THE EFFECTS OF ENHANCED E-BOOKS VS. TRADITIONAL PRINT BOOKS ON READER MOTIVATION, COMPREHENSION, AND FLUENCY IN AN ELEMENTARY CLASSROOM

Submitted in partial fulfillment of the requirements

For the degree of

MASTER OF ARTS IN TEACHING

ELEMENTARY EDUCATION (K-6)

by

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January 2015

This is a research paper submitted for ELCL 6300-60, Research in Education I & II, in partial fulfillment of the requirements for the Master of Arts in Teaching Degree at William Paterson University

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WILLIAM PATERSON UNIVERSITY OF NEW JERSEY

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A Master's Thesis Submitted to the Faculty of

William Paterson University of New Jersey

In Partial Fulfillment of the Requirements

For the Degree of MASTER OF ARTS IN TEACHING

(January 2015)

College/School: College of Education

Program: Master of Arts in Teaching

Concentration: Elementary Education

Thesis Supervisor:

_____

Dr. Janis Strasser

ABSTRACT

Students today are spending a significant amount of time engaged in media activity, yet even with an increase of e-reader compatible smart devices, reading has not increased in popularity among elementary school age children. It is critical that students spend time engaged in meaningful reading activities to become proficient readers. Thus, as educators of these 21st century learners, we must find a way to increase reader motivation and bridge the gap between home leisure activities and school activities. The objective of this study was to determine the impact of reading enhanced e-books on the iPad vs. traditional storybooks with regard to motivation to read, reading comprehension and fluency. Qualitative and quantitative methods of data collection were used, over a period of four weeks with 22 first grade student participants.

The results of this study suggested that e-books are more appealing than traditional print books and as equally

appealing, if not more appealing to students than educational apps. By the end of the study, all students were fluently reading books at least one guided reading level higher. The results from this study showed that students benefited from the combination of e-books and traditional storybooks, with this method resulting in increased fluency and comprehension among readers.

ACKNOWLEDGEMENTS

First, Dr. Strasser, I want to express my deepest gratitude for all your time, support, guidance and words of encouragement throughout this entire process. I cannot begin to thank you enough. A special thanks to Chris for going out of your way, being super flexible and allowing this study to take place, but also for your incredibly positive attitude and words, every day. To Jared, thank you for letting me live on your computer for the last several months, for your constant love and support and for celebrating my accomplishments along the way. Thank you to my family, especially my parents for being available at all hours, 24/7 despite being many miles away, for your love and support, for always believing in me and for always reminding me that you are proud of me, which has helped me get this far. Thank you to my brother for being someone I can always look up to and for your sense of humor that made many study breaks entertaining. A special thanks to Jaime, Are, Aub and Gigi for all your support and the many cups of coffee that made this thesis possible. Last, to the employee at Barnes & Noble who managed to find me a highlighter when mine ran out while endlessly highlighting research for Chapter 2, Thank you!

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Introduction

Overview

A recent study on Children's Media Usage by Common Sense Media (2013) has shown that over the last two years, children up to age 8 are spending a significantly increasing amount of time engaged in media activity on smart devices. However, the amount of leisure time spent reading has essentially remained the same. On average, children aged 5 to 8 years old are spending approximately one half hour reading or being read to, compared to 2 hours and 21 minutes spent engaged in media activity such as playing games or watching videos (Common Sense Media, 2013). Even with the increased availability of smart devices such as tablets that are e-reader compatible, reading is still not one of the activities that has increased in popularity among children under 8 years old.

With state standards requiring that elementary students be able to read with sufficient accuracy and fluency to support comprehension, it is essential that students spend time engaged in meaningful reading activities. Guthrie & Wigfield (1997) found that motivation is a strong predictor of time dedicated to reading and is

also associated with comprehension and reader achievement. Educators continue to struggle with how to make reading more motivating for 21st century learners, especially when motivation and time spent in leisure reading tends to decline as students move into middle school.

Statement of the Problem

Leipzig (2001) defines reading as "the motivated and fluent coordination of word recognition and comprehension." (p.1). The New Jersey Common Core State Standards require that by the end of 1st grade, all students have the ability to "…read with sufficient accuracy and fluency to support comprehension." (CCSS.ELA-Literacy.RF.1.4). Thus, to be considered a proficient reader, students must be able to not only recognize words in a text accurately and fluently, but understand the meaning of the words as well as the sentences and paragraphs they construct. Furthermore, students must, perhaps, be motivated and engaged enough to use prior knowledge and skills to make connections with the text, in order to construct these new meanings.

Guthrie & Wigfield (1997) have conducted extensive research on children's motivation to read and it is well established that there is a correlation between reading motivation and comprehension, motivation and amount of time

dedicated to reading and motivation and reading achievement. Research conducted by Eccles & Wigfield (2002) & Gottfried (1990) has shown that children's' intrinsic reading motivation declines across the elementary school years (as cited in Guthrie, Hoa, Wigfield & Tonks, 2006, p. 19). Greaney (1980), shows these negative reading attitudes that develop as students progress through school, result in a steady decrease in the amount of leisure time children spend reading (as cited in McKool, 2007, p.112).

So how much leisure time is spent reading by elementary students? The result of Common Sense Media's recent research study, Zero to Eight: Children's Media Use in America 2013, gives us some insight on what is motivating children of the 21st century and how they are spending their leisure time. These national surveys showed that among families with children age 8 and under, the percent of children with access to some type of "smart" mobile device at home has increased from half (52%) to three-quarters (75%) of all children in just two years. Seventy-two percent of children age 8 and under have used a mobile device for some type of media activity and the percent of children who use mobile devices on a daily basis has more than doubled. The amount of time spent using these devices on an average day has tripled from 2011 to 2013.

The average total screen media time for children aged 5 to 8 year olds is 2 hours and 21 minutes a day and the most common mobile media activity among children in this age group is playing games. The least-common activity on tablets and other similar devices among all these options was reading. Children up to age 8 read or are read to for an average of just under a half hour a day, showing little to no change over the last 2 years.

Although I had only observed in my new 1st grade classroom for 2 weeks, it quickly became apparent that some students were more motivated to read than others. Some students were clearly actively engaged in their independent reading, while others simply flipped through the pages, frequently changing books and giving their best attempt to appear engaged. Quite the contrary, much effort was needed to convince students to become "un-engaged" when iPad learning time ended. Without any encouragement or hesitation, students quickly opened an app and dedicated the entire allotted time to educational games such as, "Stack the States" or "Math Bingo." I found myself thinking, "If we could just get students *that* motivated and engaged in reading…"

Purpose of the Study

The purpose of this study is to explore enhanced e-books and their effect on reader motivation, fluency and comprehension compared with traditional print storybooks. E-reading is now a more realistic possibility with 75% of American families with children under 8, having a smart device such as an iPad in the home and 21% owning a device specifically designed as an e-reader such as a Kindle or a Nook. A large percentage of students are already regularly engaged in some sort of media activity on a daily basis.

The Research Questions

1. What impact does reading enhanced e-books on the iPad vs. traditional storybooks have on motivation to read?
2. What impact does reading enhanced e-books on the iPad vs. traditional storybooks have on reading comprehension?
3. What impact does reading enhanced e-books on the iPad vs. traditional storybooks have on fluency?

Definition of Variables

Enhanced e-books

For this study, enhanced e-books refer to digital books that feature audio, video or other interactive components.

Traditional storybooks

For this study, traditional storybooks refer to traditional paper books with printed text and illustrations.

Motivation

For this study, motivation refers to reader motivation or a reader's drive to read, which is influenced by multiple factors including self-efficacy, personal interest and satisfaction. Colker (2010) states that "motivation and engagement are basic to reading instruction… It is not enough to know how to read. If one is to become a lifelong learner, it is imperative that one have the desire to read." (p.2)

Comprehension

For this study, comprehension refers to the process in which the reader actively constructs meaning with a text.

Fluency

For this study, fluency is defined as the ability to read with speed, accuracy, and proper expression.

Hypotheses

It was generally expected that enhanced e-books would increase reader motivation, comprehension and fluency.

Hypothesis I

It was hypothesized that reader motivation would increase as a result of introducing enhanced e-books. It was expected that the interactive components of the e-books would be more appealing to students than traditional storybooks.

Hypothesis II

It was hypothesized that reader comprehension would improve with the use of enhanced e-books over traditional storybooks.

Hypothesis III

It was hypothesized that reader fluency would improve with the use of enhanced e-books over traditional storybooks. Due to the short-term nature of this study

however, it was not expected that a significant increase in reader fluency would be evident.

CHAPTER II

The Review of the Literature

This research examines technology as it impacts literacy development and practices, as well as examining what motivates 21st century learners. The research also explores the impact of electronic texts and their features on reader motivation, comprehension and fluency. Additionally, the research in this review looks at the benefits if any, electronic text offers for struggling readers and students with various special needs.

The review of the literature will include the following subtopics: Literacy Development in Young Children, Reading Motivation Using E-Books, Reading Comprehension Using E-Books, Reading Fluency Using E-Books, and Using E-books to Support Reading with Children with Special Needs.

Literacy Development in Young Children

Wright, Fugett and Caputa (2013) describe the process of learning to read as complex and consisting of several components making it challenging to teach. These components include phonemic awareness, phonics, comprehension,

vocabulary, and fluency (Gleason, 2005; Hay & Fielding-Barnsley, 2009; Moats, 2000, Wright, Fugett & Caputa, 2013, p.368).

Bear, Negrete and Cathey (2012) describe stages of literacy development specifically reading development, including the "Transitional Reading and Within Word Pattern Spelling" stage (p.4). At this stage, students are just approaching fluency and read in phrases using a combination of silent reading and reading aloud. Students in this stage are described as being able to read most single and many two-syllable words correctly. As accuracy improves, the rates at which students are able to read increase. As fluency improves, students prefer to read silently and rely less on pointing to words as they read. Students at this stage have mastered beginning and ending sounds, most consonant blends and digraphs and the CVC short vowel patterns. They begin to explore long vowel and less common patterns. When word recognition becomes automatic, students are able to focus attention on expression such as emphasizing words, changes in intonation and pausing, all of which aide in comprehension. Time spent reading is necessary then for students to develop word recognition which will help them to gain confidence in their ability to

read, allowing them to focus more attention on comprehension.

Extensive research by Guthrie and Wigfield (1997) has established that there is a relationship between reading motivation and time spent reading as well as comprehension.

Literacy skills are a foundation and predictor of academic achievement, and as a result educators are being asked to focus more attention on literacy achievement in order to improve overall academic success(ASHA, Wright, Fugett, & Caputa, 2013, p. 369).

According to de Jong and Bus, the definition of literacy however, has expanded beyond one's ability to read and write to also include ICT literacy skills (as cited in Ciampa, 2012, p. 98). These new literacy skills have called for a transformation of literacy instruction, according to Leu, Kinzer, Coiro, and Cammack (as cited in Larson, 2010, p.15). Wright, Fugett, and Caputa (2013) mention that some researchers argue that as a result of this change, traditional classroom teaching styles must be modified. Teachers are being encouraged to incorporate technology in instruction including, e-books and digitally interactive reading activities, as well as identify best practices for

utilizing these sources to support literacy development (Wright, Fugett, & Caputo, 2013).

Larson (2010) describes e-books as having the potential to introduce new learning possibilities by integrating traditional and new literacy skills. She also describes a discrepancy between literacy experiences in school and the literacy experiences of students outside of school. Ciampa (2012) suggests, that reading instruction should be taught in contexts that are familiar to students by incorporating technology to complement their out-of-school-lives (Scheiter & Gerjets, Ciampa, 2012, p. 96). A recent study on children's media usage by Common Sense Media (2013) has shown that children up to age 8 are spending significantly longer periods of time engaged in media activity than reading or being read to. According to a recent survey by Grunwald Associates LLC (2013)72% of parents with children in grades K-12 reported that their children are not allowed to use mobile devices in the classroom. However, some schools have adopted a "Bring your own device" (BYOD) approach, in which the students are allowed to use a mobile device in the classroom (Grunwald Associates LLC, 2013, p.14). In fact, some schools even require this, with 17% reporting their school requires at

least one portable device to be available for the student, whether it's a laptop, netbook, mobile device or some other device. "This could be a signal that technology that can move between homes and schools could become essential for academic learning" (Grunwald Associates LLC, 2013, p.15)The survey results indicated that more than 50% of parents support this initiative and have taken it upon themselves to utilize mobile devices at home for their children's education. 90% of parents with children in grades K-2 reported that they believed mobile devices and apps can make learning fun. These same parents also in large agreed that these aforementioned tools can promote curiosity (84%), teach reading (79%) and math (75%), teach problem solving (73%), teach science (72%), foster creativity (71%) and teach foreign languages (71%).

According to Blanchard and Moore (2010), these digital media learning opportunities come at a particularly critical period in development when emergent literacy skills are beginning to develop based on their experiences. Research conducted by Blanchard and Moore (2010) takes a "first look" at how digital media experiences are influencing children's' emergent literacy skills. They state that children are approaching literacy in new ways

and developmental milestones are changing. In fact, they propose "it just may be that emergent literacy skills development is evolving to meet the needs of digital media—and this may be happening in one generation and throughout the world" (Blanchard & Moore, 2010, p.15).

Reading Motivation using E-books

Malloy, Marinak, & Gambrell state motivation refers to "the likelihood of choosing one activity over another, as well as the persistence and effort exerted when participating in the chosen activity" (as cited in Ciampa, 2012, p.31).

Kinzer, Larson and Prensky describe children today as "digital natives" who are more motivated by electronics than any other type of entertainment (as cited in Wright, Fugett & Caputa, 2013 p.367). Furthermore, Bennett, Maton, Kervin, Prensky and the National Education Association say digital devices are found to be more appealing than paper-based activities (as cited in Wright, Fugett & Caputa, 2013, p.367). The Association of American Publishers reported a 202% increase in revenue of e-books between 2010 and 2011, while also noting that e-books are becoming more popular, and sales of printed text are decreasing.

(Woodward, Miranda, Williams-Rossi, Johnson & McKenzie, 2011, p.82).

Wright, Fugett and Caputa (2013) proposed that using electronic books over traditional print books might have a positive effect on reading interest, encouraging reading in and out of school.

As part of their study on e-books and comprehension, they also looked at interest and enjoyment levels when reading electronic text versus paper text. Participants were second grade students within normal limits for their age in reading skills, with no history or recommendations for special services, and of middle socioeconomic status. Each subject was asked to read an electronic storybook on the iPad as well as one story using a traditional print book. Both stories were matched on reading-difficulty, reading interest level for pre-K to third grade, page-length and genre.

Participant feedback from the study showed that each reader preferred and found the e-book on the iPad to be more enjoyable than reading the paper print book. Participants also provided an explanation for why they preferred the e-book which included reasons such as, the iPad was easier to hold and the paper book "hurt when

trying to hold the pages," they enjoyed turning the pages and using the electronic book-marker, they could understand the story better and the e-book offered the option to change the screen's contrast to lighter or darker (Wright, Fugett & Caputa, 2013, p.374).

Ciampa (2012) states that, "intrinsic motivation is required to initially arouse students to want to participate in learning (p.31)." Research by Randi and Como (2000) has shown that providing students with the freedom to choose reading materials increases motivation, effort, and performance (as cited in Ciampa, 2012, p.31). Thus, Randi and Corno, propose that allowing students to choose their reading activities should increase their intrinsic motivation to learn and read (as cited in Ciampa, 2012).

Ciampa conducted a pilot study which looked at 1st grade students' engagement and attitudes toward electronic text in addition to reading comprehension. Research was based on six case-studies of which participants were 1st grade students from the same suburban school district, who did not receive special services or require any additional reading support. Participants completed a questionnaire which was a combination of the Motivation for Reading Questionnaire (Gambrell, Palmer, Codling & Mazzoni 1996)

and McCough and Wigfield's Reading Activity Inventory (Ciampa, 2012). This questionnaire assessed self-efficacy, choice, interest, involvement, feedback, frequency of reading, frequency of internet use at home and school, frequency of library visits, text-type reading preferences, as well as students' feelings and attitudes toward both print text and electronic text. Ciampa (2012) also used a Behavioral Observation Checklist to record responses and behaviors and assess level of engagement. A book log was used to measure motivation to read online e-books at home.

Results of this study showed that providing the opportunity to choose what one reads from a wide variety of texts may have an impact on reading engagement. Results also indicated a strong correlation between enjoyment of the online e-books and their preference for a choice of books. Ciampa (2012) suggests that this correlation between the frequency of at home reading and enjoyment of the e-books, and the participants' preference for choosing their own books, suggests that the electronic format combined with the opportunity to choose is highly motivating. Responses also showed that participants were interested in the interactive features of the online books which included narration and highlighted text.

Deci and Ryan suggest "Motivation to read is both the essential element for actively engaging young children in the reading process and a strong predictor of later reading skills" (as cited in Ciampa, 2012, p.93). Deci and Ryan say that motivation is more than time spent reading but is also related to children's confidence in themselves as readers (as cited in Ciampa, 2012). According to Guthrie and Wigfield , "Increasing reading competence is motivating for students, and increasing motivation leads to more engaged reading time" (as cited in Ciampa, 2012, p.93).

Ciampa (2012) discusses Bandura's (1977) concept of self-efficacy and how a student's sense of competence in completing a task impacts their willingness to engage in that activity (p.96-97). Furthermore, according to Chapmna and Tunmer, this self-concept as related to reading is determined by early experiences with reading (as cited in Ciampa, 2012).

Ciampa's study (2012) developed as a result of the decrease in motivation to read which occurs across the elementary school years and with determination to find a way to promote reading and engagement in literacy activities among children. Ciampa's study (2012) looked at the effectiveness of online e-books on 1st grade students'

reading motivation. Background information about the student participants, including their reading habits, behaviors, participation and needs, was collected using report card comments, interviews, teacher field notes and parent questionnaires. Qualitative data about the children's reading experiences were collected through researcher observations and field notes during regular literacy instruction time and online e-book reading sessions in the computer lab. A participant questionnaire based on the Motivation to Read Profile (Gambrell, Palmer, Codling, & Mazzoni, 1996) was used to explore the students' experiences and attitudes toward online e-books (Ciampa, 2012). Ciampa (2012) also collected data using a parent questionnaire, teacher interviews and reading assessments. The online e-books used for this study were enhanced with music and animation as well as optional narration.

The results of this study support the idea that online storybook reading and instruction promote reading motivation among young readers (Ciampa, 2012). Online reading was also shown to be effective for students with reading and attention difficulties who were described as being "highly engaged, attentive and involved during the online storybook reading and the multimedia-based reading

activities" (Ciampa, 2012, p.122). Questionnaire results were consistent with the pilot study in revealing that students preferred being able to choose their own reading materials. Ciampa reports that the results of this study are also consistent with the research of de Jong and Bus (2002) in finding that enhancements such as animation and 3D features increased engagement and motivation (Ciampa, 2012).

