes</td>
<td>23/23</td>
</tr>
</tbody>
</table>

Observation

Qualitative data were collected through observational field notes taken throughout the two days of the study. Observational field notes taken throughout the study indicated results similar to that of the survey. Students spent an hour both days participating in sustained silent reading (SSR). While they were reading they used features such as the instant dictionary, sticky notes, and highlighting. On Day 1 the researcher observed six of the students on the iPad using sticky notes; five of the students using highlighting, and two of the students using the instant definitions at any given point in time during the hour of SSR. On Day 2 the researcher observed five of the students using sticky notes; six of the students using highlighting, and four of the students using instant definitions at any given point of time during the hour of SSR. Students were not allowed to highlight in their paperback books because of school policy. This is one advantage of the iPad that could not be controlled.
Although all students had access to dictionaries, only one student consulted a paper dictionary. He asked for the teacher’s help in looking up a word. Instead many of the students who were reading paperback books chose to consult their reading binders. Most students had taken notes and reviewed some important vocabulary words from *Ramona* with their teacher that pertained to chapters one and two before beginning reading chapters one and two. All students in both groups had access to their reading binders. However, observational field notes indicate most of the students using the paper-based text chose to consult the binders. Most students using the iPad strictly chose to use the iPad and did not consult outside resources such as their reading binders.

Almost all of the students reading paperback text utilized the post-it-notes given to them; however, they simply stuck the post its in the book versus the students who used the iPad to type comments on their sticky notes. Overall, there were a few students who asked for teacher assistance, but the majority of students read quietly by themselves for a full hour using the resources at their seats or their fingertips.

**Discussion of Results**

The purpose of this investigation was to answer two questions: Does reading electronic text on an iPad impact third grade students’ silent reading comprehension? There was no statistical significance between the means of the two groups of students’ results. The results do not indicate that students comprehend better or worse while using the iPad compared to paper-based text. Despite the fact the iPad did not impact reading comprehension does not mean that it should not be used. The possibilities and uses of the results of this study will be discussed in Chapter 5 during the conclusions and implications.
Another exploratory question asked was: Which features of the iPad did the students take advantage of? The qualitative results indicate that, despite no statistical difference in comprehension, the iPad is highly motivating to children. Survey results revealed that 22 of the 23 students believed that the iPad was easier to read than the paper-based text. Survey results revealed that 22 of the 23 students believed that the iPad was easier to read than the paper-based text. All 23 of the 23 students indicated that they would want to read from an iPad again. This will be discussed in more detail during Chapter 5 in the implications section.

Summary

This chapter is an analysis of data collected during this study to answer the research question: Does reading electronic text on an iPad impact third grade students’ silent reading comprehension? Another exploratory question that was asked is: Which features of the iPad did the students take advantage of?

The results from the comprehension assessments compared the students’ comprehension scores while reading on the iPad as opposed to paper-based text. Both groups of students’ scores on the comprehension assessments were not significantly different when compared to each other. This indicates that electronic text on the iPad did not impact third grade students’ silent reading comprehension positively or negatively in comparison with paper-based text.

Survey results and observational field notes were analyzed to determine which features of the iPad students took advantage of. Students took advantage of all three features presented to them on the iPad. They were observed highlighting, posting sticky notes, and using the instant dictionary on the iPad.
CHAPTER V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study was designed to seek answers to the research questions: Does reading electronic text on an iPad impact third grade students’ silent reading comprehension? Another exploratory question that was asked is: Which features of the iPad did the students take advantage of? Currently, there are many technology resources available such as electronic readers, that should be utilized to expose students to reading in the digital era, but educators may not be making use of these materials due to time, money, or lack of education on the technology.

Summary of Chapters I, II, III, IV, and V

The purpose of this study was to answer the research question: Does reading electronic text on an iPad impact third grade students’ silent reading comprehension? Another exploratory question that was asked is: Which features of the iPad did the students take advantage of? Chapter 1 contained a discussion related to the importance of assessing student comprehension on new forms of reading technology such as the iPad. Comprehension was the focus of this study because it is a central purpose of reading (Gambrell, Malloy, & Mazzoni, 2007).

