

## **Increasing Motivation of Struggling Readers: Can e-Readers, Apps, and Support Features Help?**

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### **Abstract**

In this exploratory study, researchers analyzed data regarding children's use of e-readers on a weekly basis to determine engagement and motivation to read using a digital device. Findings from a pilot study conducted in the spring of 2015 revealed an increase in motivation to read among six male participants in Grades 1-4 based on interview responses from children and parents, as well as data indicating the completion of 103 books for a total of 1040 minutes read. In this follow-up study, we provided a refined Reading Rainbow app, new Kindle Fires, and included 17 children in Grades K-6 attending an after-school literacy program. Increases in engagement and motivation to read using an e-reader were indicated in the initial weeks of the study; however, a decrease in reading time was noted after the first few weeks for most of the children. Although the majority of children and parents indicated increased motivation to read using the app and digital device versus traditional texts, most children did not continue to read on the device after the tutorial program was completed.

*Keywords:* literacy, technology, reading motivation, reading apps, app features

## Introduction

Imagine hearing the words, “I read the coolest book last week.” “I really like that I can have the book read to me and then I can read it on my own. This helps me understand it better.” “Sometimes I listen to the book a few times first, then read it or sometimes I just like to hear the book.” “I read three books last week!” “I like being able to return a book and get a new one without waiting a week to go to the library! I just search and download.” This is music to the ears of parents and teachers! But, how can we get children truly motivated to read and develop a passion for reading beyond short-term excitement? How can such enthusiasm for reading become sustainable?

Children’s motivation to read has long been a challenge and concern for both parents and educators, thus we must continue to seek approaches and tools that work best for each individual child. Technology is an integral part of our everyday lives and children engage in the use of technology most often to play games and communicate with others, but not for purposes of reading. Digital devices may be an engaging tool to motivate some reluctant readers, as increased use of mobile devices is impacting the reading practices for children inside and outside of the classroom (Lamb, 2011). Electronic readers (e-readers) can provide an avenue for children to engage in digital reading which may lead them to read more which improves reading comprehension (Larson, 2010; Union, Union, & Green, 2015). Evidence of e-reader use for struggling readers is minimal at best and these children are often lacking the motivation to read due to reading challenges (Baker & Wigfield, 1999).

E-readers offer a number of advantages over traditional books, such as online access to seemingly endless numbers of texts, the ability to download many texts on a device for easy access, cost benefits, and portability (Jamali, Nicholas & Rowlands, 2009). Additionally, multimodal features of e-readers such as, the use of sound to listen to text being read and the

ability to access definitions may increase reading performance through engaged reading (Lefever-Davis & Pearman 2005; Shamir & Baruch, 2011; Shamir & Shlafer, 2012). Further, Gonzalez and Johnson (2012) indicated an increase in reading comprehension for struggling readers using electronic books based on the principles of universal design for learning (UDL). The UDL format includes multiple means of presentation, engagement, action and expression. However, some children, whether struggling or not, may dislike the act of reading and are reluctant to read, no matter the format available, unless teachers require them to complete a reading task (Gambrell, Palmer, Codling, & Mazzoni, 1996; Gonzalez & Johnson, 2012; Henderson, 2011; Padak & Potenza-Radis, 2010). Minimal research, especially experimental studies reported in the literature regarding the impact of reading motivation and engagement using e-books warrants the need for further investigation.

### **Purpose of the Study**

Seeking effective strategies and tools to motivate struggling readers inspired us to investigate the potential of digital devices with reading apps and features as a means to engage students in independent reading, as well as sustain reading motivation of children. This led to the decision to use an exploratory research approach to guide this study. Therefore, the first purpose of this research study was to investigate the use of e-readers to enhance participation in recreational reading for struggling readers. The second purpose was to explore children's use of digital devices and specific reading features to increase independent reading. A third purpose was to investigate participants' perceptions regarding the use of an e-reader versus traditional texts. Lastly, in this study, we refined and extended a previous study to gain further information on increased motivation and engagement of struggling readers through the use of an e-reader.

After completing the pilot study conducted in spring of 2015, our goal was to further explore and gather data about the recreational reading of struggling readers with the use of e-readers. Documentation from the seven-week study included the number of books read (103), minutes of engagement (1040), and interview responses from children and parents indicated an increase in motivation to read independently. Findings of this short-term pilot study merited further exploration with a slightly larger sample size and expanded time frame.