Research by Corcoran and Mamalakis revealed that fifth grade students felt that "reading is a boring way to spend time" and that they do not discuss books they enjoy with their peers (as cited in Miranda, Williams-Rossi, Johnson & McKenzie, 2011, p.83) In addition to elementary and middle school students who are not motivated to read because they find it boring, are those students with low reading skills. Cunningham and Krashen reported that when these readers have difficulty decoding words or comprehending text, they lose interest and therefore avoid reading which is the very practice needed for them to improve their skills (as cited in Miranda, Williams-Rossi, Johnson & McKenzie, 2011, p.83).

Miranda, Williams-Rossi, Johnson and McKenzie (2011) were interested in discovering if reading an e-book for two

months would have a positive impact on the attitudes toward reading and state test scores of middle school students enrolled in a reading improvement class. They were also interested in observing the response-to-text notes these students would make, but due to unexpected limitations, research in this particular area could not be completed as anticipated.

Participants in the study were sixth, seventh and eighth grade students who were observed reading on Kindle devices during a 15-20 minute sustained silent reading period, with a total of 30 hours observed over the two months. In addition to the observations of engagement and text response, researchers used informal student interviews, photographs of e-reader use, Likert-scale satisfaction surveys, teacher satisfaction questionnaires and the pre- and post- test scores from the state reading tests (TAKS). The study used the Gambrell, Palmer, Codling, and Mazzoni Motivation to Read Profile, to measure reading motivation in terms of self-concept and value of reading (as cited by Miranda, Williams-Rossi, Johnson & McKenzie, 2011, p.84).

Study results revealed that students generally liked using the e-reader, with many believing their reading

improved as a result. Most students also reported reading 1-4 e-books over the duration of the study. Students were observed as becoming quickly engaged, utilizing e-book features such as the dictionary, text-to-speech and adjusting font-size. One teacher reported that students whose primary language was not English found using earphones to be very helpful. No significant differences were found among the groups in terms of self-confidence, value of reading and the full survey or between grade levels and teachers. There was a significant difference however between gender self-concept levels, with male self-concept levels being consistently higher than the females. Furthermore, male participants' attitudes in terms of value of reading improved significantly after using the e-readers while female attitudes declined. State reading test scores improved for both groups from 2010-2011, but there was not a significant difference between the gains of the two groups. The study also found a significant difference between the students' level of satisfaction using the e-reader when comparing the teachers and their assignments. Researchers suggested that this could have been related to the difference in the number of books the teachers made available for the students.

According to Marinak and Gambrell, reading engagement impacts motivation and reading achievement (as cited in Jones & Brown, 2011). Jones and Brown (2011) were interested in exploring the impact of e-books on children's' reading engagement, comprehension and enjoyment.

Participants in the study were third grade students mostly reading on grade level with a few reading below grade level. Students were divided into four groups according to reading level and the study consisted of three phases.

Overall, students reported positive feedback in regards to using the e-readers, such as; the books are always available to read as opposed to having to share them, it eliminates having to carry multiple books, and e-readers offer privacy. The researchers contributed this idea to the possibility that students, especially struggling readers, may not want their peers knowing what level they are reading.

Phase I involved students reading aloud from a traditional paper book text using a "bump reading" system (Jones & Brown, 2011, p. 10). Readings were followed by activities to assess comprehension and prediction skills, a

mapping activity, as well as a comprehension test and an enjoyment survey.

In Phase II of the study, students bump read from an electronic storybook on Raz-Kids.com using a laptop. Following the story, students participated in an activity assessing comprehension, a mapping activity and the comprehension test and enjoyment survey.

In Phase III, students bump read another e-book from the same website. Students were assessed again using the activities, test and survey. Participants were then provided with opportunities to explore the website on their own, which provided them access to approximately 100 books with a text-to-speech option. The students were asked to complete a final survey to determine their overall enjoyment of the e-books.

Scores from the comprehension test in Phase II were found to be significantly lower than scores from test 1 and 3, despite the fact that both tests 2 and 3 were based on comprehension of text presented in electronic form. Enjoyment surveys did not reflect a higher level of enjoyment or preference for a particular format. The e-books in this study were not shown to have a significant impact on comprehension, engagement or enjoyment. Results

of the study are however consistent with Flowerday, Schraw and Stevens (2004) in suggesting a correlation between engagement and motivation and being able to choose one's own reading materials (as cited in Jones & Brown, 2011, p. 16).

Research by Aydemir and Öztürk (2012) looked at the effect of reading text on a computer screen on reading motivation. Participants were fifth grade students in Turkey. Students were pre-assessed to determine their level of reading motivation. Students in the experimental group read excerpts from their text books presented on a computer screen while the control group read from the text book. The post-test, the "Reading Motivation Scale for Texts" was designed by the researchers to measure reader motivation (Aydemir & Öztürk, 2012, p. 359). Results showed that students who read the electronic texts had significantly lower motivation levels than those who read from the text book.

Reading Comprehension using E-books

Ciampa (2012) reports that previous research on e-books have assessed participants mostly 3rd grade and older, using low-level literal questions and story-retellings, and have mostly relied on CD-ROM formats. Ciampa (2012) was

interested in using more modern media and higher-level cognitive strategies in her pilot study, which looked at the effects of an online reading program and e-book question-answering tasks on 1st grade children's listening comprehension. Pearman says that E-book narration eliminates the task of decoding for early readers providing the opportunity to focus attention on processing and comprehension (Ciampa, 2012, p. 52). E-books also offer a dictionary feature which allows the reader to hear the pronunciation of a word as well as an explanation. Several researchers feel, however, that these enhancements could potentially distract the reader and thus hinder comprehension (Ciampa, 2012).

Ciampa (2012) measured listening comprehension using the Gray Oral Reading Test-4. A rubric from Smith, Randell, Nelley, and Giles PM Benchmark Reading Kit 2 was used to assess comprehension skills which included, using prior knowledge to make connections, questioning, visualizing, inferring and making predictions, and synthesizing.

Results of the study showed that listening comprehension of all participants improved with the mean comprehension score increasing from 49.2% to 71.7%. Results indicated that participants were more willing to respond

and correctly answered closed-ended multiple choice literal questions, which focused on synthesizing. Responses to open-ended questions, that were more cognitively demanding, requiring participants to make predictions, visualize, make connections and express personal thoughts and opinions, were limited. These results were consistent with the research of Miller and Smith and Van Kleeck (Ciampa, 2012). Ciampa (2012) reports that only "slight improvements" were made in answering these higher-level questions (p.50).

Explanations offered for the difference in responses include the possibility that these questions are more demanding and therefore students displayed more avoidant behaviors as a result. Also noted, was the fact that participants were not rewarded with immediate feedback as they were when answering the literal questions (Ciampa, 2012).

"In sum, the online e-books provided a multisensory reading experience that supported comprehension and critical reading by posing questions before, during, and after reading, which may have facilitated grade 1 children's listening comprehension…"(Ciampa, 2012, p.55).

Research conducted by Wright, Fugett, and Caputa (2013) looked at e-book enhancements such as animation,

highlighting, thesaurus and dictionary tools to determine if these resources improve comprehension, making them more effective than traditional print books. Reading comprehension was assessed using two researcher developed comprehension quizzes based on the traditional print storybook and two quizzes based on the e-book story. The quizzes consisted of "two term-defining questions, one implicit question, and one explicit question" (Wright, Fugett & Caputa, 2013, p.372). Resources available on the iPad e-book which included a dictionary, thesaurus and a pronunciation tool, were matched for the traditional print book, by providing a paper dictionary, thesaurus and the option to ask the researcher questions. The study compared the number of times participants utilized the available resources for each storybook format.

The results of the study showed that reading comprehension scores were somewhat higher for the traditional print text but these differences were not significant. However, the number of times the e-book resources were utilized was significantly higher than those made available for the traditional print text. These findings are consistent with a study conducted by Grimshaw, Dungworth, McKnight and Morris (2007) which resulted in

significantly greater usage of electronic dictionaries compared with print versions.

Research conducted by Oakhill, Cain and Bryant shows a correlation between comprehension skills and working memory (as cited in Grimshaw, Dungworth, McKnight & Morris, 2007). CD-ROM storybooks often include narration by multiple "characters" within the story, which Grimshaw, Dungworth, McKnight and Morris (2007) describe as preventing the reader from having to decode words and helps working memory. Grimshaw, Dungworth, McKnight and Morris (2007) consider memory to be a "confounding variable" that has not been taken into consideration by earlier studies which have relied on story-telling and multiple-choice questions (p.586). As a result, the researchers conducted a study to address this issue as well as incorporate higher-level inference questions. The study examined the effect of electronic versus printed text on children's comprehension and reading speed as well as on the retrieval of information as determined by the ability to make inferences (Grimshaw, Dungworth, McKnight & Morris, 2007). The study also aimed to identify features of three different text formats if any, that improved reading comprehension.

Participants were between the ages 9 and 11. Since the researchers were unable to locate a story that was available in all three formats desired, they decided to use two different storybooks, each available in two different formats. Storybook versions included CD-ROM versions with and without narration, as well as electronic and traditional print books. Since the researchers were interested in eliminating memory as a variable, participants were not only encouraged to use the story as a reference when taking the comprehension tests, but were even directed to the proper location within the text.

Participants who read the electronic version of the text required less time to complete the comprehension test compared to those who read the traditional printed version. Those who read the CD-ROM version without narration required the most time to complete the test.

Despite participants utilizing the electronic dictionary, differences in test scores between participants who read the electronic version versus the traditional printed version were not significant. Possible explanations offered for these findings include the possibility that participants were accurately matched to books on their reading level in so much that the dictionary, although

accessed, did not offer any advantage to the reader. The researchers state that "even if the dictionary usage is because of novelty rather than of need, the habit of accessing it may become established in the young reader" (Grimshaw, Dungworth, McKnight & Morris, 2007, p.597). Another suggestion offered is that the definitions may not have been appropriately matched to the participants' reading levels also eliminating any advantage to the reader of the electronic text (Grimshaw, Dungworth, McKnight & Morris, 2007). Nonetheless, the researchers suggest that electronic dictionaries offer the reader the advantage of an immediate definition over having to remember the correct spelling and then locate the word.

Test scores for both retrieval and inference questions among those who read the CD-ROM version with narration were significantly higher than those who read the CD-ROM version without narration (Grimshaw, Dungworth, McKnight & Morris, 2007).

Reading Fluency Using E-books

Oakley (2005) discusses the many components that are thought to come together to form the concept of "fluency." According to Worthy and Broaddus, although there is no one definition, reading rate, accuracy and automaticity of word

recognition, smoothness and appropriate phrasing, expressiveness and prosody (Oakley, 2005) are all accepted as being elements of fluency. Oakley (2005) states that reading fluency has often focused solely on automaticity of word recognition and so research and instruction have focused on decoding and sight word recognition. Oakley (2005) suggests that there are four types of non-fluent readers which include non-fluent struggling, non-fluent competent, non-fluent low-accuracy and non-fluent low comprehension. It is important then that instruction meets the specific needs of the non-fluent individual. According to Rasinski and Padak, "Fluent readers tend to enjoy reading more, have more positive attitudes toward reading and a more positive concept of themselves as readers than do less fluent readers" (as cited in Oakley, 2005, p.15).

One of the components of reading fluency is being able to identify and make meaning of phrases which is also a part of semantic knowledge. Prior research by Oakley (2003) used e-books to teach this concept and she suggests that electronic books with highlighted text phrases may support instruction in identifying phrase boundaries.

Clark says that "Children need to know what fluent reading sounds like in order to become fluent readers themselves" (as cited in Oakley, 2005, p.16). Oakley (2005)

suggests that electronic talking books can provide the opportunity to listen to fluent reading while making it easier for students to read along following highlighted text. Another important skill that readers need to develop is metacognition or the ability to monitor their own reading in comparison with fluent reading. Listening to a recording of their reading can aid in this process. Some interactive e-books allow readers to record their own voices which would allow for this self-monitoring.

Oakley (2005) makes suggestions for instructional methods that may benefit non-fluent readers. She states that electronic texts have been shown to motivate some children that are not motivated to read as revealed in her prior research (2004) and that practicing reading often is essential in developing fluency. The National Institute of Child Health and Human Development suggests that another strategy for developing fluency is repeated readings (as cited in Oakley, 2005, p.18). Electronic text offers an advantage for repeated readings in that it eliminates the need to decode words by providing pronunciation and definitions, which then improves reading rate and provides the opportunity to focus attention on comprehension, according to Glasglow and Lewis (as cited in Oakley, 2005, p.18).

Paired reading is another method of instruction that the author has implemented with students using electronic books. E-books offer narration along with highlighted text which allows students to read along with the text (Oakley, 2005).

According to Joseph, reading deficiencies are the most common reason for special education referrals (as cited in Lagrou, Burns, Mizerek & Mosack, 2006). According to Fuchs, Fuchs, Gresham, Kaminski, Good and Shinn, measures of fluency are often used for identifying problems and making instructional decisions and according to Berninger, these measures can also be used to screen student skills (as cited in Lagrou, Burns, Mizerek & Mosack, 2006). Being that fluency can be assessed using text with or without context, according to Burns, the format used could affect the outcome (as cited in Lagrou, Burns, Mizerek & Mosack, 2006).

Lagrou, Burns, Mizerek & Mosack were interested in the effect of text format and the reader's skill level on fluency and comprehension. Participants were third grade students who were identified as low, average or high level readers and divided into groups accordingly. The same text was presented to one group from each reading level within a

book and to the second group within each reading level as a separate single typed page.

Results suggested that the presentation of the text did not have a significant effect on fluency and comprehension scores for the average and high level readers. However, there was a significant difference for low readers, who read more fluently and with more accurate comprehension when reading from the book compared to the typed text. In fact, the fluency rate when reading the typed page fell below the rate of 50 words per minute, which Burns, Tucker, Hauser, Thelen, Holmes and White identified as the required level for comprehension to take place (as cited in Lagrou, Burns, Mizerek & Mosack, 2006, p. 106). Furthermore, there was a significant difference in reading comprehension between the two conditions, with low level readers demonstrating higher levels of comprehension when reading the book as opposed to the typed text. These findings suggest that format may impact assessment scores and should be taken into consideration when screening students.

Research conducted by Korat and Shamir (2012) used e-books to determine their impact on word learning and reading among young children. Jenkins, Stein and Wysocki found that "Children must be exposed to a word in the

context at least six times before they are able to learn its meaning" (Korat & Shamir, 2012, p.136). Knowing this, the researchers were interested in exploring whether using electronic text alone to present students with new words, multiple times, would result in learning the meaning of the word. They compared this with directly teaching the word using electronic text that offered a dictionary. The researchers felt that multiple exposures to new words using a combination of visual, audio and print would be sufficient for young children to read and learn the meaning of new words, which would in turn support comprehension. Participants were Israeli children of Low socioeconomic status in pre-K and Kindergarten.

Results indicated that participants who read the e-book with or without support, showed significantly more progress in reading words than those who did not read the e-book. Furthermore, participants who read the e-book with support showed more progress in learning the meaning of words compared to those who did not read the e-book. Korat's and Shamir's (2012) findings also show a positive correlation between reading and learning the meaning of new words and story comprehension. The research suggests that e-books enhanced with dictionaries can be used to directly teach word meaning.

Using E-books to Support Reading With Children With Special Needs

The research of MClanahan, Williams, Kennedy and Tate (2012) was based on a pre-service teacher's (Williams) action research project in which she focused on a fifth grade boy with ADHD who was reading on a second grade level. Initial assessments revealed that Josh struggled with phrasing and punctuation and did not use expression. He did not self-correct and did not attempt new words, despite usually being able to correctly pronounce the beginning sounds of the word. Josh also struggled with comprehension, including recalling details, sequence and making inferences.

Williams used a combination of iPad applications including e-books with narration and e-books that allowed Josh to record and listen to himself read the story. This helped Josh to self-monitor his reading and he was able to recognize that he needed to slow down. Williams reported that Josh "seemed excited to read on the iPad, he seemed to have an improved attitude toward his schoolwork and toward himself" (MClanahan, Williams, Kennedy & Tate, 2012, p.25).

Results of the 6 week study showed that Josh improved one full grade level in reading ability. The researchers

suggested that certain features of the iPad may have contributed to Josh's success. These features include the manipulative touch screen, which Raggi & Chronis say "promotes the use of several modalities including visual, and tactile/kinesthetic" (as cited in MClanahan, Williams, Kennedy & Tate, 2012, p.26). Other explanations offered were the ability to record Josh, allowing him to listen to his own reading, the ability for Josh to have more control when using the iPad and high levels of sensory stimulation offered by the iPad.

Although research has looked at digital tools for students with learning disabilities, limited research has looked at electronic text for individuals with intellectual disabilities. Dawson, Venn, Gunter, Hebert & Murdock found that digitally spoken text is easier for students with disabilities to comprehend (as cited in Douglas, Ayres, Langone, Bell & Meade, 2009, p.36). Leong, Oakley, Wise and Olson found that the use of text-to-speech resulted in improved comprehension for struggling readers and Elkind, Hecker, Burns & Katz found a correlation between text-to-speech (TTS) and increased reading accuracy (as cited in Douglas, Ayres, Langone, Bell & Meade, 2009, p.36).

Douglas, Ayres, Langone, Bell and Meade (2009) conducted six studies to explore the effect of electronic text used in combination with other supports, for students with mild to moderate intellectual disabilities. The first study used PowerPoint to present electronic text which was digitally recorded and read aloud with embedded video clips. The purpose of the study was to determine the effect of the presentation of text on reading comprehension. Results of the study did not indicate that video-supported text had a significant influence on comprehension of students with intellectual disabilities.

The second study used Microsoft Reader to look at the effect of highlighted text in combination with text read aloud on comprehension, including story retelling and the number of words read correctly, for students with moderate intellectual disabilities. The findings of this study did not indicate that highlighted text resulted in improved comprehension.

The third study used Microsoft Reader to explore the impact of TTS, in combination with highlighted text and repeated readings, on story retelling ability. Repeated readings were not shown to have a significant impact on story retell in this study and thus the findings were not consistent with Therrien's research, which suggested that

repeated readings were successful for both students with and without learning disabilities(as cited in Douglas, Ayres, Langone, Bell & Meade, 2009, p.38).

The fourth study compared electronic text without additional support to the impact of video and audio support on comprehension of simple written directions. Results indicated that non-readers and low-level readers benefited most from the video and audio supported electronic text.

The fifth study looked at the effect of audio and video supports used in combination with a graphic organizer and electronic text on the ability to recall and follow a functional reading task. Results showed improved comprehension with use of the graphic organizer.

The final study explored the effect of a graphic organizer on comprehension of narrative text immediately following the story as well as the day after. All three participants showed gains in comprehension both days.