Chapter 2 provided knowledge of the history of reading materials to understand the present state of reading in a digital format. It also covered the importance of comprehension when adopting these materials into reading education. The theory of multimodal literacy was discussed in chapter two to help in understanding how electronic readers might affect the way readers understand the text. Chapter 3 described the investigation and how it would be implemented. Quantitative data were obtained from each student’s silent comprehension scores after reading Ramona Quimby, Age 8 from
both the iPad’s application iBooks and the paperback version. Surveys were also administered to collect qualitative data about which features students chose to use on the iPad during the study as well as their overall experience using the iPad to read from. In Chapter 4 the data collected were analyzed and reported. This chapter contains conclusions drawn from the data, and then recommendations for classroom teachers, administrators, and future research.

Conclusions and Implications

Using the results from students’ scores from chapter 1 and chapter 2 of Ramona Quimby, Age 8, it is clear that students’ silent reading comprehension was not impacted, negatively or positively, by the iPad when compared to paper-based text. This finding is supported by the contemporary research studies explored in Chapter 2 involving electronic-reading devices (Korat, 2010; Matthew, 1997; Shepperd, Grace, & Koch, 2008; Woody, Daniel, & Baker, 2010;). These studies also did not see any impact of e-books on reading comprehension.

Although there was not a significant difference in students’ reading comprehension while reading from the iPad or the paperback book in this study, this does not mean that iBooks should be disregarded in the 21st century classroom. The researcher did observe students eager and excited to read on the iPads. These devices still hold value in education. Through using electronic books students are gaining experience using the newest technology devices in the digital era. Electronics are a positive attribute to education if administrators can fit the cost into their budget. As indicated in Chapter 2, research has proven that these devices are currently extremely motivating to students (De Jong & Bus, 2003; Doty, Popplewell, & Byers, 2001; Shamir & Korat, 2007).
One of the results of the exploratory question asked in this study was a high number of student responses on the survey given at the end of the study indicating that students thought that the iPad was easier to use than the paper-based book. Also, all students indicated on this survey that they wanted to use the iPad again. If students have positive beliefs towards electronic readers and they are made available to use in the school, many students may be more motivated to read and improve their own self-perception and confidence towards reading. Edmunds and Bauserman’s (2006) findings of what motivates fourth grade students to read agrees with the exploratory portion of this study’s findings. These results allow teachers to confidently implement these devices into their classrooms knowing that the devices will motivate students and their comprehension will be maintained. However, teachers must still assess each student’s understanding using these devices on an individual basis because all students comprehend differently. There is no easy solution to increasing reading comprehension. If these devices can even help one student, it should be implemented. It is clear that students will encounter digital text as they grow up and the earlier they are exposed to this text, the more familiar they will be when they read from digital devices later in life.

Overall, there was no positive or negative impact in this study using the iPad in comparison to paper-based text. This may provide comfort to teachers and administrators if choosing to implement electronic-readers in their schools or classrooms. It may also provide skepticism as to whether or not electronic-readers are worth the investment if there is no impact in comprehension. There are many factors that need to be considered when determining if these devices should be implemented in the educational system such as cost, professional development, usage, and materials available on these devices,
among others. Even though the results of this study indicate there is no statistical significance in comprehension between the iPad and paper, if the resources are available to administrators, teachers, or parents, then they should feel free to take advantage of them. The students clearly enjoy using e-books and it did not seem to hinder their comprehension. The students are gaining more exposure to and experience with technology which will benefit them in the future.

Recommendations

For Classroom Teachers

The results from this investigation suggest that it would be beneficial for classroom teachers to include e-readers into their classrooms if the funding is available. Although results indicated the iPad did not have an impact on reading comprehension, observational field notes and the survey given did indicate it increases students’ motivation to read. It is suggested that teachers may use this device to motivate students to read. Teacher may also use electronic-readers as a tool to expose students to digital reading technology. Teachers could use this technology to differentiate for the students that do benefit from them. iPads could be used individually by students’ who find the features offered on the iPad helpful in tackling a difficult text independently. They could also be used for whole group instruction to expose students to the different design and features that electronic reading devices have to offer. There are positive and negative consequences of which students should be aware when using these devices. Students are exposed to these devices outside of the classroom as indicated in the survey, so it is beneficial to bring authentic reading experiences with technology into the classroom to motivate students. These devices may also allow students to create a positive self-
perception of themselves as readers. All of these are factors for teachers to consider when determining if electronic-readers may benefit specific students in their classroom.