A second purpose of this research, prompted by the results of the pilot study, was to further investigate specific types of e-readers, apps for e-readers, and software features to support sustainable reading, including access to a variety of texts and genres. Therefore, we explored programs that allowed us as researchers to gather data as to the number of books and minutes read for each of the participants; as well as, examine the types of books the children self-selected to read. In this study, we used an updated version of the initial reading app, new Kindle Fires, and expanded the study to include 17 participants, 5 girls and 12 boys in Grades K-6.

### **Research Questions**

The following research questions were addressed: (a) To what extent will struggling readers use an e-reader to recreationally read outside of school?; (b) What features of the digital device and selected app do children find helpful when using an e-reader?; (c) What are the perceptions of struggling readers on the use of an e-reader versus traditional texts?; and (d) What are the perceptions of struggling readers regarding motivation and engagement in the use of an e-reader to self-select reading materials based on their interests and independent reading level?

### **Theoretical Framework**

In the past and present, reading instruction has emphasized the reader's skill development. Such practices were based on the behaviorist learning theory of direct instruction. Children were taught to read through a series of sequenced skills, then drilled and assessed on the acquisition of these skills through a series of worksheets and reading passages (Engelmann, 1980, 2007; Skinner, 1974). Children may be placed in ability groups with instruction provided through scripted, sequential lessons employed to optimize reading skill development. The motivation for this type of reading instruction is extrinsic through frequent and consistent feedback by the teacher.

By the turn of the millennium, indications are that reading instruction has changed due to increased complexity of texts and inclusion of multimodal texts. A constructivist theoretical approach to learning best supports these changes. The theoretical premise is that children construct knowledge through self-directed engagement in the learning process within a specific context, in this case learning to read in the digital age. Children have the opportunity to choose to actively engage in their own learning. Readers construct the meaning of a text through simultaneous interaction with the text, combining prior knowledge, skills, and text features for comprehension (Tompkins, 2013). This can apply quite well to the use of e-readers for children because they can select texts of interest and move through the texts in an ebb and flow process. For instance, digital tools like e-readers allow children to choose what they want to read, go back and reread a section of the text or apply reading app features to support their comprehension of the text at various points when reading. Rvachew, Rees, Carolan, and Nadig (2017) study of 28 kindergarteners indicated text features of print-to-talk and words highlighted in e-books may contribute to the development of emergent literacy skills and increased reading success. Through these interactive processes, children scaffold their own learning (Bruner, 1960). Concepts are formulated within their individual zone of

proximal development for reading comprehension (Vygotsky, 1978). Constructively, children can gain essential experiences through active, intrinsically motivated engagement in the mastery of the reading process.

## **Review of the Literature**

### **Motivation Theory of Learning**

Guthrie and Wigfield (2000) identified five motivational reasons for reading: learning orientation, intrinsic motivation, extrinsic motivation, self-efficacy, and social motivation. Learning orientation refers to learning behaviors that influence learning such as dispositions, emotions, intentions, desire for success and social influences. In a small study of eight first grade students, Ciampa (2012) noted through observation, documentation, and surveys that e-books with text-to-speech storybook reading and reading activities contributed to students' reading motivation, as well as self-efficacy. Observations of students' screen engagement while being read to and their participation in other reading activities demonstrated increased reading motivation. Findings included an increase in motivation when observing students' screen engagement while being read to and their participation in reading activities. Another key component for increased motivation to read using the e-books was the game format and the feedback provided for support during reading activities. Lastly, student interview responses indicated that the opportunities for autonomy and choice promoted self-efficacy.

Motivation is evident in the two theoretical educational frameworks, behaviorism, and constructivism. The key question about motivation becomes why do children do what they do? Why are children extrinsically or intrinsically motivated? Picton's (2014) summary of the National Literacy Trust's survey questionnaire of thousands of children ages 8 to 16 noted an increase in reading motivation and literacy skills because of access to electronic devices (tablets, phones, computers, e-readers). Bandura (1997) suggested that motivation has more of

an effect on our learning than actively participating in a particular lesson or activity. Direct instruction, the behaviorist approach, focuses on concrete consequences such as grades and external rewards that decrease intrinsic motivation to engage in the learning process. This is apparent in Ciampa's (2012) study where online feedback with immediate positive reinforcement for corrective adjustments increased student engagement. Immediate positive feedback influences students' motivation and self-efficacy rather than comparing reading success with other students' success (Ciampa, 2012). According to Deci and Flaste (1995), such an approach represents motivation as a set of goal-oriented outcome-based expectations influenced by the use of extrinsic concrete consequences. Whereas, a sense of autonomy, personal control and a sense of personal aspirations supports intrinsic motivation (Deci and Flaste, 1995). Pintrich and Schunk (2002) explained that intrinsic motivation is the willingness to engage in a task for its own sake, whereas extrinsic motivation denotes a willingness to engage in a task as a means to an end.