Schneps, Thompson, Chen, Sonnert and Pomplun (2013) explore the advantage of reformatting text using electronic books to meet the special needs of individuals with dyslexia and other impairments. Although once mostly associated with phonological skills, Schneps, Thompson, Chen, Sonnert and Pomplun (2013) state that deficits in visual attention and poor oculomotor control are now

recognized as contributing factors related to dylexia (p.1). This led to the development of Span Limited Tactile Reinforcement (SLTR) which uses large scrollable text, allowing only a few words at a time to be visible on a small screened e-reader. A small screen was chosen because previous research using an iPod v. the iPad resulted in favorable outcomes for students with dyslexia who used the smaller device.

This study was interested in the effect of using the SLTR method v. paper text on comprehension and speed for readers with dyslexia. The researchers hypothesized that the SLTR method would lead to gains in comprehension and speed. All but one participant attended a high school for students with language-based disabilities and all participants were identified as long time struggling readers. The Test of Word Reading Efficiency (TOWRE), three subtests of the Comprehensive Test of Phonological Processing (CTOPP) and the Block Design subtest of the Wechsler Abbreviated Scale of Intelligence (WASI) were used to pre-assess students (Schneps, Thompson, Chen, Sonnert & Pomplun, 2013, p.2). Text was displayed in size 42 font using the GoodReader app on an iPod Touch.

Results showed participants with low visual attention span scored higher on measures of comprehension when using

the iPod v. paper text. However, the opposite was true for those with high visual attention span. Those determined to have low level phoneme decoding skills or poor sight word reading scored higher in terms of reading speed using the iPod v. paper text. Yet again, the exact opposite was true for those determined as having high phoneme decoding skills, who read faster using paper text. The study suggests that some readers with dyslexia can benefit from formatting text to display few words at a time on small e-readers.

Summary of the Literature Review

Research on the impact of e-books on reader motivation has produced conflicting results. Wright, Fugett and Caputa (2013), Ciampa (2012), and Miranda, Williams-Rossi, Johnson and McKenzie (2011) found that e-books have a positive impact on reader motivation, with readers reporting high levels of enjoyment when using the e-books over traditional print books. Miranda, Williams-Rossi, Johnson and McKenzie (2011) reported that even reluctant readers were more motivated and engaged when using e-books. Interestingly, their research indicated a gender difference among attitudes about e-books suggesting that e-books may have a greater impact on the attitudes of males over females.

In contrast to these findings, Jones and Brown (2011) and Aydemir and Öztürk (2012) found that e-books did not have a significant impact on engagement, enjoyment and motivation. In fact, Aydemit and Öztürk (2012) reported that electronic text resulted in significantly lower levels of motivation compared to those who read traditional print books. Jones and Brown (2011) found that readers in their study did not prefer one format over the other.

Randi and Como (2000), Ciampa (2012), Flowerday, Schraw and Stevens (2004) et al. (2004) and Jones & Brown (2011) found that allowing children to choose their own reading materials has a positive impact on reader engagement and motivation. Furthermore, Ciampa (2012) and Jones and Brown (2011) suggest that providing a wide selection and variety of reading material also has a positive impact on reader engagement and thus reading comprehension(Jones & Brown, 2011).

Ciampa (2012) and Jones and Brown (2011) found that children displayed high interest in the interactive features of electronic books including narration, highlighted text, pictures and videos, animation and sound effects. Despite this interest, Jones and Brown (2011) reported that participants in their study did not indicate a preference for electronic text. Wright, Fugett and Caputa

(2013) and Grimshaw (2007) found that readers utilized resources including the online dictionary significantly more when reading e-books compared to print books. Wright, Fugett and Caputa (2013) suggested that enjoyment or ease of use may explain this increased use of resources. Grimshaw (2007) found that narration in particular, of the available resources, significantly improved comprehension and increased readers' level of enjoyment. Korat and Shamir (2012) found that e-books enhanced with dictionaries can support children's learning of word meanings and highlighted text may result in increased attention. MClanahan, Williams, Kennedy and Tate (2012) suggested that the results of their study, which showed reading gains for a fifth grade student with ADHD, may be attributed to the visual, tactile/kinesthetic and sensory stimulating features made available with the iPad. One particularly valuable feature for this study was the option to record one's voice, allowing the reader to monitor their own reading. Douglas, Ayres, Langone, Bell and Meade (2009) reported that video-supported text and highlighted text did not have a significant impact on comprehension for students with intellectual disabilities. The research did show however, that non-readers and low-level readers benefited the most from the video and audio supported text.

Research on the impact of e-books on comprehension was also conflicting. Ciampa (2012) found that electronic text improved listening comprehension for all participants in the study. However, Wright, Fugett and Caputa (2013) found that comprehension was actually higher for those reading traditional print books, although there was not a significant difference between scores. Grimshaw (2007) found no significant difference in comprehension scores between electronic and print text.

Lagrou, Burns, Mizereck and Mosack (2006) found that when comparing text in a book to a single typed page, there is no significant effect on fluency and comprehension for average and high level readers. However, low readers read more fluently and had improved comprehension when reading from the book. Although this research does not utilize electronic text, it suggests that text format may impact reading fluency and comprehension scores.

Korat and Shamir (2012) found a positive correlation between reading electronic text and the ability to read and learn new words.

MClanahan, Williams, Kennedy and Tate (2012), Douglas, Ayres, Langone, Bell and Meade (2009) and Schneps, Thomson, Chen, Sonnert and Pomplun (2013) found that electronic text can benefit some readers with special needs. Mclanahan,

Williams, Kennedy and Tate (2012) attribute the reading gains made by one fifth grade boy with ADHD, to the iPad. Douglas, Ayres, Langone, Bell and Meade (2009) found that non-readers and low-level readers with intellectual disabilities benefited from video and audio supported text. Schneps, Thomson, Chen, Sonnert and Pomplun (2013) found that the iPod increased comprehension for readers with low visual attention spans and increased reading speed for those with low level phoneme decoding skills or poor sight word recognition. They also reported that some readers with dyslexia can benefit from formatting text to display a few words at a time on small e-readers.

CHAPTER III

Methods

Participants

The participants in this study were 22 first grade students, between the ages of 6 and 7, attending a suburban elementary school that was one of the top socioeconomic, highest achieving districts in the state of NJ. This first grade population consisted of 13 boys and 9 girls, of whom 16 were Caucasian, 5 were Asian and 1 was African American. There were 4 students identified as having special needs. A sample of 6 students, including 2 low level readers, 2 mid-range level readers and 2 high level readers were assessed for reading fluency and comprehension throughout the study. All three pairs consisted of one boy and one girl.

The Teacher-researcher was a 29-year-old White female who student-taught Kindergarten in the school just prior to the study and was a Special Education Paraprofessional in this first grade classroom at the time of the study. She held a Bachelors of Science degree in Psychology with three years experience as a Mental Health Therapist and Crisis Assessment Specialist. She also held a Certificate of Eligibility with Advanced Standing in (K-6) Elementary Education, and was in the final semester of the Masters of Arts in Teaching Degree, at the time of the study. The

classroom teacher was a white male with 15 years teaching experience, who had taught in the district for 11 years.

Materials

Children's E-Books

52 Scholastic Storia, leveled, enhanced E-Books were used for this study. The features of the enhanced books included: language games, such as word searches and word scrambles, memory and sequencing challenges, full-color videos and graphics, music, illustrative puzzles, quizzes, optional narration, and touch the page, built-in dictionary with word definitions supplemented with images and optional narration. The E-books were selected based on student reading levels and their interests. The E-Books used in the study included:

Author:	Title:
Arlon, Penelope and Gordon-Harris, Tory	Scholastic Discover More™: See Me Grow
Arlon, Penelope	Scholastic Discover More™: Penguins
Arnold, Tedd	Super Fly Guy
Bang, Molly	My Light: How Sunlight Becomes

	Electricity
Bridwell, Norman	Clifford’s Good Deeds
Buckingham, Matt	The Bravest Fish
Cabrera, Jane	The Wheels on the Bus
Capucilli, Alyssa Satin	Inside a Zoo in the City: A Rebus Read-Along Story
Catrow, David	Max Spaniel: Funny Lunch
Catrow, David	Max Spaniel #3: Best in Show
Demas, Corinne	Yuck! Stuck in the Muck
Doodler, Todd H.	RAWR!
Emmett, Jonathan	Leaf Trouble
Funke, Cornelia	The Princess Knight
Hall, Zoe	The Surprise Garden
Huneck, Stephen	Sally Goes to the Beach
Huneck, Stephen	Sally Goes to the Farm
Joyner, Andrew	Boris Sees the Light
Kelley, True	Ollie’s New Tricks
Klein, Abby	Ready, Freddy! #1: Tooth Trouble
Krulik, Nancy	Appleville Elementary #4: Fooled You!
Leroe, Ellen	Aly Cat Takes Over First Grade!
Adapted by Rachel Lisberg	Sing and Read Storybook®: Do Your Ears Hang Low?

One Drowsy Dragon	Long, Ethan
Luckhurst, Matt	Paul Bunyan and Babe the Blue Ox: The Great Pancake Adventure
MacDonald, Margaret Read	Bat's Big Game
Maccarone, Grace	First-Grade Friends®: The Lunch Box Surprise
Maccarone, Grace	First-Grade Friends®: The Classroom Pet
Mack, Jeff	Hippo and Rabbit in 3 More Tales: Brave Like Me
Mara, Wil	Rookie Read-About® Dinosaurs: Tyrannosaurus Rex
May, Kyla	Lotus Lane #1: KiKi: My Stylish Life
McMullan, Kate	Fluffy and the Firefighters
Meadows, Daisy	The Magical Animal Fairies #7: Caitlin the Ice Bear Fairy
Nees, Susan	Missy's Super Duper Royal Deluxe #1: Picture Day
Parish, Herman	Amelia Bedelia Makes a Friend
Pinnington, Andrea and Gordon-Harris, Tory	Scholastic Discover More™: Animal Babies

Preller, James	Jigsaw Jones Mysteries #1: The Case of Hermie the Missing Hamster
Remkiewicz, Frank	Gus Gets Scared
Rex, Michael	Scarecrow
Robinson, Fay	Creepy Beetles!
Ryals, Lexi	Teeny Tiny Animals
Shannon, David	Good Boy, Fergus!
Shannon, David	David Goes to School
Slater, Teddy	The Pooches of Peppermint Park: Dottie and the Dog Show
Tuchman, Gail	National Geographic Kids™: Safari
Weeks, Sarah	Mac and Cheese and the Perfect Plan
Wilhelm, Hans	Noodles®: I Love School!
N/A	Sing and Read Storybook®: The Farmer in the Dell

Childrens' Print Storybooks

The 22 students selected 5 leveled traditional print storybooks, from the appropriate level book bin, to keep at their desks, as they routinely would do. These books were used as the traditional storybooks for the study and the titles were recorded after the students made their selections.

Apple iPads

Each of the 22 students were provided an Apple iPad with the Scholastic Inc.™© Storia App (2012)installed.

Observation Checklist

An Observation checklist (Appendix A) created by the teacher-researcher was used to record the students' preferences during free time. During this time, students were provided with the option to read traditional storybooks, read e-books on the iPad or play select educational games on the iPad.

Student Motivation Questionnaire

The teacher-researcher created a motivation questionnaire, (Appendix B) consisting of 5 questions, to determine students' book format preference, home experience with e-books, interest level in using e-books in the classroom and preference of enhanced e-book features. The questions were:

1. Which do you like better?

   Answer Choices: Storybook, E-book or I don't know

2. Do you read e-books at home?

   Answer Choices: Yes or No

3. If you could choose E-books or regular storybooks to read in school, which would you choose?

   Answer Choices: E-books, Storybooks or I don't know

4. What did you like or dislike about the e-books?

5. Do you want to say anything else about e-books?

Teacher-Researcher Journal

The teacher-researcher kept a journal throughout the study, to record any observations related to students' interactions with both the traditional books and the e-books.

Fluency Assessment

The students' reading Fluency was measured using the Teachers College Reading and Writing Project Reading Assessment for Independent Reading Books, Running Record and Fluency and Intonation Checklist (Appendix C). One hundred words from their e-books and storybooks were selected for the running record to assess accuracy, based on the scale from the Teachers College Reading and Writing Project, Reading Assessment for Independent Reading Books (Appendix C). The fluency benchmarks consisted of the following 5 reading behaviors:

- Responds to punctuation by changing his/her voice
- Reads dialogue with phrasing and expression
- Reads in phrases rather than word by word
- Changes voice to mark shifts in mood or tone

- Changes voice to reflect meaning and understanding

It is important to note, however, that the fluency benchmarks alone were not used as a means of determining independent level, until level J, when the Oral Reading Fluency Scale is implemented. This tool was borrowed from http://readingandwritingproject.com/ (2010)

Comprehension Assessment

The students' reading Comprehension was measured using two literal and two inferential questions from the Teachers College Reading and Writing Project (TCRWP) Reading Assessment for Independent Reading Books, Comprehension Questions (Appendix C). This Assessment was borrowed from http://readingandwritingproject.com (2010)

Personal Interview

The teacher-researcher conducted a personal interview consisting of three questions, at the end of the study, to determine if students felt the e-books helped them read at a faster rate, with improved accuracy and with more expression. The interview questions were:

1. Do you think reading e-books or regular books helps you read faster? Why?
2. Do you think reading e-books or regular books makes it easier for you to read more words correctly? Why?

3. Do you think reading e-books or regular books helps you read with more expression? Why?

Procedures

Qualitative and quantitative methods of data collection were used for the study, which took place over a period of four weeks. Using observational research, as the teacher/researcher, is considered appropriate in early childhood (Goodwin & Goodwin, 1996). The objective of this study was to determine the impact of reading enhanced e-books on the iPad vs. traditional storybooks with regard to motivation to read, reading comprehension and fluency.

Pre-Intervention Procedures

The teacher-researcher obtained students' current guided reading levels, as assessed by the classroom teacher, using the Teachers College Reading and Writing Project Fiction Reading Assessments (2010) and corresponding leveled print books. The teacher-researcher interviewed students to collect information regarding students' reading subject matter interests. Students' guided reading levels and interests were used to determine the selection of e-books. A virtual bookshelf consisting of the appropriate leveled books was created for each guided reading level, using the Scholastic Inc™© Storia App (2010)

on the iPad, with a total of 52 enhanced e-books. The 22 first grade students' guided reading levels ranged from level D-level M, with only one student reading at level D, no students reading at the E or F level, and with K as the median level. Based on this information, it was determined that two students would be selected from level G to represent the lower level readers, two students from level I were selected to represent the mid-range readers and 2 students from level K were selected to represent the high level readers.

Intervention Procedures

This study was conducted during the regularly scheduled guided reading sessions three days of the week; Monday, Wednesday and Friday for four weeks. The 22 students alternated each week between reading e-books on the iPad and reading traditional print books; reading e-books Weeks 1 and 3 and reading traditional books Weeks 2 and 4. Students were allowed to select any e-books from their leveled virtual bookshelf and any leveled traditional print books they had previously chosen and placed in their book bags kept at their desks.

During these guided reading periods, the six participants were individually assessed for reading fluency and comprehension by the teacher-researcher, using the

Teachers College Reading and Writing Assessment Project Reading Assessment for Independent Reading Books (Appendix C).

The 22 students were observed on the remaining two days, Tuesdays and Thursdays, all four weeks, during a free period in which they were provided the option to read e-books on the iPad, read their traditional leveled books or play an educational game on the iPad. Observations of student choices were recorded using the Observation Checklist (Appendix A).

Post Intervention

During Week 5, the study was concluded by administering a Student Motivation Questionnaire (Appendix B) and a teacher-researcher conducted Personal Interview (Appendix D). The following Table (Table 1), visually displays the data collection schedule.

Table 1

Daily Schedule for Weeks 1-4

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	4/21/14 E-Book X	4/22/14 E-Book C	4/23/14 E-Book X	4/24/14 E-Book C	4/25/14 E-Book X
Week 2	4/28/14 TSB X	4/29/14 TSB C	4/30/14 TSB X	5/1/14 TSB C	5/2/14 TSB X
Week 3	5/5/14 E-book X	5/6/14 E-Book C	5/7/14 E-Book X	5/8/14 E-Book C	5/9/14 E-Book X
Week 4	5/12/14 TSB X	5/13/14 TSB C	5/14/14 TSB X	5/15/14 TSB C	5/16/14 TSB X
Week 5		5/20/14 Personal Interview Sample	5/21/14 Student Question Population		

*X= TCRWP Running Record, Fluency and Intonation Score and TCRWP Comprehension Check, C= Observation Checklist

The following Table (Table 2) visually displays the data collection methods that answer each Research Question.

Table II

Data Collection Methods

	Observation Checklist	Motivation Questionnaire	Teacher-Researcher Journal	TCRWP Running Record	TCRWP Fluency Assessment	TCRWP Comprehension Assessment	Personal Interview
Hypothesis I: Motivation	X	X	X				
Hypothesis II: Comprehension			X			X	
Hypothesis III: Fluency			X	X	X		X

CHAPTER IV

Results

Overview

The data collected in this study were used to determine the impact of e-books, if any, on reader motivation, fluency and comprehension. Quantitative and Qualitative methods of data collection were used for this four-week study, including a teacher-researcher created observation checklist and motivation questionnaire. Other methods included a comprehension assessment, running record, fluency checklist and a teacher-researcher created personal interview. The teacher-researcher also kept an anecdotal journal throughout the study.

A teacher-researcher created observation checklist was used to obtain quantitative data related to student preferences when given the option to choose traditional print books, e-books or select educational games. This checklist was used 2 days a week, over the course of 4 weeks, to record student choices. There were 22 student participants and student choices were tallied and totaled for all 3 options, including the number of switches, for each observation day.

A five-question, teacher-researcher created questionnaire was also used during the last week of the study. This questionnaire was used to collect qualitative data pertaining to the 22 student participants' preferences and overall experience with e-books and traditional storybooks.

In an attempt to gain consistently quantifiable measures of reader comprehension, two literal and two inferential questions were used to assess the 6 selected students. These questions were borrowed from the Teachers College Reading and Writing Project (TCRWP) Reading Assessment for Independent Reading Books. The Comprehension Questions and Rubric, were used to assess reader comprehension and assign comprehension scores. Comprehension scores for e-books and traditional storybooks were calculated and compared for each student, to determine the impact, if any, text format had on that individual reader's comprehension. Additionally, scores were analyzed across all participants to identify any potential trends related to text format and reader comprehension.

Reader Fluency was measured using the Teachers College Reading and Writing Project Reading Assessment for Independent Reading Books, Running Record and Fluency and Intonation Checklist. Students were given an accuracy

percentage score and a fluency benchmark score, based on a running record consisting of 100 words. These scores were again analyzed for each of the 6 students.

A 3 question, teacher-researcher conducted interview was used to collect qualitative data related to students' perceptions concerning the impact e-books or traditional storybooks had, if any, on their fluency.

A teacher-researcher journal was used daily, to record anecdotal observations throughout the study. Information was recorded, related to the 22 students' interactions with both traditional books and e-books. These observations were later examined and linked to hypotheses.