For Administrators

In this case electronic-readers did not impact students’ silent reading comprehension. However, it is still important to consider the motivational factors that resulted from this study. Administrators have the ability to weigh the positives and negatives research provides about electronic readers to determine if these devices are worth the money.

Since administrators are responsible for the budget, they determine whether or not electronic-readers are worth the long-term investment or if paper-based books are a cheaper alternative that still hold great value. There are many affordable alternatives now available comparable to the iPad; these are called electronic slates. Either way, administrators have the ability to ensure that funding is provided to purchase these materials.

Professional development is an important consideration for administrators if they choose to implement electronic-readers in their school districts. These are opportunities to inform teachers about how these electronic readers can be used in their classroom. Many teachers receive technology for their classroom and never use it because they either do not feel comfortable using the technology or do not know how to incorporate the technology into their curriculum. Professional development can provide teachers with the opportunity to handle the devices so they feel more comfortable incorporating them into their classrooms. Administrators are the decision making factor in whether or not technology such electronic-readers are incorporated into the schools.
For Future Research

Based upon results and conclusions discovered during this study, a better test for the iPad needs to be done to eliminate the differences caused by results on one good day and one bad day of this study. On the second day of this study all of the students struggled on the chapter two assessment. Future research should explore the impact of the iPad with a more definitive assessment using a text that is on students’ independent level.

It would be interesting to note the difference between different types of electronic reading devices and which devices work better with students. It would also be noteworthy to observe how the device works with people of all age groups. In addition, it would be beneficial to note the types of learners that the iPad does impact. These learners might then benefit from differentiated instruction utilizing the iPad.

Electronic books do require slightly different reading skills than reading a paperback book. The different methods of reading text electronically would be another interesting possibility for future research. There are unlimited possibilities for research to be conducted with technology devices such as the electronic-readers. Research will help to promote education on these devices and answer questions as to how and why they do or do not work in instructional situations.

Summary

This chapter reviewed the current investigation, drew conclusions based upon the results of the study, and suggested recommendations for classroom teachers administrators, and future research. Overall, further research is necessary to draw any firm conclusions about the impact of the iPad on reading comprehension. This study did reveal that the iPad is a tool that the students are motivated by and view as easier to read.
Many of the third grade students indicated that they would like to read from an iPad again. Electronic-readers hold many opportunities in the future. Further research will help inform educators as to how these devices best aid students in the classroom.
REFERENCES


doi:10.1080/00986280701818532.


doi:10.1080/1463631042000211024.


APPENDIX A.

COMPREHENSION ASSESSMENTS (CHAPTERS 1 & 2)
1. What grade is Ramona going into? (Literal)

2. Why does Ramona’s dad have to work at the Shop-Rite Market to “squeak by”? (Inferential)

3. What does Mr. Quimby give the girls for luck on the first day of school? (Literal)

4. Who is Willa Jean AND why doesn’t Ramona like her? (Inferential)

5. Who took Ramona’s pink eraser? (Literal)

6. Why was Ramona okay with the nick name Superfoot but not Bigfoot? (Inferential)
1. What is sustained silent reading (SSR)? (Literal)

2. Why does Mrs. Whaley decide to call SSR drop everything and read (D.E.A.R)? (Literal)

3. Why does Ramona prefer SSR to D.E.A.R? (Literal)

4. Why was Ramona happy to see Bruce? (Inferential)

5. What does Ramona really want to be doing instead of playing with Willa Jean? (Inferential)

6. How is Ramona doing her part? (Inferential)
ANSWERS
Ramona Quimby, Age 8 By: Beverly Cleary
Chapter 1: The First Day of School

1. What grade is Ramona going into? (Literal) 3\textsuperscript{rd} grade

2. Why does Ramona’s dad have to work at the Shop-Rite Market to “squeak by”? (Inferential) So that their family can make money to live while he goes back to school to become a teacher.