Engagement in a task correlates with children's self-efficacy. Self-efficacy is the most significant factor that influences personal aspirations and autonomy (Bandura, 1997). Self-efficacy is an intrinsic state of mind; such as pride or sense of accomplishment for a specific act or behavior. Children's beliefs in their efficacy to control and master their own learning dominates their motivation to achieve in reading or any other endeavor. The expectation of failure contributes to the degree of engagement in a particular task. Therefore, children that demonstrate high self-efficacy for a specific learning task put forth much more effort to accomplish the task, in this case reading. Children with high positive self-efficacy are motivated to invest the time and effort to work more diligently and are persistent in learning. Whereas children with lower self-efficacy who exhibit expectations of failure or anxiety over mistakes they make are less successful. The development of positive self-efficacy heightens

intrinsic motivation, thus promoting active engagement in the learning process. Baker and Wigfield's (1999) research examining fifth- and sixth-grade students' self-efficacy for reading suggested students with low reading self-efficacy might profit from teaching practices that increase self-efficacy. The premise is that students who read well are intrinsically motivated to read. Another factor to consider is Bruner's (1966) acknowledgment that motivation is a necessary precondition and essential element for learning. The interest level of learners stimulates the motivation to learn, not external rewards.

To determine attitudes and behaviors of parents and children regarding motivation to read for fun, Scholastic in conjunction with YouGov (2015) conducted a survey. The survey included 506 parents of children birth to age five, and, 1,026 parents of children, ages six to seventeen. The report indicated a positive effect regarding children's motivation to read, with slightly over 50% reading books for fun. With regard to the use of digital devices for reading, results show an increase in the percentage of children who have read an e-book from 25% in 2010 to 61% in 2015, yet the majority of the children indicate they prefer to read traditional books in print. According to participant responses, the most important factor for motivation to read included the opportunity for children to choose books they found interesting and engaging. Choice was the most significant factor for recreational reading. Intrinsically motivated readers are engaged readers who use metacognitive strategies to monitor their reading comprehension (Long & Szabo, 2016).

Autonomy, including the opportunity to choose, promotes intrinsic motivation for mastery of specific skills through exploration, intuitive and analytical thinking. The purpose or interest level correlates with who controls the learning process. Autonomy and choice promote a sense of internal locus of control. Expectations and choice (locus of control) contribute to autonomy (self-directed actions) and mastery as well as the willingness to put forth the

necessary effort (persistence) to read. The belief in the ability to control and change a particular behavior increases self-efficacy or confidence which evolves to success-oriented motivation.

Maynard's (2010) pilot study examined reading experiences of six young readers, seven to twelve years of age, with e-reader devices: Kindle, Nintendo DS-lite and Apple iPod Touch. The premise for using e-readers was the possibility that e-books could change children's attitudes and increase motivation and enjoyment in reading. Participants were asked to read at least 20 minutes per day using an e-reader. The study specified participant preference for the Kindle because it was easier to use. Interviews with parents and children indicated an increase in reading habits (enjoyment and amount of time) when reading books electronically. Three children preferred e-books reading rather than printed books. The only reluctant reader in the study expressed interest in e-books reading due to the opportunity to choose and download books on a Kindle. Voluntary reading and enjoyment in the interaction with text was also reported. In a more recent study, Abdus (2014) investigated the impact of e-books on the attitudes toward reading of 16 fourth grade students. Eight students read a text using the 'read-to-me' feature on an e-book and eight students read the text independently. Findings revealed students preferred electronic texts and features; however, there were no differences indicated with regard to comprehension among participants in the two groups (Abdus, 2014). One difference of note between the two groups, the group reading the paperback format of the text completed reading the book significantly faster than students reading the e-book.