Analysis of Data

Hypothesis I-Reader Motivation

It was hypothesized that reader motivation would increase as a result of introducing enhanced e-books. It was expected that the interactive components of the e-books would be more appealing to students than traditional storybooks. To test this hypothesis, the teacher-researcher created an observation checklist which was used 2 days a week throughout the study. This checklist was used to record students' preferences when given the option to

choose traditional print books, e-books or select educational apps.

After 8 days of observation, the number of times each option was chosen was totaled and the mean (or average) over 8 days was calculated for each. Also included, was the average number of switches occurring on a given day. It is evident from this data, that in this particular study, participants most consistently chose e-books in the Storia application (referred to as app from here on.) and educational apps, when given the choice among traditional storybooks, e-books or educational apps. Approximately 50% of the students chose e-books and 46% chose Educational Apps. Only 4% chose traditional storybooks. Results are visually displayed in Table 3.

Table 3

Motivation/Observation Checklist Results (n=22 students)

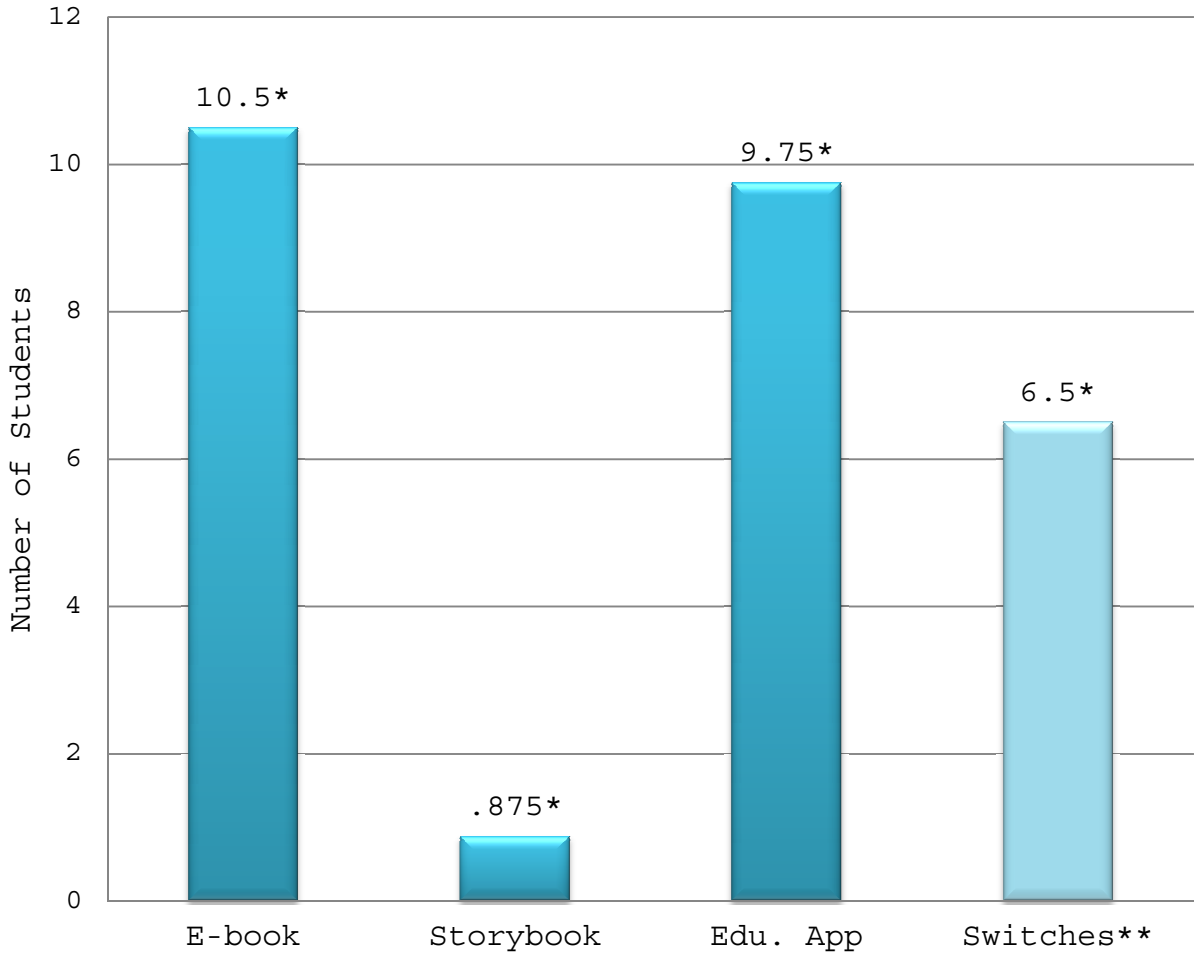
Totals	**Students who chose e-books**	**%***	**Students who chose storybooks**	**%***	**Students who chose edu.apps**	**%***	**Switches**
Week 1 Day 1	13	62%	1	5%	7	33%	0
Week 1 Day 2	14	70%	0	0%	6	30%	2
Week 2 Day 1	8	38%	1	5%	12	57%	11
Week 2 Day 2	8	40%	0	0%	12	60%	7
Week 3 Day 1	10	45%	0	0%	12	55%	21
Week 3 Day 2	13	62%	1	5%	7	33%	7
Week 4 Day 1	6	27%	2	9%	14	64%	2
Week 4 Day 2	12	55%	2	9%	8	36%	2
Mean Over 8 Days Number of students that chose item in category	**10.5**	**50%**	**.875**	**4%**	**9.75**	**46%**	**6.5**

*Percent of students who chose this option

Figure I displays data in a bar graph.

Figure I

Types of Books/Apps Used During 8 Days of Observation (n=22 students)

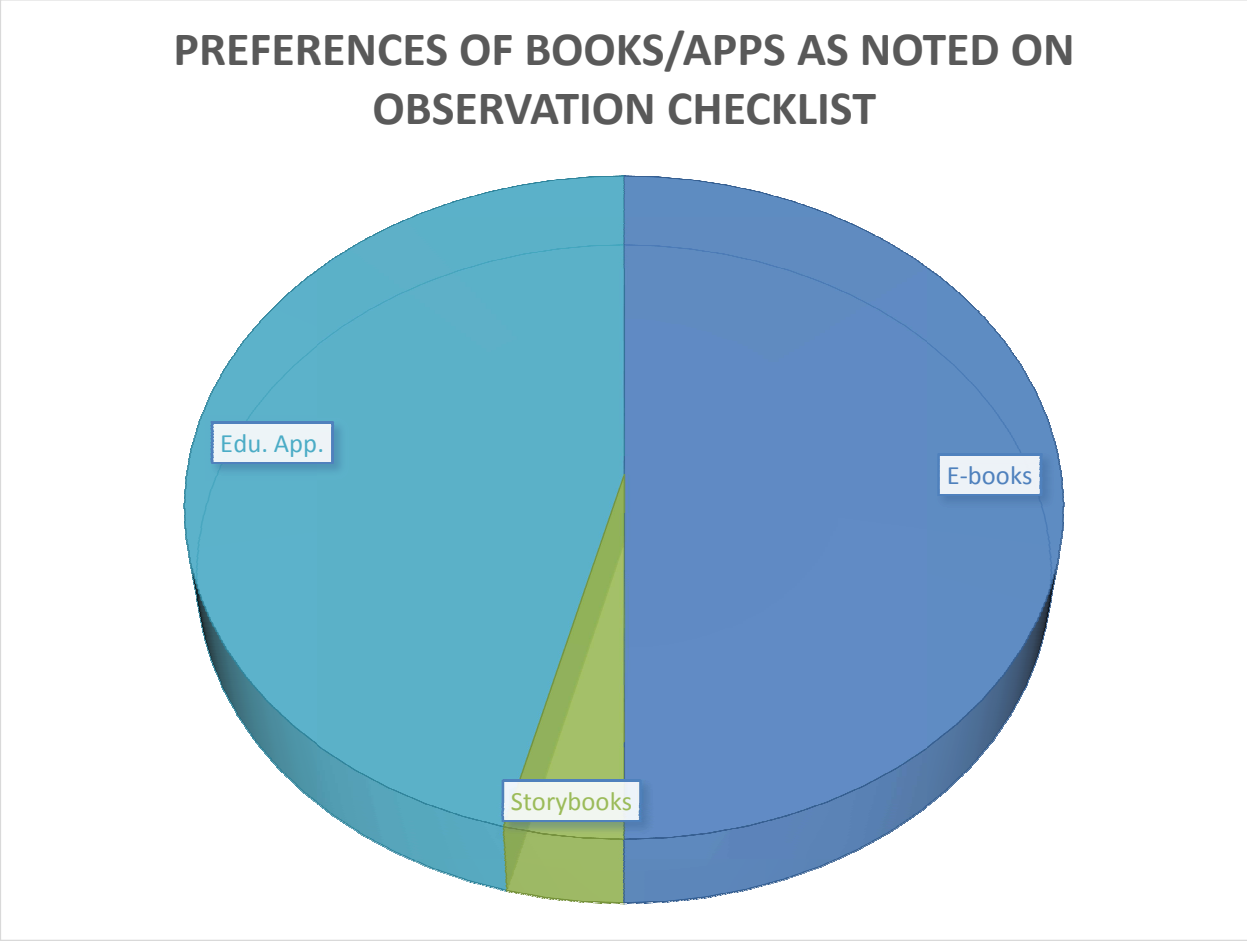


**Number indicates average for 8 days*
***Switches made between books/apps on a given day*

Figure II displays the same data in a pie graph.

Figure II

Preferences of Books/Apps as noted on Observational Checklist (n =22 students)



Reader motivation was also measured using a teacher-researcher created motivation questionnaire, consisting of 5 questions. For the selected-response questions 1-3, the number of times each response was chosen was totaled. For open-ended, qualitative questions 4-5, written responses were later summarized by the teacher-researcher. An equal number of participants (50%) chose traditional storybooks and e-books, when asked which they liked better. When asked which format they would choose to use in school however, only 7(32%) reported they would choose e-books, with 10(45%) students choosing traditional storybooks and 5(23%) responding, "I don't know." Question 2 revealed that only 6 out of 22 (27%) students reported using e-books at home. These results as well as summaries of the open-ended response questions are shown in Table 4.

Table 4

Responses to Motivation Questionnaire (n=22 students)

Student	Question 1*			Question 2*		Question 3*			Question 4*	Question 5*
	EB	SB	?	Y	N	EB	SB	?		
1	√				√		√		Don't like	N/A
2		√		√			√		Like chapters	They're fun
3		√			√		√		Dislike turning pages-doesn't feel good	N/A
4		√		√				√	Like narration	N/A
5	√			√		√			Love everything	N/A
6	√				√			√	Like drawing, dict.& good books-Like alot	N/A
7		√			√	√			Like penguin books	e-books are cool
8		√			√		√		Don't have as much adventure	N/A
9		√		√				√	Like coloring dislike turning pages	N/A
10		√		√			√		Like Narration	N/A
11	√				√	√			Like Activities	can paint & reads to you
12		√			√		√		Like fly guy Dislike questions	They're funny books
13			√		√			√	Like games & books	N/A
14	√				√		√		like book KiKi-really funny	N/A
15			√		√			√	there are good books	Read all boy books on my level
16		√			√		√		Dislike level J choices	N/A
17	√				√	√			like book KiKi	N/A
18	√				√	√			Like a book I'm reading	N/A
19		√			√		√		Not enough books	N/A
20	√				√		√		like animal books	N/A
21	√				√	√			like non-fiction e-books	N/A
22	√			√		√			Like-they have Different books	N/A
Total	10	10	2	6	16	7	10	5		

Questions:

1. Which do you like better? Storybook, E-book, I don't know

2.Do you read e-books at home? Yes, No

3. If you could choose e-books or regular storybooks to read in school, which would you choose? E-books, Storybooks, I don't know

4. What did you like or dislike about the e-books?

5. Do you want to say anything else about e-books?

The anecdotal observations recorded in the Teacher-Researcher Journal were analyzed. It was revealed by reading and coding the anecdotes, that students frequently showed interest in using the Storia app. Students often asked, "Are we going to use the iPads today?" One student happily reported, "Last night, I went on Storia on my Mom's iPad." During observations, students were often found looking at nonfiction animal e-books and returning to chapter e-books they had begun reading on previous days. Students were, on one occasion, observed to be watching animal videos embedded in the e-books and sharing animal facts with one another.

During independent reading with traditional books, some students were observed flipping through pages and talking quietly, not appearing to be actively reading. One student stated, "I don't like using stupid, old books. They're lame. They're really lame." One student was observed in the library selecting the traditional storybook version of *The Princess Knight*, she had been reading on the iPad in the classroom.

On several occasions while reading e-books, students were observed spending a significant amount of time using the "paint" feature in the Storia e-book app for purposes

unrelated to the story. One student reported he was "practicing minus (subtraction) facts," while another reported, "I switched to Storia but I just drew." Other students were observed creating Mother's Day drawings in the paint feature. However, one student was observed using the Storia feature relative to the story, in which he reported, "I like that you can paint. I made a new ending and put a bunch of clowns and that was the new ending." It was also noted that students who sat next to each other or at the same table often chose the same e-book or app. During one observation, all 5 students at one table were reading the same e-book.

Hypothesis II- Reader Comprehension

It was hypothesized that reader comprehension would improve with the use of enhanced e-books over traditional storybooks. Reading Comprehension was measured using two literal and two inferential questions from the Teachers College Reading and Writing Project (TCRWP) Reading Assessment for Independent Reading Books. Student responses were transcribed by the researcher and scored from 1-4, using the Teachers College Reading and Writing Project Rubric for Assessing a Retell on the Reading Level Assessment.

Comprehension scores were organized for each individual student, according to study week and day, and are displayed in two separate columns for e-books and storybooks, in Tables 5-10.

Tables 5-10

TCRWP Reading Assessment Comprehension, Running Record and Fluency & Intonation Checklist Scores (n=6 students)

Student: 1

Date	Level	Comprehension E-book	Comprehension Storybook	Fluency E-book	Fluency Storybook	Running Record E-book	Running Record Storybook
4/21	G	4		3		95	
4/23	G	4		4		100	
4/25	H	4		5		92	
4/28	H		4		5		97
4/30	I		2		2		86
5/5	J	4		2		91	
5/7	J	2		4		93	
5/9	J	4		4		93	
5/12	I		4		5		93
5/14	I		4		3		95
5/16	I		4		2		86
5/19	J		4		1		89

Student: 2

Date	Level	Comprehension E-book	Comprehension Storybook	Fluency E-book	Fluency Storybook	Running Record E-book	Running Record Storybook
4/21	G	1		5		98	
4/23	G	1		5		99	
4/25	H	4		5		93	
4/28	H		4		1		94
4/30	H		2		0		75
5/5	I	2		0		83	
5/7	I	2		0		81	
5/9	H	4		5		100	
5/12	I		4		4		97
5/14	I		2		5		95
5/16	I		4		3		94
5/19	H		3		1		96

Student: 3

Date	Level	Comprehension E-book	Comprehension Storybook	Fluency E-book	Fluency Storybook	Running Record E-book	Running Record Storybook
4/21	I	1		2		99	
4/23	I	4		3		100	
4/25	J	1		5		99	
4/28	I		3		5		100
4/30	J		4		4		98
5/5	K	3		4		100	
5/7	K	3		3		99	
5/9	L	3		4		100	
5/12	K		4		5		100
5/14	K		4		5		100
5/16	L		3		5		100
5/19	L		1		4		98

Student: 4

Date	Level	Comprehension E-book	Comprehension Storybook	Fluency E-book	Fluency Storybook	Running Record E-book	Running Record Storybook
4/21	I	1		0		94	
4/23	I	3		0		92	
4/25	J	2		0		93	
4/28	J		4		5		99
4/30	J		4		1		93
5/5	K	4		2		97	
5/7	K	3		3		98	
5/9	K	4		3		97	
5/12	K		1		1		97
5/14	K		3		1		93
5/16	K		3		4		98
5/19	L		1		2		92

Student: 5

Date	Level	Comprehension E-book	Comprehension Storybook	Fluency E-book	Fluency Storybook	Running Record E-book	Running Record Storybook
4/21	K	1		4		96	
4/23	K	2		4		98	
4/25	K	4		5		94	
4/28	L		4		5		99
4/30	L		4		5		100
5/5	M	4		5		100	
5/7	L	2		5		97	
5/9	L	3		5		98	
5/12	L		2		5		99
5/14	L		4		4		97
5/16	M		4		4		97
5/19	M		4		4		100

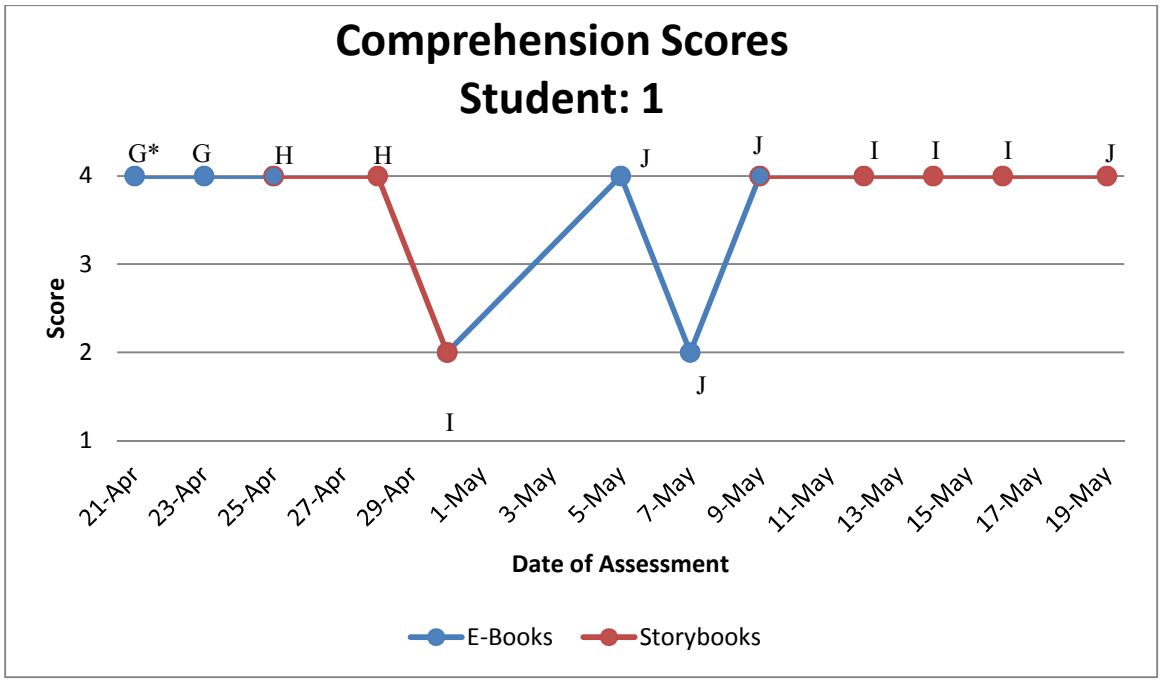
Student: 6

Date	Level	Comprehension E-book	Comprehension Storybook	Fluency E-book	Fluency Storybook	Running Record E-book	Running Record Storybook
4/21	K	1		4		97	
4/23	K	2		4		92	
4/25	K	1		3		94	
4/28	K		2		4		94
4/30	K		4		5		100
5/5	L	4		5		98	
5/7	L	2		3		99	
5/9	L	2		3		99	
5/12	L		4		5		100
5/14	L		3		5		100
5/16	L		2		5		100
5/19	L		2		5		100