3. What does Mr. Quimby give the girls for luck on the first day of school? (Literal) A pink eraser

4. Who is Willa Jean AND why doesn’t Ramona like her? (Inferential) Willa Jean is a 4 year old that shares the same babysitter. She does not like having to play games with her; she wants to be grown up.

5. Who took Ramona’s pink eraser? (Literal) Danny or “Yard Ape”

6. Why was Ramona okay with the nick name Superfoot but not Bigfoot? (Inferential) Because she thought of the name herself.
Name: ___________________

ANSWERS

Ramona Quimby, Age 8 By: Beverly Cleary
Chapter 2: At Howe’s House

1. What is sustained silent reading (SSR)? (Literal) Reading silently to yourself

2. Why does Mrs. Whaley decide to call SSR drop everything and read (D.E.A.R)? (Literal) Because it is more fun

3. Why does Ramona prefer SSR to D.E.A.R? (Literal) Because it is more grown up

4. Why was Ramona happy to see Bruce? (Inferential) Because she did not have to play with Willa Jean anymore

5. What does Ramona really want to be doing instead of playing with Willa Jean? (Inferential) Riding bikes with Howie

6. How is Ramona doing her part? (Inferential) She was being good at the babysitters so her mom and dad would be happy when they are busy at work and school
APPENDIX B.

POST SURVEY
Name: _______________________________

Post-Survey

1. Before reading this book, have you ever read an electronic book before? **Yes** or **No**

2. Which of these did you use on the iPad? (You may check more than one.)
   - [ ] Dictionary
   - [ ] Sticky notes
   - [ ] Highlighting

3. Which was easier to read—the book or the iPad? **Book** or **iPad**

4. Would you want to read from the iPad again? **Yes** or **No**
APPENDIX C.

PARENT LETTER OF CONSENT
December 6, 2010

Dear Parent or Guardian:

My name is Kristine E. Grace, and I am a graduate student in the reading program at Bowling Green State University. I am conducting a study to determine if reading electronic text on the iPad has an impact on third grade students' silent reading comprehension. I am also exploring which features of the iPad students choose to take advantage of. I believe that this information will help educators determine whether iPads should be adapted and used for reading instruction in the classroom.

The iPad's application, iBooks, has many features that may impact students' understanding of what they read. These features include virtual sticky notes, the ability to highlight text, and the capability to instantly define words with the touch of a finger. Students will benefit from knowledge of how to use this device. Educators will also benefit from the findings of this study when determining whether iPads should be adapted into the school curriculum.

The study will take place over the course of two days during an hour of in-class instructional time. First, the class will be split in half at random. Both halves of the class will be reading Beverly Cleary's, *Ramona Quimby, Age 8*. However, half of the class will receive an iPad with the preloaded book to read from, and the other half will be reading the same paperback book. It will be clearly stated that all students will have the opportunity to use the iPad either on the first or the second day of this study. All students will be introduced to the iPad and its features such as sticky notes, instant definitions, and highlighting. Then, the half of the class given the iPad for that day will have some time to become familiar with the features. The students that are reading from the paper-based text will be given access to sticky notes, post-its, and dictionaries as well. While reading, the actual classroom teacher will be allowed to walk around and answer any questions that students have about the story just as if this was a typical instructional lesson. The researcher will be observing in the background, taking anecdotal records about what materials and features the students are or are not using for both the iPad and the paperback text. The students will be instructed to read chapter 1 of *Ramona Quimby, Age 8*. Then they will take a short, six question comprehension assessment to see how well they understood what they had read. Testing for day 1 will then be finished. This process should not take more than 1 hour.

On day two, the half of the class that did not get to use the iPad the first day of testing will get to use it, and the other group that did use the iPad will be reading from the paper back book. Students will be reading the second chapter of *Ramona Quimby, Age 8*. The features will be reintroduced to the second group using the iPads, and then that group will be given the same amount of time to become familiar with the features. Again, the group using paper text will have the access to materials such as highlighters, post-its, and dictionaries. The teacher will be allowed to walk around the classroom and answer any questions the students might have about the text as if this was a typical lesson in the classroom. The students will read chapter two and then take a short six question comprehension assessment to see how well they understood what they read. The scores from both of these comprehension assessments will NOT impact your child's grade in any way.