Pink (2006) surmised that motivation equates to the degree of an individual's sense of autonomy, mastery (competence – desire to improve), and purpose (expectancy – a reason for doing). E-readers may increase the opportunities for reading and learning, yet digital text

may or may not be a motivating factor for reading (Long & Szabo, 2016). The concept of motivation includes the degree or level of ownership. “Control leads to compliance: autonomy leads to engagement” (Pink, 2009, p. 108). Intrinsic motivation connects with a particular level of effort (expectancy) that occurs when a person feels competent and self-determined (Deci & Ryan, 2000). McClanahan, Williams, and Tate’s (2012) investigated the use of an iPad with a student with an attention deficit hyperactivity disorder (ADHD) to support the development of reading strategies. The iPad features allow for Wi-Fi data collection, connection to affordable and downloadable applications, touch screen, and ease of use in weight and size. The student’s use of the iPad during the six-week tutoring sessions indicated an increase in engagement with the text, attention span, motivation to read, word recognition, and reading comprehension.

### **Motivational Factors to Read**

What about the motivational reasons for reading? Various researchers have identified different motivational factors for reading: attitudes, values, self-concepts, and dispositions (Coiro, 2012; Conradi, Jang, & McKenna, 2014; Schiefele, Schaffner, Möller, & Wigfield, 2012). Duncan and McKeachie (2005) stated “motivation is dynamic and contextually bound and that learning strategies can be learned and brought under the control of the student” (p. 117). The desire to read is based on children’s beliefs, purpose and reasons for reading, and the emotional reactions to reading (Pintrich & DeGroot, 1990). It is also noted there are reasons for a lack of motivation to read: reading ability in contrast to their peers; textbook content above grade or reading level; and, lack of interest in the curriculum (Guthrie & Wigfield, 2000). The desire, lack of desire, or motivation to read correlates directly with previously stated research regarding motivation as a whole.

The fact remains that children who read more become better readers, perform higher on standardized tests and become lifelong readers (Wang & Guthrie, 2004). Schiefele, Schaffner, Möller, and Wigfield, (2012) indicated a positive correlation between intrinsic motivation and reading satisfaction because of curiosity, involvement, competition, recognition, grades, compliance, and reading competence (reading skills and comprehension). Additionally, the amount of reading fosters an increase in reading competence (Schiefele, Schaffner, Möller, & Wigfield, 2012). This brings us back to two overarching considerations. How can we get children truly motivated to read and develop a passion for literature? How can we keep children's short-term enthusiasm for reading going?

### **Motivation and e-Readers**

Larson (2010) noted the importance of integrating information and communication technologies (ICT) in classrooms to increase literacy skills. Well-developed digital libraries are sources of a wide array of genres and literature to support a range of reading levels and interests. In a study conducted by Hendrickson (2014), the software program, Raz-Kids, was implemented as part of the literacy curriculum in primary classrooms to provide children an opportunity to read leveled texts online to support a variety of literacy strategies at each student's instructional level.

Readers of all skill levels may experience an increase in motivation to read after interacting with multimodal texts, through the use of technology (Larson, 2010). "Electronic books provide children with editing tools . . . that allow the reader to edit text by inserting, deleting or replacing text; mark passages by highlighting, underlining or crossing out words and using audio comments." (Larson, 2008, p. 123). Another element previously noted by researchers is the opportunity to make a choice. Choice can become a major factor because digital devices extend access to literature beyond the typical mode of delivery. The

motivational aspects for accessing digital sources extend the opportunities for choice (Coiro, 2012; Putman, 2014). The opportunity to choose may improve student attitudes, which elevates the possibilities for developing positive experiences and eventually motivated readers. Choice is based upon what Bandura (1997) referred to as self-efficacy, an individual's belief about his or her ability to engage in a specific task, such as the ability to read.

Educators and parents continually search for ways to encourage and motivate struggling readers; this coupled with having a technological world at our fingertips provided the foundation for this study. Much of the research that has been conducted with regard to e-readers has been connected to determining effects of using digital devices to improve reading achievement in the classroom on standardized test scores. The potential of e-readers to engage developing readers in recreational reading through self-selected texts is a key factor in reading development. As explained previously, motivated learners invest their time and effort to the task of reading. Motivated readers may invest more time to diligently and persistently participate in reading, thus increase their ability to read.