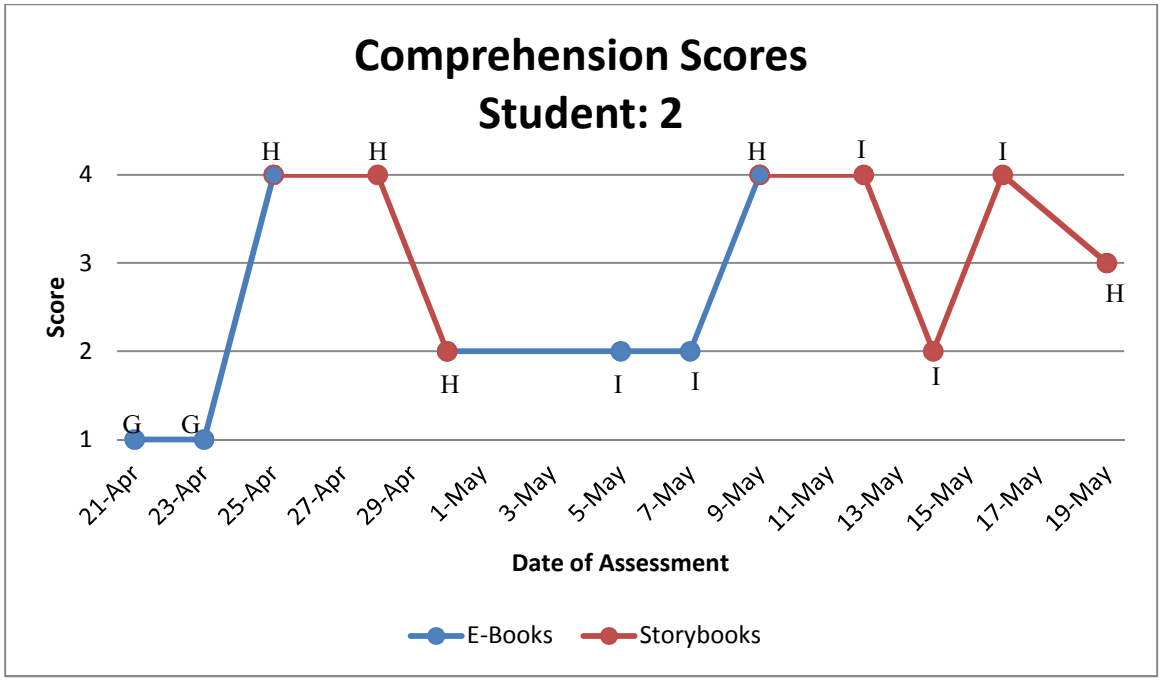
Figures III-VIII display the comprehension scores for both e-books and traditional storybooks on a line graph.

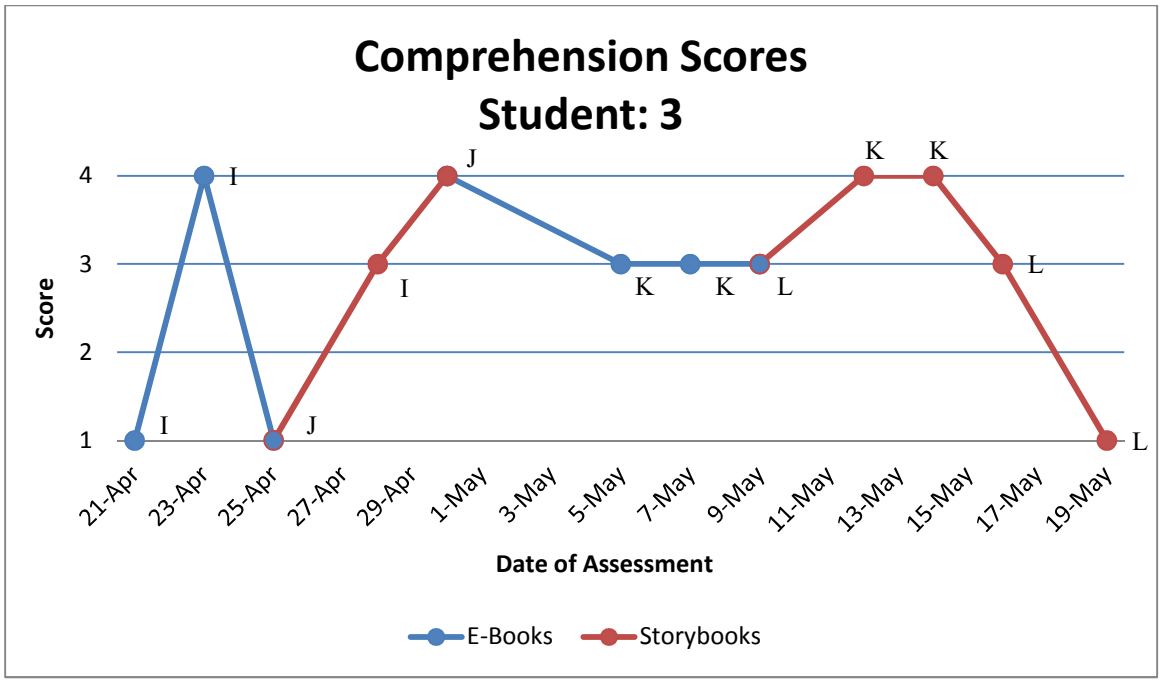
Figures III-VIII

TCRWP Reading Assessment Comprehension Scores (n=6 students)



**Letter represents Guided Reading Level of book read*




Comprehension Scores
Student: 3
Score
4
3
2
1
I
I
J
I
J
K
K
K
K
L
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I
J
K
L
21-Apr
23-Apr
25-Apr
27-Apr
29-Apr
1-May
3-May
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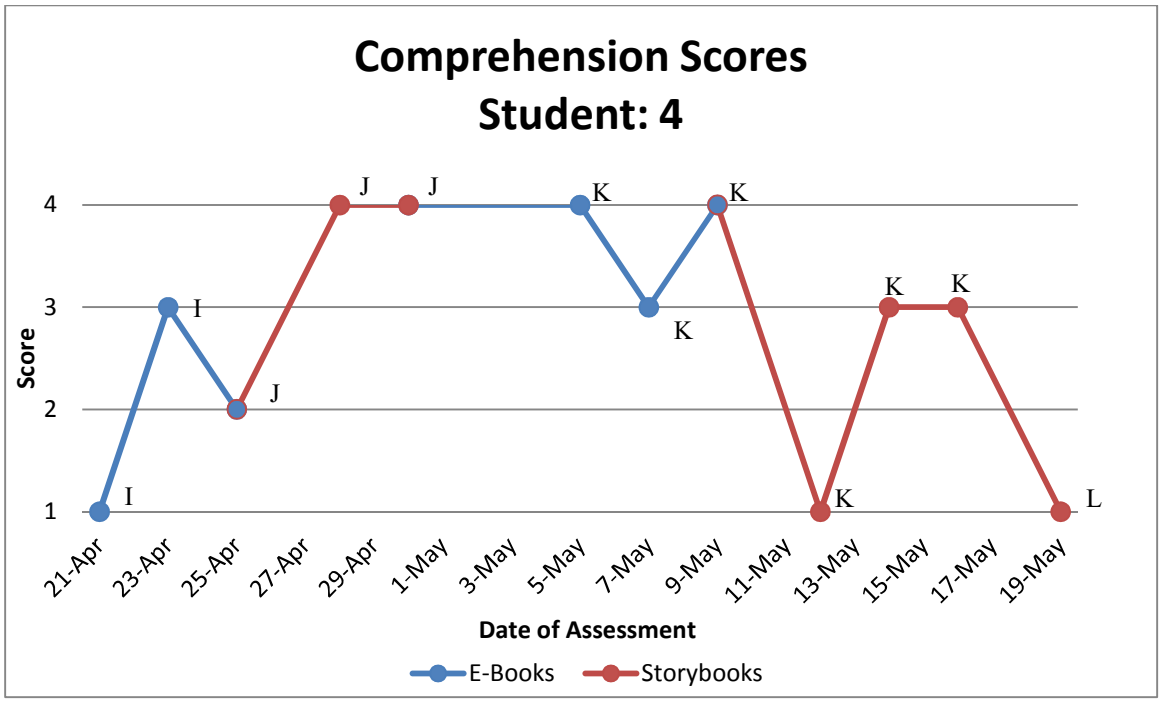
7-May
9-May
11-May
13-May
15-May
17-May
19-May
Date of Assessment
E-Books
Storybooks


Comprehension Scores
Student: 4
Score
4
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1
I
I
J
J
J
K
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21-Apr
23-Apr
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27-Apr
29-Apr
1-May
3-May
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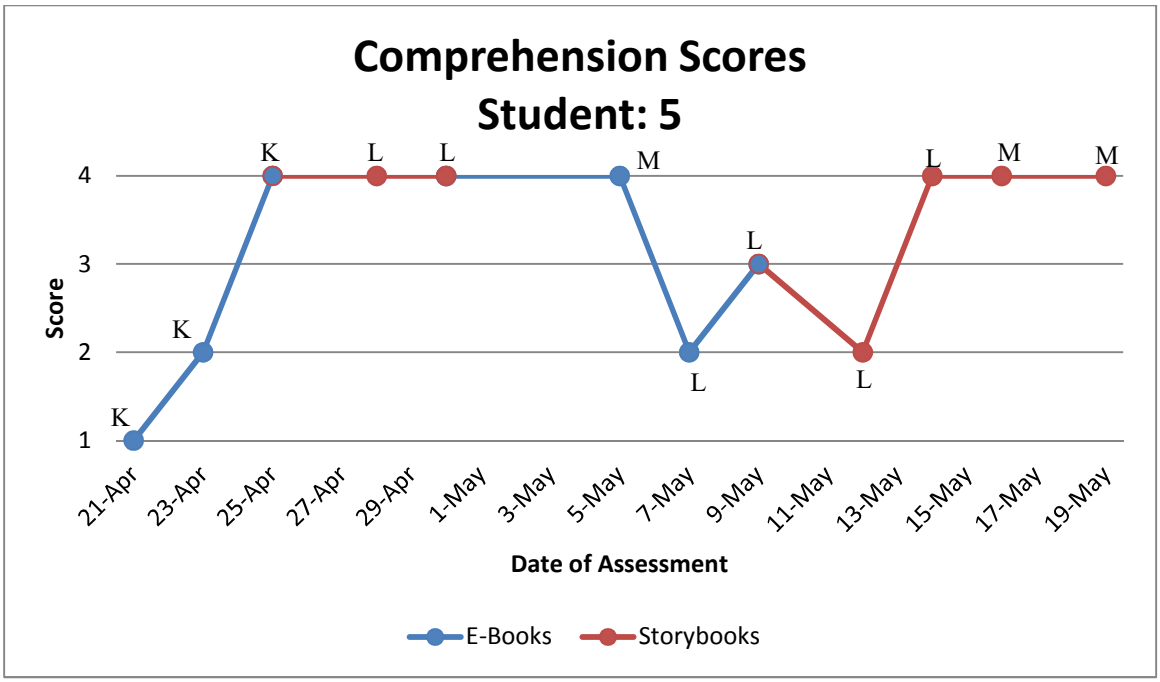
7-May
9-May
11-May
13-May
15-May
17-May
19-May
Date of Assessment
E-Books
Storybooks


Comprehension Scores
Student: 5
Score
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27-Apr
29-Apr
1-May
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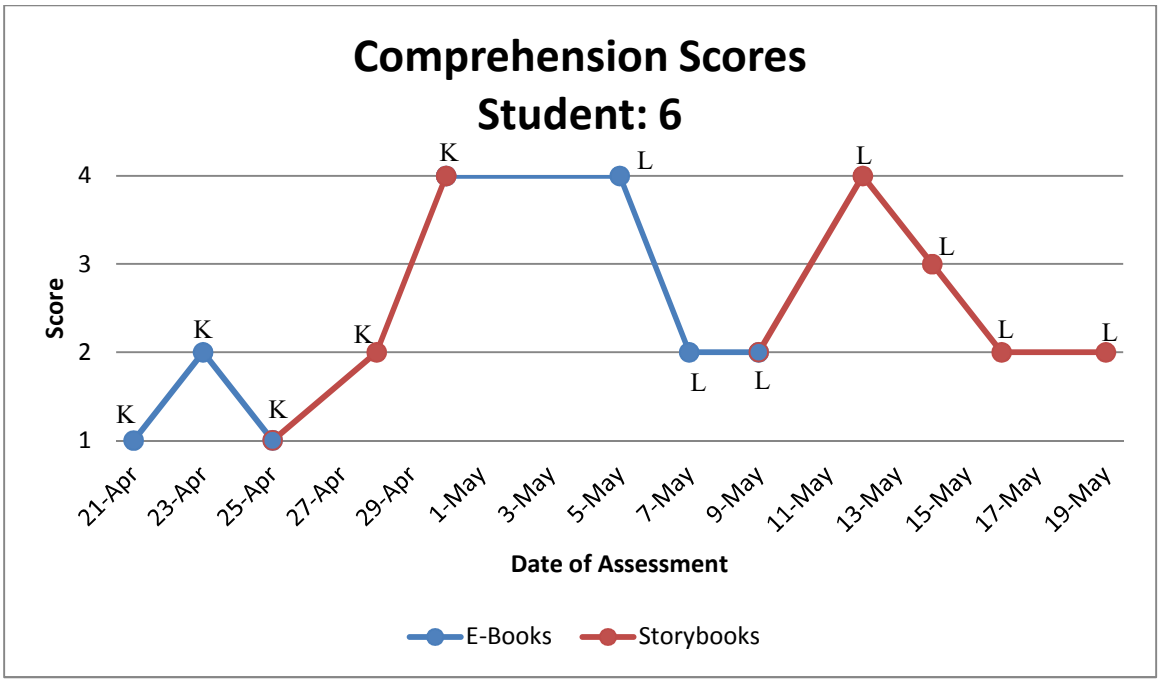
11-May
13-May
15-May
17-May
19-May
Date of Assessment
E-Books
Storybooks


Comprehension Scores
Student: 6
Score
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K
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K
K
L
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27-Apr
29-Apr
1-May
3-May
5-May
7-May
9-May
11-May
13-May
15-May
17-May
19-May
Date of Assessment
E-Books
Storybooks

After tables 5-10 and figures III-VIII were created, the data were summarized and analyzed to reveal the following trends in comprehension.

According to the TCRWP, one of the three determinants of a student being considered to read a text level independently, is if they are able to read with comprehension. This is determined by a successful retell and/or acceptable responses to 3 of 4 comprehension questions. 5 out of 6 students (83%) scored a 3 or higher on at least 50% of the 12 combined e-books and traditional storybooks they read and were assessed on. By the end of the study, these 5 students were assessed to be independently reading books 2-3 guided reading levels above their starting level at the beginning of the study.

The data revealed that 4 out of 6 students (67%) achieved the target score more frequently when assessed using traditional storybooks than when assessed using e-books. Student 2 scored 3 or higher on 4 out of 6 (67%) traditional books, as opposed to 2 out of 6 e-books (33%). Student 5 met the target score 5 out of 6 times (83%) when assessed using traditional storybooks, as opposed to 3 out of 6 times (50%) when assessed using e-books. Student 6 reached the target score 3 out of 6 times (50%) when

assessed with traditional storybooks and only 1 out of 6 times (17%) when assessed using e-books. Finally, Student 3, although close to achieving the target score an equal amount of times for both text formats, reached the target score 5 out of 6 times (83%) with traditional books, with a slightly lower 4 out of 6 times (67%) with e-books.

It was further noted that for the remaining 2 out of 6 students (33%), the number of times the students achieved the target comprehension score of 3 or higher was the exact same for e-books and traditional storybooks. More specifically, Student 4 achieved the target score 4 times using e-books and 4 times using traditional storybooks and Student 1 achieved the score 5 times using e-books and 5 times using traditional storybooks.

It was also noted that 5 out of the 6 students (83%) scored a 1 out of 4 possible comprehension points on the first day of the study. The students read and were assessed using e-books on this day during week one. On the first day of assessments using traditional storybooks, during week 2, 5 out of 6 students (83%) scored 3 or higher, with 4 out of the 6 (67%) scoring a 4 out of 4 possible points.

The anecdotal observations recorded in the Teacher-Researcher Journal were analyzed by reading and color-coding the anecdotes. These data suggested that students were able to make connections and locate specific features of text, using both traditional storybooks and e-books. For example, a student made a text-to-text connection between a non-fiction traditional book and the non-fiction e-book, *Scholastic Discover More; Animal Babies*, locating similar facts about termite mounds in both. The student then proceeded to take out both texts to compare. Students also made text-to-text connections between two e-books, locating two books that were related to nonfiction animals, funny animals, tiny animals and two stories that were "both in schools." Another student reported finding a change of font to "bold and capital letters" in the e-book, *Lotus Lane #1: KiKi: My Stylish Life*.

Students were frequently observed trying to answer built-in e-book comprehension questions without reading the story first. For example, before reading the story, one student asked, "How do I get to the puzzle?" Students were observed helping each other to answer comprehension questions. During one observation, a student suggested to a peer, "Go back and read the story to help." On one

occasion, when an e-book pop-up feature displayed facts rather than a comprehension check/game, the student reported, “It’s not doing anything,” while using his finger to try to interact with the page. After the student was informed that the pop-up feature was only displaying facts and was not an interactive game, the student continued touching the page in an attempt to play a game.

Hypothesis III – Reader Fluency

It was hypothesized that reader fluency would improve with the use of enhanced e-books over traditional storybooks. Due to the short-term nature of this study however, it was not expected that a significant increase in reader fluency would be evident.