Once all students are finished, they will answer a post survey with four questions about their experiences with the iPad. At this time, testing will be finished and all papers will be collected and taken with the research to be stored in a safe and confidential place.

The principal and teacher at your child's school have agreed to try the iPad study. They are curious to see whether the iPad has an impact on students' reading comprehension. I am writing to ask you to volunteer your child to in this study comparing reading comprehension on the iPad to that of paper-based books. Any child who does not have permission to participate in this study will be given an alternative assignment to complete by the teacher during the time this study takes place.
It is important to stress the volunteer nature of this study. Thus, only students who sign an assent form stating their willingness to participate AND who have a signed consent form from you, the parent or guardian, will be eligible to participate. If your child does not want to participate and/or you do not want to sign the consent form, then your child will not participate in the study. Instead, your child will be given an alternative assignment to complete from his/her classroom teacher at that time. No matter what you decide, your child’s grades and class standing will not change.

After testing, each child’s results will be examined for information regarding whether or not the iPad led to an increase or decrease in comprehension scores compared to the paperback book. Also, factors indicated on the post assessment, such as features or materials your child used while reading, will be taken into consideration. Be assured, this data will be used for research purposes only, and your child’s real name and school will NOT be used in conference presentations, in research articles, or in books. Students will write their name on their paper in order to keep each child’s survey and comprehension assessment together. However, as soon as papers are collected and each child’s survey and comprehension assessment are grouped together, the names will be cut off from the top of their paper and shredded. This study does not contain risks greater than in everyday life.

If you have any questions about the study’s procedures, the goals of the research project, or how your child will be treated, please call me at the phone number listed below, or send me an e-mail at the e-mail address listed below. Additionally, if you have questions about the conduct of this study, or if any problems or concerns arise during the course of the study, you may contact the Chair of Bowling Green State University’s Human Subjects Review Board at (419) 372-7716 (hrb@bgnet.bgsu.edu). In addition, if you have other questions about the study, you may contact my thesis advisor, Dr. Tim Murnen, at (419) 372-7983, or tmurnen@bgsu.edu.

Sincerely,

Kristine Grace
BGSU Graduate Reading Program
Phone: 440-554-4658
e-mail: kgrace@bgsu.edu
Consent for my child to participate in a BGSU Reading Study

I have been informed that as part of a research study, Kristine Grace, Masters in Reading candidate, will be conducting a research study on the iPad in my child’s third grade classroom. I have also been informed that the study is part of a thesis research project and only those students with consent to participate in this study will be involved. Furthermore, I have been informed that my child will: a.) Read from the iPad and paper-based book and then answer 12 comprehension questions total; and b.) Take a short 4 question follow-up survey. Additionally, I have been informed that only those students who volunteer to be tested and who bring back signed parental permission forms will be allowed to participate. I recognize that this study does not contain risks greater than in everyday life.

Next, I have been informed that Kristine Grace, with guidance from her research professors, will examine my child’s results from the study and survey given. I also have been informed that the real name of my child, my child’s school, and/or my child’s school district’s name will NOT be mentioned in any conference presentations, research papers, or books concerning this thesis study.

In addition, I understand that the decision to allow my child to participate or not participate will have no impact on my child’s grades, class standing, or relationship with Bowling Green State University.

Most importantly, I have been informed that my child, my child’s teacher, or I can choose to stop the child’s participation in the study at any time.

I hereby give my consent for my child to participate in the study comparing the iPad to paper-based books, and that any information gained through the study, whether used in research conferences, articles, and/or books, will not contain any identifiable reference to my child.

_________________________  __________________________
Signature                              Date

_________________________  __________________________
Parent/Guardian’s Printed Name   Your Child’s Printed Name
APPENDIX D.