### **Reading apps and Features to Support Reading**

What apps or technical features will increase student motivation, enthusiasm, and passion for reading? The quest to answer this question underpinned our study. Although there are numerous digital reading programs and a variety of apps to support literacy skills and strategies, keeping up with the rapidly changing software, updates to apps, and updates in technological devices can be daunting. Additionally, some of the reading programs available are quite costly and many do not offer a wide array of features to support independent reading; such as, a dictionary and pointing to or highlighting words as they are read aloud to help the reader follow the text. Another challenge is in the compatibility and functionality of programs

with different digital devices or the differing compatibility of hardware packages on various computers.

Considerations for not using e-readers are that not all children like using a digital device to read; some just prefer to read traditional printed materials (Marinak & Gambrell, 2009). Further, some individuals have difficulty navigating through programs and devices, as well as accessing specific features which can support reading (Gregory, 2008). Lastly, the font on some of the e-texts are quite small and there is too much print on a screen which inhibits reading for some children, especially those who are already struggling with reading.

## **Method**

### **Participants**

Participants in the pilot study included six males, three Hispanic and three White, in first-fourth grades. We expanded the current study to 17 children in Grades K-6, who were reading below their grade level and attended an after-school literacy program weekly at a local public library for ten weeks. Initially, there were 6 girls and 14 boys in the study. Two children, one girl in fourth grade, and one boy in sixth grade dropped from the study and returned their e-readers within the first two weeks; however, both continued to attend the tutorial program. Both children indicated that they preferred chapter books which were not provided as an option with the app. A third student in the fifth grade who dropped from the study stated that he did not want to use the e-reader and did not want to read any texts outside of school. He returned his device after four weeks and stated that he did not want to read at home. He did not have negative feelings toward using the e-reader but did not want to read texts of any type for recreational purposes. Further, his mother shared that she preferred the device be given to another child who would use it for reading. Of note, one student, a fourth grade boy, who participated in the pilot study was included in the second study due to

continual technical problems with his Kindle and the inability to download books for the majority of the seven-week period. Presented in Table 1 is the demographic information for participants.

**Table 1:** *Ethnicity and Grade Level of Participants*

<b>Participants</b>	<b>Girls</b>	<b>Boys</b>
<b>Ethnicity</b>		
Black	2	1
Hispanic	1	3
White	2	8
<b>Grade Level</b>		
Kindergarten	1	
First	1	1
Second	1	3
Third	1	3
Fourth	1	1
Fifth		3
Sixth		1

### **Tutorial Program Information**

The tutorial program the participants attended was located at the local public library and was held weekly for one hour over a ten-week period in the fall and spring. The tutorial program was free and had an average enrollment of 18-25 students per session. Enrollment was open to children in Grades K-6 and they had the option of continuing enrollment from session to session. Tutors for the program were preservice teachers from a local university who were in their junior or senior year of coursework and were hired and trained by the researchers who served as the program directors. The program was small due to location and the fact that it was operated solely through grant funding. Additionally, the program had been

offered for five years and enrollment was often based on referrals from teachers for students who were below grade level in reading.

The tutors were trained in assessment instruments and effective reading strategies to support the needs of the children; however, these approaches had been more traditional and similar to classroom approaches of their teachers. Our efforts to find ways to engage children in reading and to motivate them to read outside of school led us to consider e-readers as a tool to engage students in reading. We applied for and received a grant for \$3000.00 to purchase e-readers, cases, and individual reading app accounts for the participants. The funds allowed us to purchase materials for 22 children.

### **Instrumentation**

We explored various reading apps for digital devices, as well as considerations regarding Kindles versus iPads before making final determinations for the study. Based on cost, effectiveness, and durability, Kindle Fires with protective cases were selected for purchase for the participants in the study. Additionally, the Reading Rainbow app was chosen due to specific features offered and the wide array of genres and texts available for young children. One of the most important features guiding our selection of apps was the option that children could have a selected text read to them.

Of note, the Reading Rainbow app used in the pilot study was newly developed and we encountered some issues in the functionality of the app which were addressed by technical support through the Reading Rainbow website. However, at times these issues decreased the opportunity for students to download and access books in the first study. Our instructional technology expert and co-researcher was in constant contact with support staff at Reading Rainbow. The purpose was to continually convey information regarding the functionality of the app in the spring of 2015 and to acquire the cumulative data file for all participants.