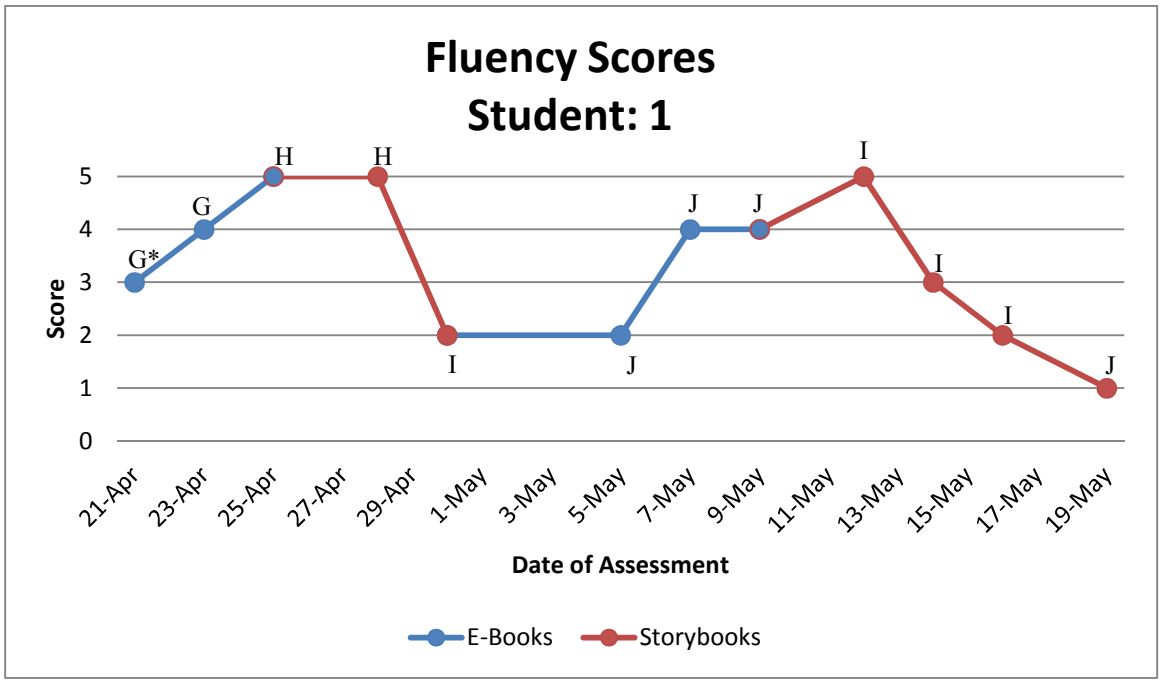
The students’ reading fluency was measured using the Teachers College Reading and Writing Project Reading Assessment for Independent Reading Books, Running Record and Fluency and Intonation Checklist. A running record of 100 words was used to assess students’ accuracy and a percentage score from 0-100% was calculated based on the scale from the Teachers College Reading and Writing Project, Reading Assessment for Independent Reading Books. Students were also assigned a fluency benchmark score which ranged from 0-5. Fluency and Running Record scores were

organized for each individual student, according to study week and day, and are displayed in separate columns for e-books and storybooks, in Tables 5-10 (displayed earlier in Chapter IV).

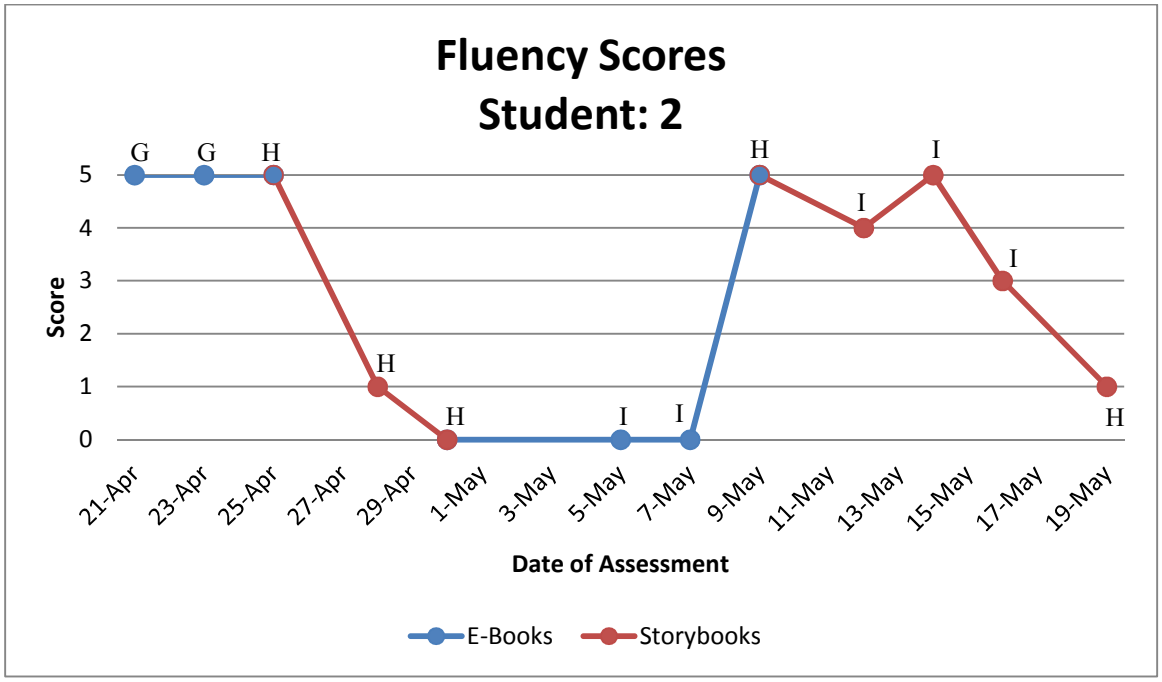
Figures IX-XIV display fluency scores for both e-books and traditional storybooks on a line graph.

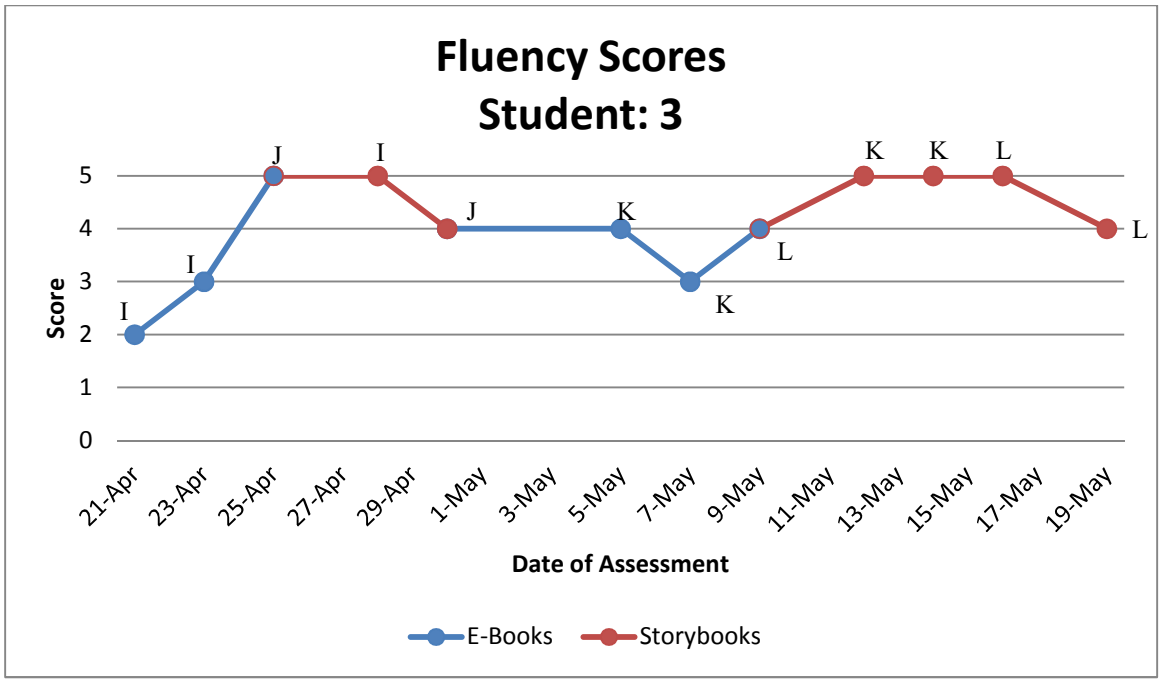
Figures IX-XIV

TCRWP Reading Assessment Fluency Scores (n=6 students)



**Letter represents Guided Reading Level of book read*




Fluency Scores
Student: 3
Score
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2
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4
5
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J
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J
K
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L
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L
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K
L
21-Apr
23-Apr
25-Apr
27-Apr
29-Apr
1-May
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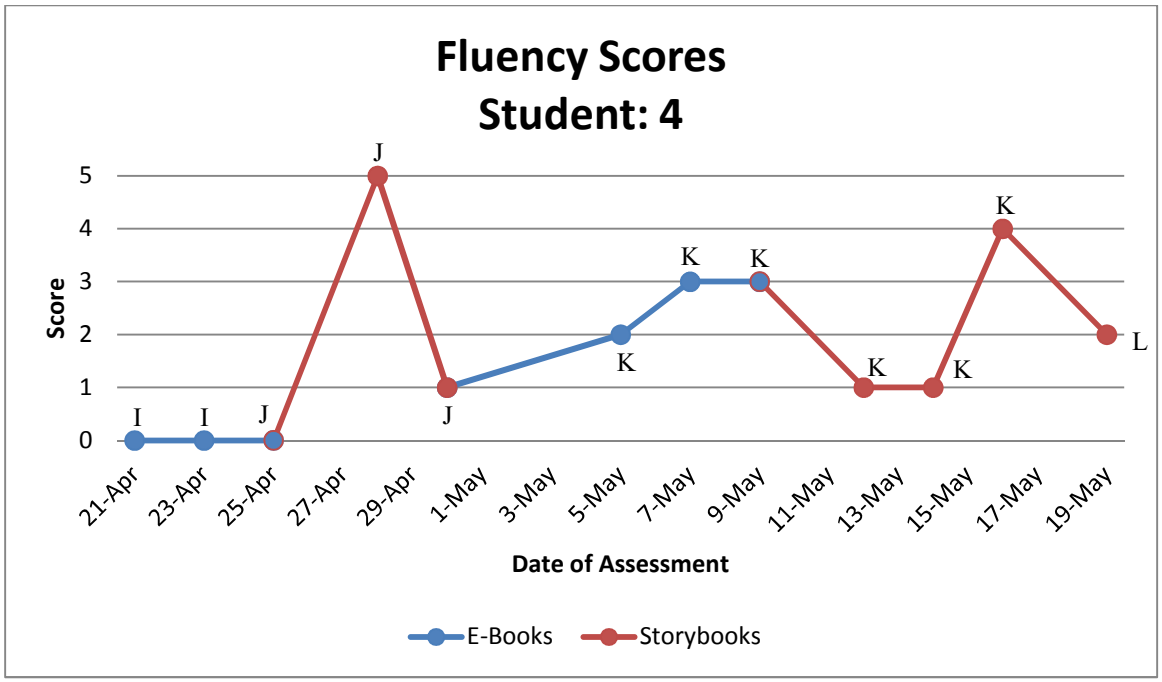
11-May
13-May
15-May
17-May
19-May
Date of Assessment
E-Books
Storybooks


Fluency Scores
Student: 4
Score
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1
2
3
4
5
I
I
J
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K
K
K
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L
21-Apr
23-Apr
25-Apr
27-Apr
29-Apr
1-May
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11-May
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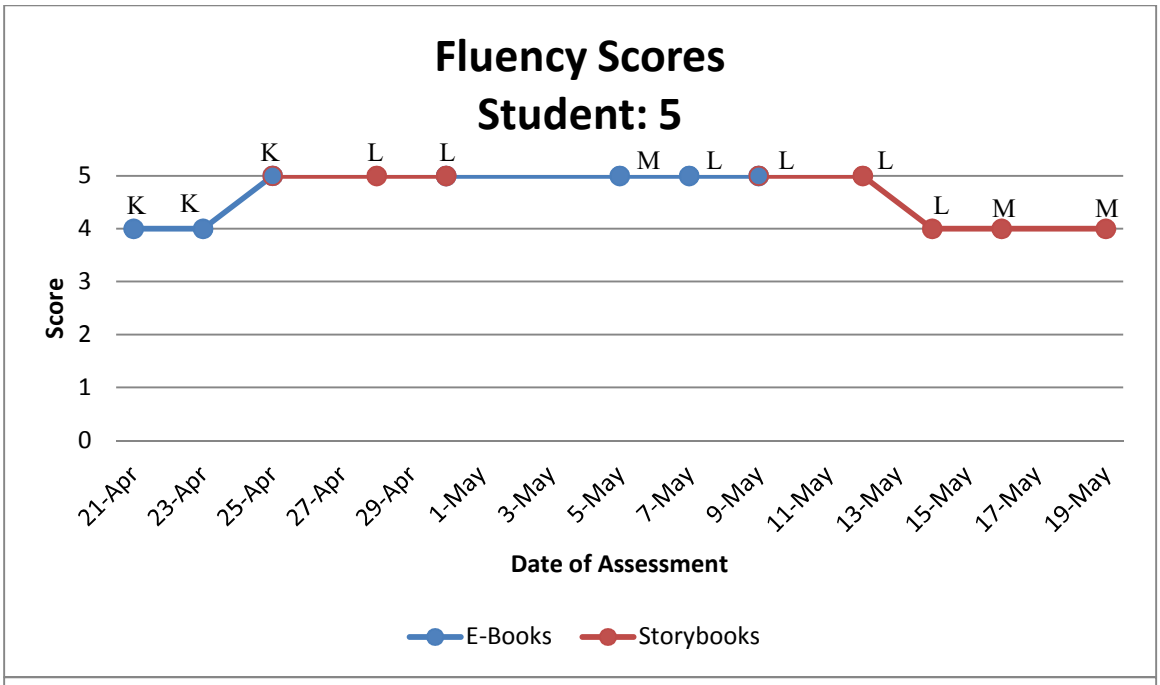
17-May
19-May
Date of Assessment
E-Books
Storybooks


Fluency Scores
Student: 5
Score
5
4
3
2
1
0
K K K L L M L L L L M M
21-Apr
23-Apr
25-Apr
27-Apr
29-Apr
1-May
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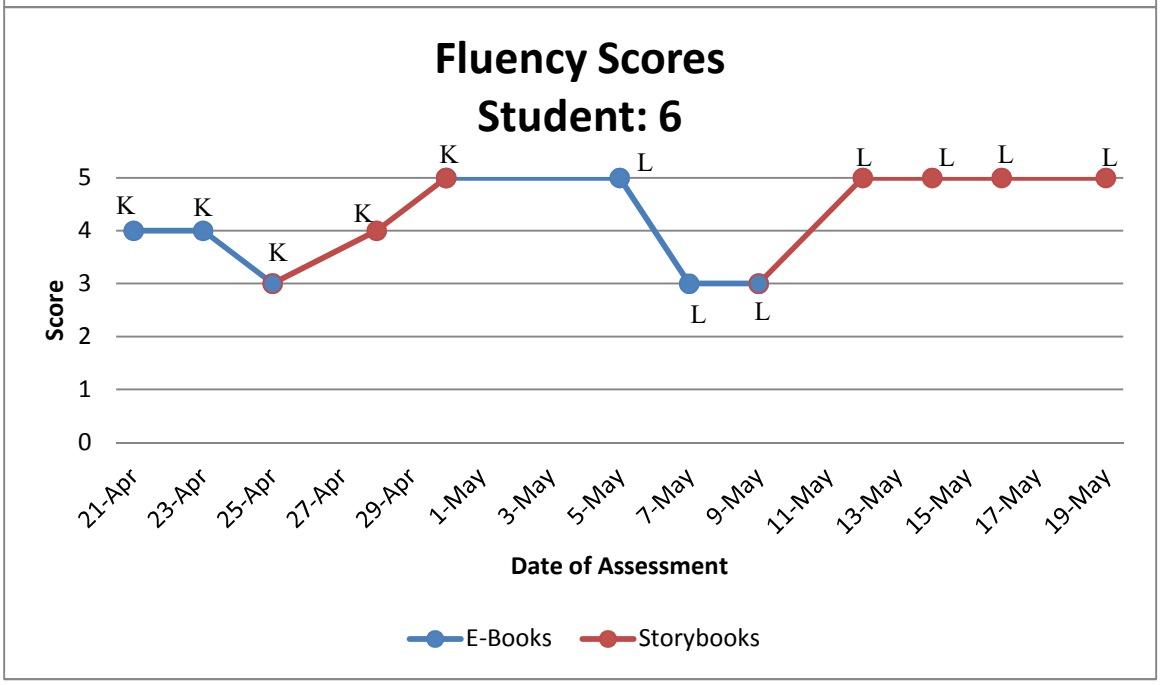
11-May
13-May
15-May
17-May
19-May
Date of Assessment
E-Books
Storybooks


Fluency Scores
Student: 6
Score
5
4
3
2
1
0
K K K K K L L L L L L
21-Apr
23-Apr
25-Apr
27-Apr
29-Apr
1-May
3-May
5-May
7-May
9-May
11-May
13-May
15-May
17-May
19-May
Date of Assessment
E-Books
Storybooks

After tables 5- 10 and figures IX-XIV were created, the data were summarized and analyzed to reveal trends in fluency. According to the TCRWP, one of the three indicators that a student is reading a text level independently, is reading with fluency behaviors required at that level. Fluency is determined by a score of 3 or 4 on the Oral Fluency Scale. Although this score is only considered as an indicator at levels K and above, a fluency score based on this scale was assigned for all levels in this study. The data suggests that there was greater fluctuation among scores for guided reading levels below level K, which can be seen for students 1-4, especially students 1 and 2. For guided reading levels K and above, benchmark scores tended to vary only 1 or 2 points between books.