STUDENT LETTER OF AGREEMENT
Student Assent to Participate

1. I want to read using both the iPad and a paperback book.

2. I will take a test after I read from the iPad and the paper book to show I understood what I read.

3. I will take a short survey about the iPad.

4. I will let others use my results without using my name.

5. I want to be a part of this study.

________________________________________
Signature

Date

________________________________________
Printed Name
APPENDIX E.

APPLE GRANT REQUEST
To: Apple Representative  
From: Ms. Kristine E. Grace  
Re: iPad Research Proposal

Apple Representative:  
My name is Kristine Grace, and I am currently completing my Masters in Reading at Bowling Green State University. This semester in our graduate courses, we have been exploring potential educational uses of the iPad, including new approaches to reading text. Putting the iPad in the hands of today’s children has the capability to transform the way students perceive reading, not only by creating excitement, but by providing them tools to increase their comprehension. Ultimately, technology is moving forward, and the iPad may be the key to revolutionizing the educational field of reading instruction.

For my Master’s thesis, I will be conducting a study which measures an elementary student’s comprehension on the iPad in comparison to paper text. The study will take place in a suburban school district surrounding the Bowling Green, Ohio area. Students in several classrooms will participate in the study in order to compare as many results as possible in the one-year time frame given. In each classroom, students will read silently from a traditional paper children’s book, as well as from the same children’s iBook on the iPad. After they have finished reading, students will answer comprehension questions to show how well they understood the material. It is important to note that students will be introduced to the iPad and be given instructions on how to use it before the experiment begins. Once the data from all students is collected, it will be statistically analyzed, using a group comparison design. Results will then be analyzed and conclusions drawn that explore the possible advantages of using the iPad in academic reading situations. Hopefully, highlights of the thesis itself will have the potential to be published as an article in a teacher or education practitioner publication. This may be of great benefit to your company, as it shows the capabilities the iPad has on young students’ learning, as well as its effects on the teaching and learning of reading.

Ideally, for this study to be replicated in an authentic classroom setting, multiple iPads would be necessary. The number of iPads used in my study will help determine the number of participants, affecting the size of the study. This will be a pilot study that will provide implications for potential larger scale research. Therefore, I am requesting your consideration in supporting this study by providing me with the equipment to proceed. An overview of this study can be found in the attached document.

I would welcome the opportunity to meet with you to discuss this study further and the possibilities it could hold for Apple. Please contact me at (440) 554-4658 to arrange a meeting at your earliest convenience. Thank you for your consideration.

Sincerely,

Kristine E. Grace  
BGSU

Timothy J. Murnen, Ph.D.  
Associate Professor of Literacy & Teacher Education  
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The iPad: An Innovative Way to Read Text and Improve Student Reading Comprehension

A fair amount of research has been done on the effect of electronic reading devices, students’ skills and reading motivation, but thus far, there have been few studies done utilizing the iPad. For instance, a study by Shepperd, Grace, and Koch (2008) evaluated electronic textbooks (e-books) used in college courses. Students had the opportunity to purchase the electronic version of their textbooks as opposed to traditional paper texts. The textbooks (both electronic and paper) were used throughout the semester. At the end of the study, an exit survey was given indicating whether the electronic text improved the students’ reading experience or not. Also, the student’s grade point average was collected to compare academic success with the electronic text versus the paper text. There was no statistical significance in grade point average. However, students did indicate that they did not prefer the electronic text due to factors such as convenience, portability and access. It is easy to see why these students would not prefer the e-book; they were required to read this book while sitting at a computer.

The iPad, however, solves many of these issues with its size and overall design. It is small and lightweight which allows for easy access and portability. Rather than going through the tedious process of opening a computer lid and going online, a student can flip on the iPad in a second (Young, 2010). It also has features such as sticky notes, instant definitions and the capability to click on a button, which orally reads the text to you. These are new features that have not been seen or used before by students. They allow students to more efficiently and effectively read a piece of text that they may not have
been able to understand if not for these quick convenient applications. These are tools that may very well lead to better comprehension.