Several issues were resolved to enhance the usability of the app and device for participants in the spring 2016 study.

The opening page of the Reading Rainbow Skybrary app displays a cloud-filled sky that supports colorful characters and a banner indicating various genres of texts. Children could download up to five books at a time in their ‘virtual backpack’ and then drag and drop the book in the return slot when they were finished with the book. Then, children could download another text as needed. Each child’s backpack contained their profile, which they were able to set up and change as they desired.

### **Procedures**

From the pilot study we learned that creating individual accounts versus one overall account would allow us to collect data specific to each child’s reading experiences. Therefore, individual Reading Rainbow accounts were purchased for a six-month period and set up for each Kindle assigned to a child. This allowed us to collect data to determine the amount of weekly reading time, the number of books attempted and completed, and document the genres selected by each child.

Each student was provided a Kindle Fire with the updated Reading Rainbow Skybrary app to select, download, and read books. Each device was programmed to prevent children from downloading any other apps on the device. This was an important step in the e-reader study as initially students wanted to play games and use the device for purposes other than reading. When they became aware that they could only read on the device they were at first disappointed and then engaged in learning how to use the e-reader and app. All pop-up advertisements were blocked to protect children from inappropriate content or advertisements. Children, parents, and tutors were provided training on how to connect to the Internet through the device, explore texts, select and download books, as well as return them in the drop box.

Additionally, training included how to use the features to support reading, such as highlighting text and the 'read-to-me' feature.

Pre-service teachers from a local university worked with the children in small tutorial groups. The pre-service teachers provided literacy support on a weekly basis but did not use the Kindles. The literacy support was provided as a stand-alone group instructional session. At the end of the tutorial session tutors and researchers made sure children had books downloaded on their Kindle to read throughout the week.

Children were asked to bring their e-reader to each tutorial session. The devices were given to the researchers to allow them an opportunity to make sure there were five books downloaded on each Kindle and the children were not having any technical issues with the device. At the end of each tutorial session, the Kindles were returned and children were given the opportunity to return and download new books using the free Internet access before leaving the public library.

Additionally, researchers engaged the children in brief, informal conversations as they arrived for tutorials each week to determine their level of engagement in using the e-reader. Researchers inquired as to any difficulties with the device through the week and if they were able to access books to read. Further, the tutors allowed the children to share information about books they read the previous week within their tutorial groups. Of note, often the children would discuss what they had read the previous week with their group members and before leaving the sessions some children would make sure they had downloaded a book based on peer recommendation. Through informal discussions, participants were asked their thoughts about using the e-reader versus traditional texts as they dropped off or picked up their e-reader. Notes were taken as to the comments children shared.

The researchers also checked in periodically with parents to see if they were having any technical issues with the digital devices and often parents would share information regarding their child's use of the e-reader. Several parents stated that their child was more engaged with the device and liked to carry it in the car or read at night before going to bed. Some did note that the lack of Internet access at home was an issue and they had to remember to download books when they had access to the Internet between tutorial sessions.

Initial data were not collected the first week of the ten-week tutorial sessions due to technical problems concerning access to the Reading Rainbow app. Although the Reading Rainbow accounts were set up and payment for each was submitted, the app defaulted to a trial period initially and then each Kindle had to be set up a second time before data were able to be collected. Children were allowed to keep the Kindles for the six-month Reading Rainbow account period after the tutorial program was completed in April. Therefore, we were able to continue to collect data through the individual Reading Rainbow accounts through July.

### **Findings**

Data were collected regarding the number of texts and minutes read for each child. Findings were consistent with findings from the pilot study conducted in spring of 2015. The findings provided information as to interaction with reading using the e-reader, yet few conclusive answers as to increased motivation for recreational reading. Presented in Table 2 are the minutes read and books completed by participants.

**Table 2:** *Number of Minutes Read by Participants*

<b>Participants</b>	<b>Minutes Read</b>	<b>Number of Texts Downloaded</b>	<b>Number of Texts Completed</b>
Girls <i>n</i> = 5	650	118	100
Boys <i>n</i> = 12	2386	470	395
Total <i>N</i> =17	3036	588	495

To answer research question one, struggling readers used an e-reader to read on a recreational basis outside of school for a substantial number of minutes and completed books from a variety of genres. Additionally, children selected and perused books, but returned them in the drop box if they were not interested in reading the text. This is consistent with what individuals do in a library setting; take books from the shelves, scan the text and then determine whether or not to keep it for further reading. Informal conversations with parents each week at the beginning of tutorial session revealed that the children who were using the e-readers were reading more books and for longer periods of time at home than with traditional texts.