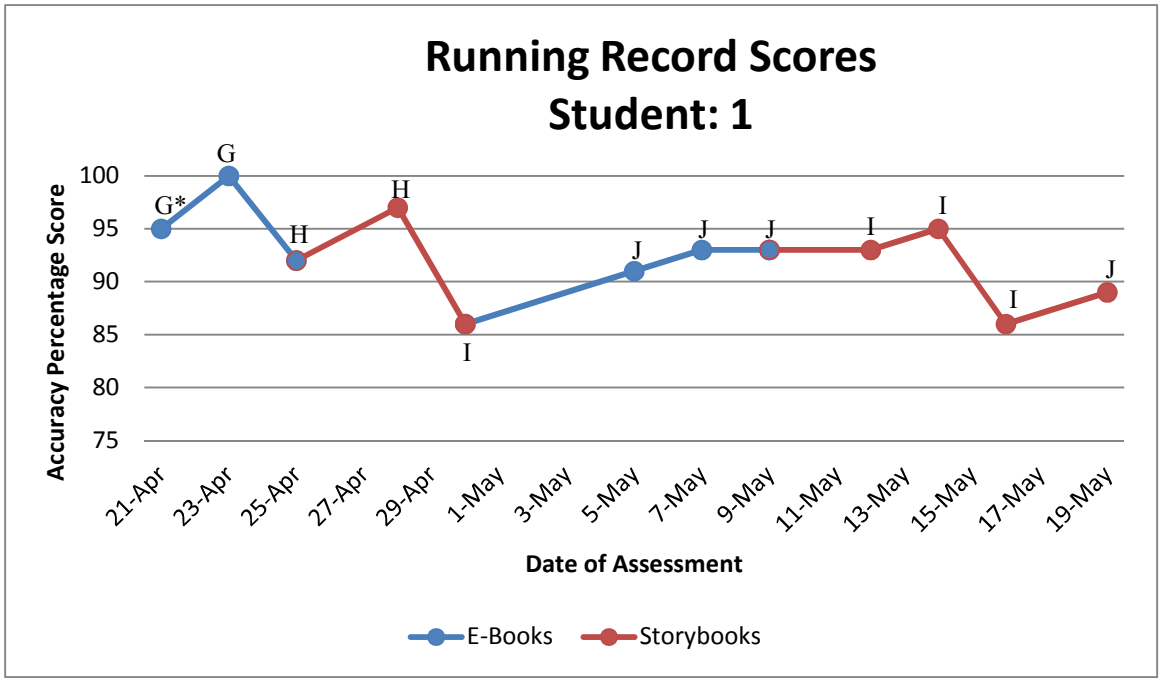
3 out of the 6 students (50%) reached the target benchmark score of 3 or higher an equal number of times when assessed using e-books as when assessed using traditional storybooks. Students 5 and 6 scored 3 or higher on 12 out of 12 books (100%), 6 of which were e-books and 6 traditional books. Student 4 reached the score twice with e-books and twice with traditional books. Of the remaining 3 students (50%), the number of times the target score was

reached using e-books compared to using traditional books was almost equally divided between text formats. Student 3 reached the target score 5 times using e-books compared with 6 times using traditional storybooks. Student 1 reached the score 5 times using e-books as opposed to 3 times using storybooks and Student 2 reached the target 4 times with e-books compared to 3 times using traditional storybooks. Although target scores of 3 or higher appear to be evenly divided among the two text formats, it is evident that some students scored higher using one particular format. Students 3 and 6, for example, scored the highest most frequently when reading traditional storybooks, whereas student 2 scored the highest most frequently when reading e-books. Overall, it appears that more students (67%) achieved their highest scores most frequently when reading traditional storybooks.

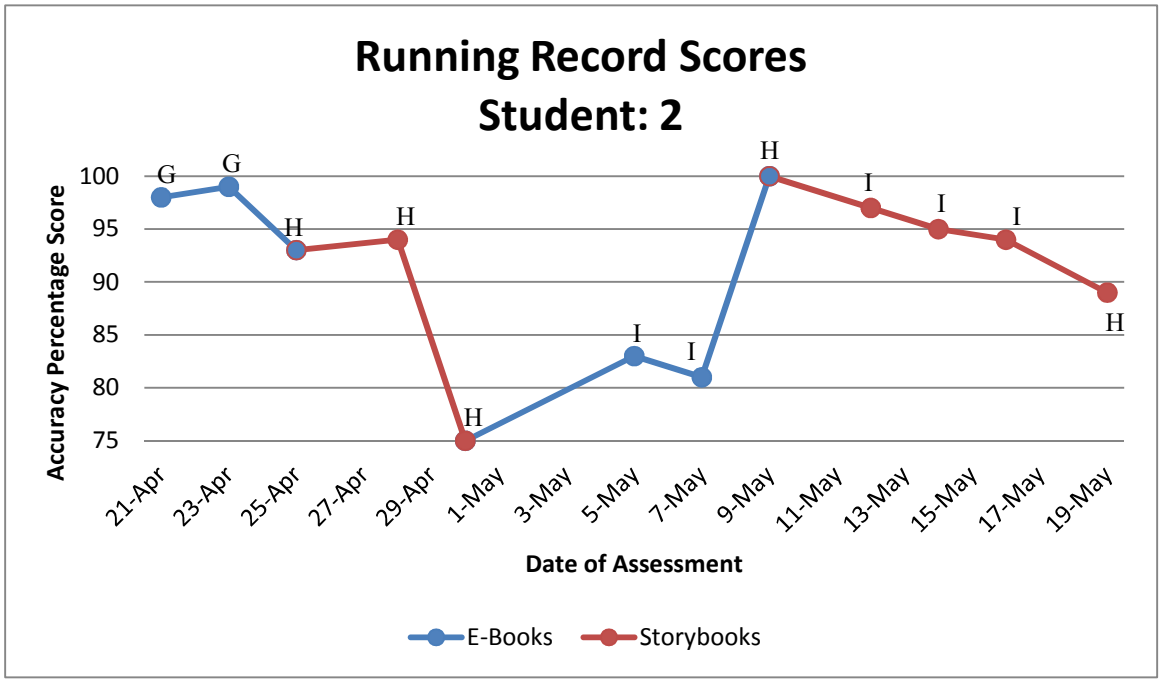
Figures XV-XX display running record percentage scores for both e-books and traditional storybooks on a line graph.

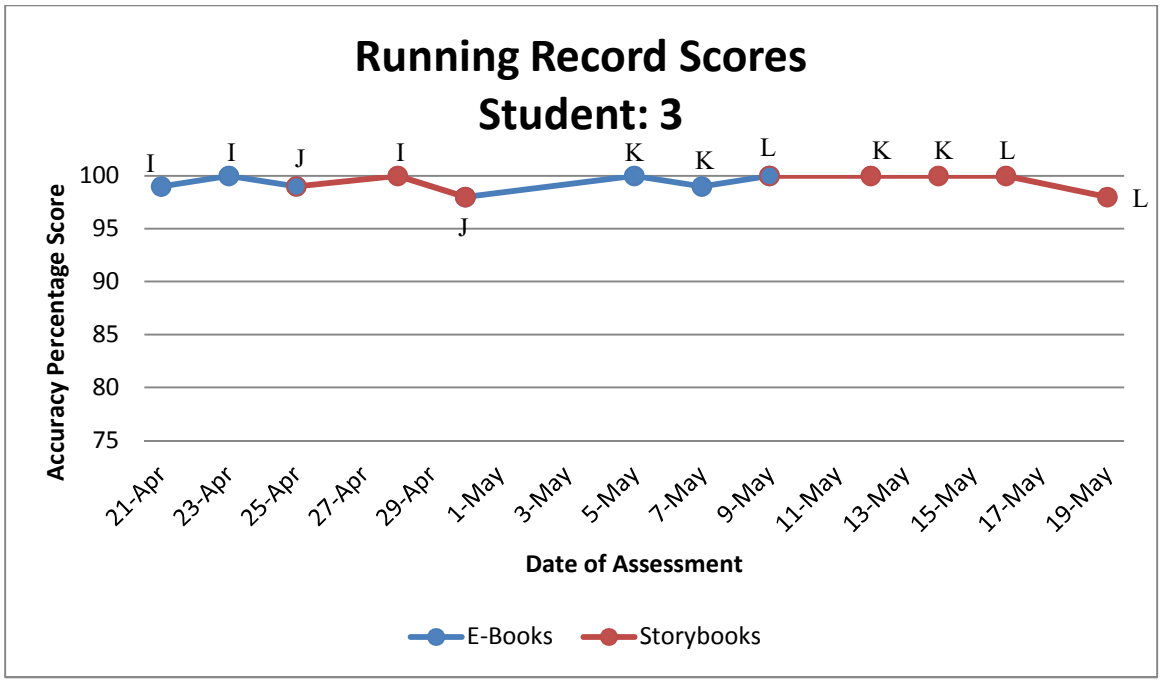
Figures XV-XX

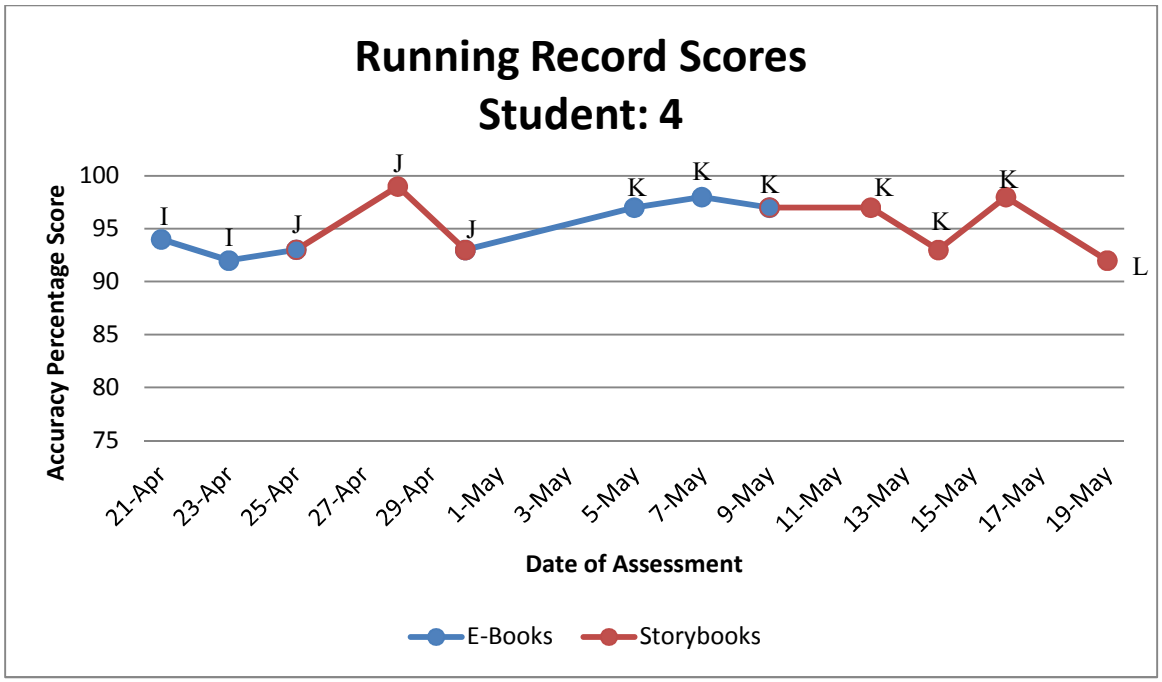
TCRWP Running Record Scores (n=6 students)

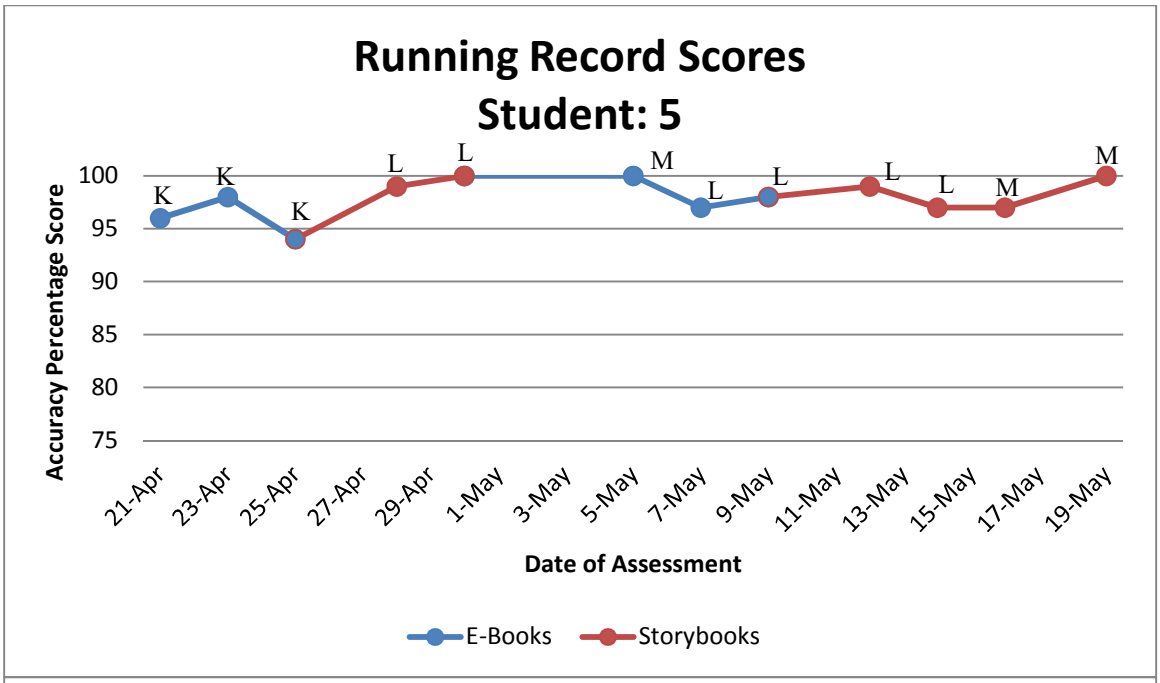


**Letter represents Guided Reading Level of book read*




Running Record Scores
Student: 3
Accuracy Percentage Score
100
95
90
85
80
75
I
I
J
I
J
K
K
L
K
K
L
L
21-Apr
23-Apr
25-Apr
27-Apr
29-Apr
1-May
3-May
5-May
7-May
9-May
11-May
13-May
15-May
17-May
19-May
Date of Assessment
E-Books
Storybooks


Running Record Scores
Student: 4
Accuracy Percentage Score
100
95
90
85
80
75
I
I
J
J
J
K
K
K
K
K
K
L
21-Apr
23-Apr
25-Apr
27-Apr
29-Apr
1-May
3-May
5-May
7-May
9-May
11-May
13-May
15-May
17-May
19-May
Date of Assessment
E-Books
Storybooks


Running Record Scores
Student: 5
Accuracy Percentage Score
100
95
90
85
80
75
K
K
K
L
L
M
L
L
L
L
M
M
21-Apr
23-Apr
25-Apr
27-Apr
29-Apr
1-May
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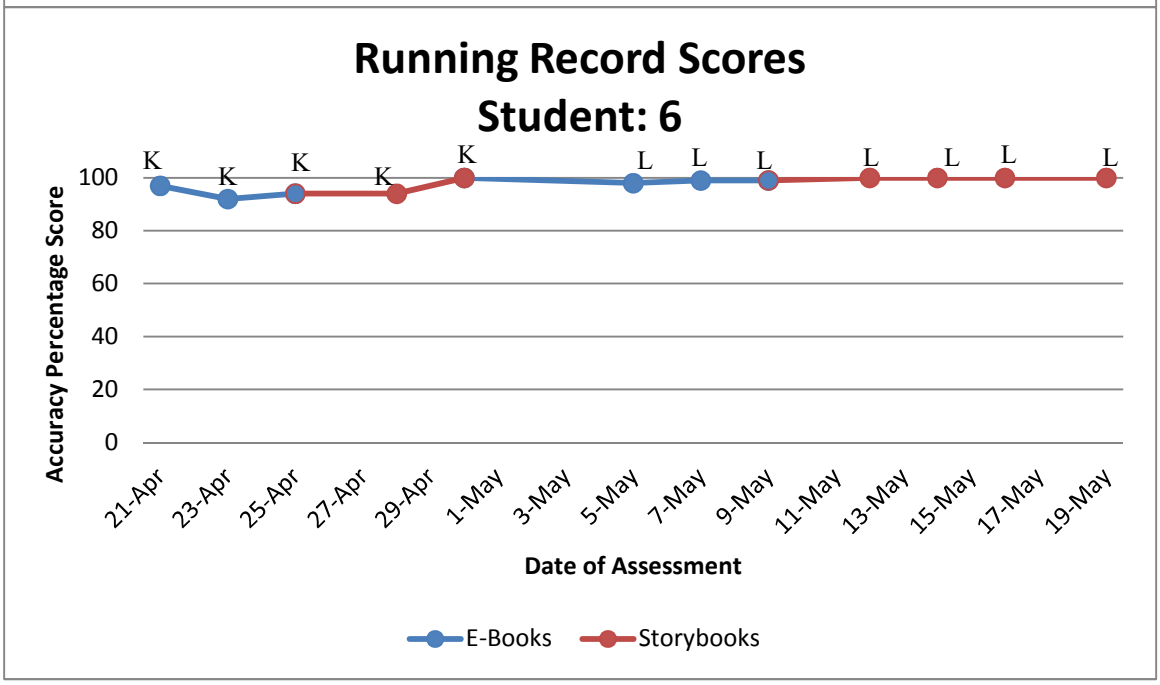
11-May
13-May
15-May
17-May
19-May
Date of Assessment
E-Books
Storybooks


Running Record Scores
Student: 6
Accuracy Percentage Score
100
80
60
40
20
0
K
K
K
K
K
L
L
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L
L
21-Apr
23-Apr
25-Apr
27-Apr
29-Apr
1-May
3-May
5-May
7-May
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11-May
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15-May
17-May
19-May
Date of Assessment
E-Books
Storybooks

After tables 5-10 and figures XV-XX were created, the data were summarized and analyzed and revealed the following trends. According to the TCRWP, one of the three determinants of a student being considered to read a text level independently, is reading a text with 96% accuracy as determined by the running record. The TCRWP considers reading accuracy between 90%-95% to be at the scaffolded instruction level, with accuracy below 90% being considered the frustration level or too difficult (2014).

The data revealed that all 6 students (100%) read a book at least one guided reading level higher at 96% accuracy or higher. Three out of the six students (50%) read an equal number of e-books and traditional storybooks with 96% accuracy or higher. Of the remaining 3 students (50%), the number of each book type read with 96% accuracy or higher was also almost the same. Student 2 read 3 e-books and 2 traditional books with 96% accuracy or higher, Student 5 read 5 e-books and 6 traditional books with 96% accuracy or higher and Student 6 read 4 e-books and 5 traditional books with 96% accuracy or higher. There was also an equal number of students who achieved their highest scores reading e-books and those who scored their highest when reading traditional storybooks.

A teacher-researcher conducted personal interview consisting of 3 questions was used to determine students' perceptions regarding the impact of e-books or traditional storybooks on their fluency. The six students' responses were transcribed by the teacher-researcher and the preferred text type stated for each question was totaled for all three questions. The teacher-researcher also later summarized student explanations for each choice. Student responses suggested that 4 out of 6 students (67%) felt e-books helped them to read faster, compared to 1 out of 6 (17%), who felt traditional books helped them to read faster, with one student who felt it was the same. However, an equal number of students chose e-books and traditional books when asked which format helped them to read more words correctly and which format helped them to read with more expression. These results are shown in Table 11.

Table 11

Responses to Teacher-Researcher Personal Interview (n=6 students)

Student	Question 1*	Question 2*	Question 3*
1	**SB** Read more than once so learn words	**SB** Read more than once so learn words	**SB** Levels with e-books would be hard
2	**EB** reads to you and can tap words if you don't know	**EB** same	**EB** use more expression. no expression with SB I read them regular
3	**SB** Flipping e-book pages is slower and not comfortable on fingers	**SB** can look at it closer- e-books have really thin letters	**SB** can see exclamation points and [quotation marks]
4	**SB** can switch pages more quickly	**SB** faster bc EB have a lot of words, SB don't	**EB** I don't read SB with a lot of expression at my house but I can with EB bc I'm in school
5	**BOTH** Basically the same thing but e-books are on iPad	**EB** Don't have to turn the page; just press it and touch the word to hear it	**EB** It's really fun to read books on the iPad
6	**SB** have kind of big words	**EB** Can touch the word to hear it and look it up	**SB** Can sound out the words bc it has [quotation marks]
Total	SB 4 / EB 1	SB 3 / EB 3	SB 3 / EB 3

**Question 1: Do you think reading e-books or regular books helps you read faster? Why?*

Question 2: Do you think reading e-books or regular books makes it easier for you to read more words correctly? Why?