Other studies similar to this one have been done with children that explore other aspects of electronic texts beyond convenience. Results have indicated that electronic books do significantly improve vocabulary, and vocabulary plays a strong role in reading comprehension. Greenlee-Moore and Smith (1996) indicate that electronic books significantly help when text is challenging and lengthy because of the ability to access online sources, which aid comprehension. As mentioned before, the iPad gives a reader the definition of a word with the tap of a finger, eliminating the process of going online to look up a word. It is more likely with the convenience of this application that students will be retrieving definitions to words they do not know, helping them to better comprehend what they were reading. The study I am pursuing involves early childhood students, most likely in second, third, or fourth grade, who are beginning to read chapter books that are longer and more challenging than the short picture books they are accustomed to. Of course, due to time constraints in this study, students will not be reading a chapter book in its entirety; a selection from the book will be chosen and assessed. The book chosen will be engaging and will still incorporate visual pictures and images to suit children’s interests.

All of the prior studies touch on the importance and progressive nature of technology. It is inevitable with the current “Green” movement, as well as the rising cost of paper and printing, that the age of the paperless educational environment is upon us. The electronic textbook currently does not meet all of the needs of students in the classroom. However, the iPad’s application, iBook, is a new alternative to the electronic
textbook, which will allow the classroom to enter the twenty-first century. Thus, I have created a study designed to compare paper text and the iBook’s electronic text.

After looking into the iPad’s capabilities, it shows great potential to change the way children think about reading. The iPad application, iBook, is the primary focus of this study. I believe that students will be excited and motivated to use the iBook because its design tools aid in reading comprehension and motivation. Therefore, I decided to study the effects the iBook application has on silent reading comprehension. I believe reading comprehension on the iBook would be the ultimate factor in the success of this product.

The premise of this study is based on whether the iBook increases reading comprehension in children in comparison with traditional paper text. The study will take place in a suburban school district surrounding the Bowling Green, Ohio area. The number of classrooms that can participate in this study is dependent on the number of iPads that can be utilized at one time. More classrooms can be assessed efficiently and effectively as the number of iPads available increases. A higher number of participants will indicate statistical significance in the study and produce a more valid, reliable conclusion. Before students participate in this study, they will be given explicit instructions on how to use the iBook, as well as sufficient time to become comfortable with the device. Students will be allowed to use features of the iBook such as sticky notes and definitions, among others. In each classroom, half of the students will read silently from a paper-based children’s book and the other half will read the same children’s iBook on the iPad. After both groups are finished reading, they will answer comprehension questions to show how well they understood the story. Data results will be collected and
compared. Surveys or interviews with students will provide further details about the effectiveness of the iPad. These results will produce the information necessary to draw conclusions as to how the iBook influences reading comprehension as opposed to paper text. Based upon the results and questions that arise throughout the study, further studies may be developed on the iBook. This will allow me to determine what features of the iPad the students are using the most, the least, etc. The use of these features may give insight to the value of the iPad and how students are better comprehending the text.

The average classroom contains twenty to twenty-five students. To efficiently administer the study, ten iPads would be desirable; this would allow half of any class to read a story on the iPad while the other half uses traditional paper text. Students would then be able to swap and every student would have the opportunity to read from the iPad. If necessary, a smaller form of this study could be done if I had one iPad that I would be able to use individually with students. The study will be conducted over the next six months, and the results available by April 2011. Bowling Green State University has a limited number of iPads that have restrictions to the number of hours for check out. Due to University policy, only downloads that are free of charge can be put on the iPad. Using Bowling Green’s iPads results in a problem due to these issues. As of now, I do not have any iPads secured for this research study. Having 1-10 iPads provided by Apple will allow this study to proceed as planned. These iPads will be placed directly in the hands of children, allowing them to experience reading in a new way. Hopefully, results will be significant and may produce a publication about the iPad and its effects on the way students understand what they are reading. Regardless, I see this study as valuable to
Apple. If Apple provides support for this study, you will receive a copy of all results, as well as my thesis. Apple may use these results at its own discretion.

PAPER TEXTBOOKS REMAIN THE DOMINANT SOURCE OF READING MATERIAL IN MOST CLASSROOMS. HOWEVER, I BELIEVE THAT ONCE IPADS ARE PLACED IN THE HANDS OF YOUNG STUDENTS, THEY WILL THRIVE OFF OF THIS DEVICE, AND READING AS WE KNOW IT, MAY BE CHANGED FOREVER.

References


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