With regard to research question two, the ‘read-to-me’ feature was a favorite among the children as the feature they found most helpful and engaging. Researchers recorded the weekly data and noted that in some instances time spent on a text was quite lengthy. Most children shared that they chose to listen to the text with the ‘read-to-me’ feature first, then read the text on their own. Children also shared that they liked hearing a book read to them at night and could also use the e-reader without having to use a nightlight. This supported autonomy for struggling readers.

One child, a fourth grade student, who also participated in the pilot study was allowed to participate in the second study based on a request by his parents. The student had been

identified as dyslexic and was reading far below grade level. Additionally, due to many technical problems with his device and the app, he was unable to download books for several weeks in the first pilot study. The student expressed his disappointment in the e-reader experience because he wanted to select his own books and was excited about the features that the e-reader and app would provide for reading support, especially the 'read-to-me' feature. Therefore, based on his limited opportunity to use the e-reader in the first study, along with the updated Kindles and the enhanced app included in the second study, the decision was made to allow him to participate.

This student completed more books than all other children for a total of 167 books and he downloaded 200 overall, some of which were read for short periods of time before returning it to the Skybrary. He selected a wide array of books and liked to read but struggled; therefore, he used the 'read-to-me' feature regularly. This student also chose to take the e-reader to school as he indicated that he preferred using the e-reader because no one knew how 'big' the book was that he was reading (reading level) or the type of book he selected. The e-reader leveled the playing field for him as a reader and he liked the fact that no one knew what he was reading. He shared that this was the first time he liked to read and especially in school during independent reading time. Additionally, his mother often carried the e-reader in her purse so he had it available in the car and at other times when reading could be completed. She explained that she liked the fact that it was small and easy to carry and he had access at all times.

Participants' perceptions of e-readers were ascertained through informal discussions each tutorial session. Children shared how much they liked reading on the device and the fact that they could access more than one book at a time. Children also indicated they liked the option of exploring books from the various clouds and the Reading Rainbow app was easy to

use. In addition, children explained that they were required to read at school, but if they checked out a book from the library that they did not like they were not always allowed time to go back to the library and select another book. Further, if they forgot their library book on class library day they were not given the opportunity to check out another book, thus preventing them from having any new reading material for home for up to a week. They liked the ability to download and return books instantaneously, as well as the option to create their own profile and backpack to fit their interests.

The extent of availability along with some degree of interest level correlates with various theories of motivation because of the children's opportunities for choice and their ability to control the reading-learning process (Deci and Flaste, 1995; Deci & Ryan, 2000; Flaste 1995; Guthrie and Wigfield, 2000). Deci's (1971) research indicates that motivation may be measured by the amount of time an individual spends during "free choice". Choice encourages internal locus of control. Locus and controllability refer to feelings of pride, value, achievable outcomes, and accomplishments (Weiner, 2000). The opportunity for control may lead to self-directed learning and mastery as well as willingness to apply the necessary effort to read. Motivation increases with the expectancy of future success based on anticipated personal goals (Weiner, 2000).

To address the final research question, children indicated that they liked having the opportunity to self-select reading materials based on their interests and that if the text was a little too difficult for them to read independently then they would apply the read aloud option so they did not struggle with the book. They would follow along and then at times reread it independently. Of course, this option does not apply to traditional texts and if the book is recorded then the reader must have both the text and a digital device to enhance the reading experience. E-readers make this a more convenient process. Such preferences by the children

may imply that the degree of choice, sense of control over the reading process, and autonomy supports some level of intrinsic motivation for mastery of reading through exploration, intuitive and analytical thinking. However, children were provided with the Kindles and access to the Reading Rainbow app through the end of July. But, only four children accessed their Reading Rainbow accounts after the tutorial sessions ended in April and the few that did continue to read on occasion did not access the accounts to read any texts after May 30<sup>th</sup> when school was out for the summer. In essence, children appear to be less motivated to continue to read without the connection to the tutoring program or to being in school. The children's response to using the e-reader negates the motivational aspect for increasing the desire to read which was the focus of our exploration.