Question 3: Do you think reading e-books or regular books helps you read with more expression? Why?

The anecdotal observations recorded in the Teacher-Researcher Journal were analyzed by reading and coding and it was noted that students were observed using narration features while others chose to read themselves. One student reported, "I had it read to me because I couldn't really read it," yet this same student read the same text with 98% accuracy immediately after. During one observation, while students were using iPads, a student was heard singing, "I like books, they help me read." Thus, no pattern or trend was observed.

Summary of Results

It was hypothesized that reader motivation would increase as a result of introducing enhanced e-books. The motivation observation checklist results supported the expectation that the interactive components of the e-books would be more appealing to students than traditional storybooks. 50% of students chose e-books compared to 4% who chose traditional storybooks when given the option. On the other hand, the motivation questionnaire produced mixed results. Responses to Question 1 indicated that an equal amount of students preferred e-books as those who preferred traditional storybooks. However, when students were asked

which they would prefer to use in school, only 7(32%) reported they would choose e-books, with 10(45%) students choosing traditional storybooks. When students were provided the opportunity to comment on what they liked and disliked about the e-books, 20 comments were positive responses to reading e-books and only 7 comments expressed a dislike. Anecdotal records from the teacher-researcher journal also supported the idea that e-books increased reader motivation. The observations revealed that the enhanced e-book features were engaging for students even if they were not always used for their intended purpose of supporting comprehension.

It was hypothesized that reader comprehension would improve with the use of enhanced e-books over traditional storybooks.

Although 5 out of the 6 (83%) students were assessed to be independently reading books 2-3 guided reading levels higher by the end of the study, this progress cannot necessarily be attributed to the use of e-books in this study. In fact, the results of the TCRWP comprehension questions showed that 4 out of 6 students (67%) achieved the target score more frequently when assessed using traditional storybooks than when assessed using e-books. The remaining 2 students (33%) achieved the target

comprehension score the same number of times for e-books and traditional storybooks.

The anecdotal observations recorded in the Teacher-Researcher Journal provided evidence that students were able to make connections and locate specific features of text, using both traditional storybooks and e-books. However, the students were also frequently observed using features in ways that did not support comprehension, such as trying to complete built-in game-like activities without reading the story first.

Finally, it was hypothesized that reader fluency would improve with the use of enhanced e-books over traditional storybooks. All 6 students (100%) read a text at least one guided reading level higher with proficient fluency by the end of the study. However, the data revealed that fluency benchmark scores and running record scores were generally evenly dispersed. For all 6 students (100%) the target fluency benchmark score and the target accuracy score of 96% or higher was achieved an equal or almost equal number of times when assessed using e-books and traditional storybooks. There was also an equal number of students who achieved their highest running record scores reading e-books as those who read traditional storybooks. Nonetheless, more students (67%) achieved their highest

fluency benchmark scores most frequently when reading traditional storybooks.

Interestingly, students' perceptions regarding their fluency including accuracy were fairly accurate as revealed by the teacher-researcher conducted personal interview.

CHAPTER V

Discussion

It was hypothesized that enhanced e-books would have a positive impact on reader motivation, fluency and comprehension compared to traditional print storybooks. The results of this study only partially supported these hypotheses. While gains were made for all students in this study, suggesting that the use of e-books is in fact valuable, this progress cannot necessarily be solely contributed to their use.

Hypothesis 1 – Reader Motivation

The motivation observation checklist supported the expectation that reader motivation would increase as a result of introducing enhanced e-books. Fifty percent of students chose e-books compared to 4% who chose traditional storybooks when given the option. Still, 46% of students chose Educational Apps. The data therefore suggests that e-books are at least as equally appealing, if not more appealing to students than educational apps. Although it was anticipated that e-books would be more motivating than traditional storybooks, it was not expected that they would be as motivating as educational apps on the iPad. Due to the short duration of this study, one has to wonder if the

novelty of the e-books might eventually diminish, or if e-books are truly a solution in motivating otherwise reluctant readers. This possibility should be taken into consideration for this study, being that students were already familiarized with the educational apps used for the motivation observation. Additionally, the educational apps were limited to Hungry Fish, Math Bingo, Alphabet Board and Stack the States.

The increase in reader motivation as a result of introducing e-books was also supported by the teacher-researcher observations, during which students frequently requested to read on the iPads.

Responses to the motivation questionnaire indicated that an almost equal amount of students preferred e-books as those who preferred traditional storybooks. There was only a slight discrepancy with more students stating they would prefer to use traditional storybooks over e-books in school. Yet, for the open-ended questions, there were more than twice as many positive comments regarding e-books as there were negative. Despite what the results suggest, there were some inconsistencies when closely examining the questionnaire responses. This may have been due to the format/wording of the questionnaire. It is possible that students were not easily able to distinguish between the

answer choices, “storybook” and “e-book” when responding, especially because students often referred to the e-books as “Storia” or “books on the iPad.” Nine (41%) of the 22 questionnaires appeared to produce somewhat inconsistent findings. For example, 3 students responded that they preferred e-books, yet when asked which they would choose to read in school, they chose storybooks. On the contrary, one student preferred storybooks but chose e-books to be used in school. If we rule out the possibility that students may have misinterpreted the questions or responses, it could simply be that students preferred e-books but were accustomed to using traditional storybooks in the classroom. Two students chose storybooks as their preference for both questions but wrote positive responses regarding e-books for the open-ended questions. Three students chose a preferred text format but responded, “I don’t know” for which they would choose for school. It seems the responses to the open-ended questions, asking students what they liked or disliked about the e-books, may present a more accurate representation of students’ true feelings regarding e-books, although we cannot draw any conclusions about which format they prefer from this question. Although students responded with many positive

comments regarding the e-books, still only 27% of the 22 students reported using e-books at home.

Overall, it seems e-books have a positive impact on reader motivation, with students experiencing more enjoyment using the e-books over traditional print books, which is consistent with the findings of Wright, Fugett and Caputa (2013), Ciampa (2012) and Miranda, Williams-Rossi, Johnson and McKenzie (2011). This finding is also consistent with the literature of Bennett, Maton and Kervin (2008), Prensky (2006) and the National Education Association (2007) who stated that digital devices are more appealing than print activities (as cited in Wright, Fugett & Caputa, 2013, p.367). Also consistent with the findings of Miranda, Williams-Rossi, Johnson, and McKenzie (2011) was that even reluctant readers were motivated and engaged using the e-books. As reported in the teacher-researcher journal, some students were observed flipping through pages and talking quietly during independent reading with traditional books, not appearing to be actively engaged. One struggling and reluctant reader even stated, "I don't like using stupid, old books. They're lame. They're really lame." Cunningham (2008) and Krashen (2009)reported that struggling readers lose interest and therefore avoid reading, preventing them for getting the practice they

require to improve (as cited in Miranda, Williams-Rossi, Johnson & McKenzie, 2011, p.83).

Considering that the students in this study were allowed to choose their own reading materials, this may have contributed to an increase in motivation. Randi and Como (2000), Ciampa (2012), Flowerday, Schraw and Stevens et al. (2004) and Jones & Brown (2011) found this freedom to choose has a positive impact on reader engagement and motivation. This was evident in the Motivation Questionnaire in which 16 out of 27 (59%) of the comments were related to the types of books available to choose from. Twelve comments described a liking for the book choices, with 7 students commenting on specific books or types of books they liked, while others described the books as "funny" or "good books." One student wrote he liked that there were "different books." On the other hand, three comments revealed negative feelings regarding the book choices, including one student who disliked "level J choices," one student who felt there were "not enough books" and one who found the e-books available didn't have enough "adventure." Another student reported having "read all the books on my level." It is important to note that the three students who were not satisfied with the book choices chose traditional storybooks as their preference on

this questionnaire. The student who reported reading all the books on their level responded "I don't know" when asked which they preferred.

Hypothesis II – Reader Comprehension

Five of the six (83%) students assessed were independently reading books 2-3 guided reading levels higher by the end of the study. However, it cannot necessarily be concluded from the data that the use of enhanced e-books improved reader comprehension as hypothesized. The results showed that students (67%) achieved the target score more frequently when assessed using traditional storybooks than when assessed using e-books. The remaining students (33%) achieved the target comprehension score the same number of times for e-books and traditional storybooks. These results were somewhat consistent with the results of a study conducted by Wright, Fugett, and Caputa (2013), in which reading comprehension scores were somewhat higher for the traditional print text, although the differences were not significant. Grimshaw (2007) also found no significant difference in comprehension scores between electronic and print text.

It is important to note however, that because the enhanced e-books offered features such as optional

narration and a built-in dictionary, 5 out of 6 (83%) students attempted a higher guided reading level for the first time more frequently when using e-books. The narration feature allows readers to focus more attention on comprehension by allowing them to focus less on having to decode words and the dictionary feature allows the reader to hear the pronunciation of a word as well as an explanation (Ciampa, 2012, p.52).

It was also noted that 5 of the 6 students (83%) only scored a 1 out of 4 possible comprehension points on the first day of the study using e-books. It is possible that this low performance can be contributed to the students' unfamiliarity with the e-books and assessment routine on the first day of the study.

The teacher-researcher journal presented another possible explanation for higher assessment scores when using traditional storybooks. It was evident during observations that the enhanced features of e-books, although many times aiding in comprehension, also acted as a deterrent from actually reading for many students. Students were observed spending a significant amount of time using the "paint" feature in the Storia e-book app for purposes unrelated to the story, and also trying to answer

built-in e-book comprehension questions without reading the story first. The students' high interest in the enhanced features of the e-books was consistent with the findings of Ciampa (2012), Jones and Brown (2011) and de Jong and Bus (2002). However, Ciampa (2012) stated that researchers were concerned that these enhancements could potentially distract the reader and thus hinder comprehension. It is obvious from this study, this is a realistic concern.

Conclusions imply that the overall gains in reading levels cannot be attributed to the use of one specific text format. Rather, the only conclusion that can be drawn from these findings, is that the use of enhanced e-books in combination with traditional storybooks in the classroom appears to improve reader comprehension.

Hypothesis III- Reader Fluency

By the end of the study, all students were fluently reading books at least one guided reading level higher. It seems to follow then, that as anticipated, reader fluency improved with the use of e-books. Yet, the data revealed that target fluency benchmark and accuracy scores were achieved an equal or almost equal number of times when assessed using e-books and traditional storybooks. Also, the students' highest running record scores were achieved

an equal number of times when assessed using e-books as traditional storybooks. According to the TCRWP, the fluency benchmark scores are only considered as an indicator at levels K and above but for this study a fluency score based on the TCRWP scale was assigned for all six students. There was greater fluctuation among these scores for guided reading levels below level K.

The degree to which the student had been exposed to the book prior to the assessment as well as the varying extent to which students utilized built-in features such as narration may have influenced scores. Oakley (2005) suggested that narration can provide the opportunity to listen to fluent reading while making it easier for students to read along with the text. According to Glasglow and Lewis, electronic text offers an advantage for repeated readings in that it eliminates the need to decode words by providing pronunciation and definitions, which then improves reading rate and provides the opportunity to focus attention on comprehension (as cited in Oakley, 2005, p.18). Research by Korat and Shamir (2012) suggested that e-books enhanced with dictioniaries can be used to directly teach word meaning. In a study conducted by Grimshaw, Dungworth, McKnight and Morris (2007) test scores for both

retrieval and inference questions for those who read a CD-ROM version of a text with narration were significantly higher than those who read a CD-ROM version without narration. Douglas, Ayres, Langone, Bell and Meade (2009) found that non-readers and low-level readers benefited the most from video and audio supported electronic text. The availability of these features may have influenced students to attempt books at a higher level and may have influenced scores, but we cannot draw any specific conclusions about the use of narration from this study. Yet again, it does appear that when used in combination, e-books and traditional storybooks appear to increase reader fluency.

Conclusions

The study results imply that e-books have a place in the elementary classroom. Rather than viewing e-books with apprehension as devices which threaten to replace traditional storybooks, we should view them as an alternative to traditional storybooks of which certain types of learners benefit. In order to teach to all types of learners as well as prepare students with 21st century skills, we continue to incorporate more technology in the classrooms, with the use of SMART boards, iPads, laptops and digital literacy instruction. According to the

literature on literacy instruction, teachers are being encouraged to identify best practices for utilizing these sources to support literacy development (Wright, Fugett & Caputo, 2013). Yet it seems that e-books are not utilized as much as perhaps they should be. The results from this study showed that students benefited from the combination of e-books and traditional storybooks, with this method resulting in more fluent and comprehending readers. Perhaps students should have the option to use e-books during independent reading times instead of being limited to traditional storybooks. If students are being observed not actively reading traditional storybooks during these designated periods, then we are not accomplishing our objectives, so why not allow them this alternative?

Additionally, conclusions show that e-books are as motivating as educational apps for young students. With students reading less and less by the time they reach middle school, we need to engage them at a young age. Larson (2010) discussed the discrepancy between literacy experiences in school and those outside of school, with Ciampa (2012) suggesting that reading should be taught in contexts that complement their experiences out of school, by incorporating technology. If students are not picking up

traditional print books at home as a leisure activity, perhaps they *will* open an e-book, considering it has been demonstrated in this study and others that e-books are highly motivating for children. This is a proposal that has also been made by Wright, Fugett and Caputa (2013) who suggested that using e-books over traditional print books might encourage reading in and out of school. Extensive research by Guthrie and Wigfield (1997) has established the relationship between reading motivation and time spent reading.

Furthermore, students were frequently observed looking at non-fiction penguin e-books, which was a topic they studied earlier in the year. One student in this study was observed choosing the print version of a book from the library that she had previously read on the iPad. Perhaps, as educators, we can at least take advantage of the motivational aspect of the e-books to initially engage students in print books or activities.

Educational Implications

Teachers can recreate the method used in this study, alternating between having the entire class use traditional storybooks and e-books. Students can learn that the strategies used in guided reading instruction can be

applied independently to both traditional books and e-books, as demonstrated by some students in this study when making text-to-text connections between both.

Students in this study were shown to be highly motivated by the iPads and survey research by Common Sense Media (2013) revealed that children are spending an average of 2 hours and 21 minutes every day engaged in media activity. Considering there is a divide between in-school and out-of-school activities, perhaps educators can take advantage of the time students are spending engaged in electronic media at home, by encouraging the use of enhanced e-books at home. This study found that only 27% of the students reported using e-books at home. Teachers could provide the option for students to choose e-books for out-of-school activities or choose texts that are available in both electronic and print form.

Limitations of the study

There were limitations to the study that may have influenced results. Due to the short-term nature of this study, students were assessed three times a week as opposed to following a typical assessment schedule, during which students might only be assessed every 4-8 weeks. Additionally, an unanticipated field trip was scheduled on

Friday, May 2; the third assessment day for week 2. As a result, during the second week of the study, students were only assessed twice using the traditional print books and the original assessment day was rescheduled for Monday, 5/19, which was during the last week of the study.

A fluency benchmark scale was used for all six participants, even though this is only recommended for early fluent readers and not for emergent reading levels under K. Due to the fact that performance within a certain guided reading level fluctuated between text formats, students did not always move to new levels based on the most previous assessment if they were assessed using a different text format. This, along with the brief duration of the study, made it difficult for students to follow a typical recommendation schedule for moving up levels. Thus, students were sometimes advanced based on previous performances. Students sometimes attempted one guided reading level higher on Storia because the e-books offered enhancements such as narration and a built in dictionary.

Another limitation of the study was the small study sample, with assessment data collected for 6 students and a total of 22 students who participated in the motivation observation and questionnaire. This study was also conducted within a predominantly white, suburban school in

one of the top socioeconomic, highest achieving districts in the state.

The educational apps used in the motivation observation were limited to Hungry Fish, Math Bingo, Alphabet Board and Stack the States. It cannot be predicted if using other educational apps would produce the same results, but being these were apps that were well-liked by the students, it seems that changing the apps would not have much of an impact. The apps used in this study were limited to educational apps, so it is unknown whether e-books would be as motivating as non-educational apps.

The inconsistencies that appeared in the motivation questionnaire may have been the result of the format and wording of the questionnaire. Students mostly referred to the e-books as "Storia" and "books on the iPad," which may have led to difficulty differentiating between "storybooks" and "e-books" as answer choices on the questionnaire. It would be advisable to add graphics or use more student specific language to help students identify answer choices when creating student questionnaires.

Implications for future research

Although research on e-books and their impact on literacy development continues to emerge, this area of study is still relatively new and limited, especially in

terms of their use within the elementary classroom. Thus far, study results have not yielded clear or consistent results. What has remained consistent however, is the idea that e-books are more motivating for students than traditional print books. Knowing this, future research should continue to examine their impact on literacy development but more specifically, this research should be dedicated to identifying best practices for incorporating e-books in the classroom. It should be investigated how e-books can be used in combination with traditional books for guided reading instruction and independent reading. This can be extended to out of school learning environments to determine how to better link at home and in school literacy activities. Their role in differentiating instruction and types of learners who prefer and benefit from their use should also be further considered. It could also be explored whether enhanced e-books versus e-books that don’t offer additional interactive components advance or impede comprehension.

Appendix A

Observation Checklist

WK 1	Tuesday 4/22/14			Thursday 4/23/14		
	E-book	**Storybook**	**Edu.App**	**E-book**	**Storybook**	**Edu.App**
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

WK 2	Tuesday 4/29/14			Thursday 5/1/14		
	E-book	**Storybook**	**Edu.App**	**E-book**	**Storybook**	**Edu.App**
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

WK 3	Tuesday 5/6/14			Thursday 5/8/14		
	E-book	**Storybook**	**Edu.App**	**E-book**	**Storybook**	**Edu.App**
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

WK 4	Tuesday 5/13/14			Thursday 5/15/14		
	E-book	Storybook	Edu.App	E-book	Storybook	Edu.App
1						
2						
3						
4						
5						
6						
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Appendix B

Motivation Questionnaire

Circle Answer

6. Which do you like better?

   Storybook E-book I don't know

7. Do you read e-books at home?

   Yes No

8. If you could choose E-books or regular storybooks to read in school, which would you choose?

   E-books Storybooks I don't know

9. What did you like or dislike about the e-books?

10. Do you want to say anything else about e-books?

Appendix C

Personal Interview

4. Do you think reading e-books or regular books helps you read faster than reading regular storybooks?
5. Do you think reading e-books or regular books makes it easier for you to read more words correctly?
6. Do you think reading e-books or regular books helps you read with more expression?

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