The potential for positive self-efficacy attributes is still unknown. Intrinsic motivational factors for reading such as attitudes, values, self-concepts, and dispositions were present when children were in the tutorial program. The lack of sustainability, desire, lack of desire, or motivation to read may be attributed to children's beliefs in their expectation of failure or the degree of engagement in self-directed reading. Reading requires effort. A sense of positive self-efficacy motivates someone to invest the time and effort in a task. Lower self-efficacy leads to less self-directed control and effort. In this study, the use of e-readers supported positive self-efficacy. An important consideration, the student identified as dyslexic demonstrated positive self-efficacy when using the e-reader, especially in the classroom. He could reread familiar texts or select a text based on his independent reading level without the stress of his fellow students noting what he was reading. This provided an opportunity for the student who has struggled for years with reading to experience success.

Integrating the need for struggling readers to improve their reading abilities with information and communication technologies (ICT) increased literacy skills to some extent.

The e-reader as a digital tool provided a digital library for various forms of literature. In addition, the children did use the e-reader to read and explore texts outside of their school setting throughout the ten-week period of the tutorial sessions. They also indicated a preference for using the digital devices versus traditional texts. However, the fact remains that the children in this study only read within structured arrangements with tutoring and parental support. In essence, children appear to be less motivated to continue to read without the connection to the tutoring program or to being in school. Yet, when children read on a regular basis, research indicates that they will perform better on standardized tests and develop a desire to read over a lifetime.

### **Discussion**

Children today are very skilled in the use of technology and often engage in video games and visual media, so much so that it can be even more of a challenge for teachers to motivate children through traditional approaches to instruction. Teachers are challenged to engage and motivate children as active participants in their own learning. This challenge is certainly not new for educators. There is much more to learn about the use of digital devices for encouraging readers to read than ever before.

From a constructivist approach in the use of e-readers, the learner is actively involved in the learning process through authentic reading experiences consistent with their interests in digital devices. Additionally, each individual constructs their own meaning of a text through interaction with the text and self-selection of text support features, as well as control over when to apply them (Harvey & Goudvis, 2007). Lastly, the visual aspect of digital texts is consistent with other digital formats of video games and apps that children are familiar with and engage in using on a regular basis. Supposedly, children who struggle with and are not motivated to read independently are more engaged when they have voice and choice in

selecting texts from many genres and are able to access texts more efficiently. This is supported by Bandura (1997), Bruner (1966) and other theorists who emphasize the importance of intrinsic motivation and self-efficacy as necessary for learning.

Although technology is an integral part of our lives, it may not be a motivating factor for some children to read independently. Based on this study, a positive correlation between intrinsic motivation, reading satisfaction because of curiosity, involvement, and, reading competence is debatable. The amount of intrinsically motivated reading to increase reading competence is unknown. Children in the study needed routines and expectations of school or parental encouragement to read outside of more structured settings.

### **Considerations**

Some of the considerations we encountered were the cost of the Reading Rainbow accounts for a six-month period. With the lack of additional funding, we were not able to continue with the individual accounts. Further, in order to download books to the Kindle, access to the Internet was required. For some participants, this was an issue as they did not have Internet access at home. Therefore, during each tutoring session, the researchers or tutors made sure each child had five books downloaded before the tutoring session ended. However, at times children would forget to bring their Kindle, thus preventing the opportunity for us to check their reading activity or guarantee they had texts to read for the week.

Another consideration with regard to the Reading Rainbow app was that the books available were picture books and children in older grades preferred to read chapter books. The app is relatively new and is being updated so texts for children with higher reading levels will likely be added. The children did like the opportunity to select from various genres based on exploration of the clouds in the Skybrary, although there was some overlap in texts among the genre clouds for text selection. Lastly, some texts displayed a very small font which became a

bit more challenging to read and more visually demanding if there were ~~are~~ complex illustrations on the page.

### **Future Direction to Explore**

Based on the information we gathered in this exploratory study, we have decided to explore the availability of free books to download to the Kindles. Amazon provides access to free downloadable children's books with a wide array of reading levels and genres. This will prevent the issues with Internet access and by setting up one account, researchers can download books and push them to the e-readers. Further, the children will have access to many books versus the five-book limit at a time. Lastly, the free books available for download include a wide array of genres and text levels which may appeal to the children's individual reading needs and interests.

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