



## **READING ENGAGEMENT: A COMPARISON BETWEEN E-BOOKS AND TRADITIONAL PRINT BOOKS IN AN ELEMENTARY CLASSROOM**

**Troy Jones**

Asst. Prof., East Carolina University, USA

[Jonestr@ecu.edu](mailto:Jonestr@ecu.edu)

**Carol Brown**

Assoc. Prof., East Carolina University, USA

Electronic books (e-books) are gaining popularity for personal reading. Options for access to a large selection of book titles and “anytime/anywhere” reading choices have added to the increased use of e-books. For this study, 22 third-grade students completed satisfaction surveys and reading comprehension tests on three separate reading sessions: one traditional print-based and two e-book titles. Indicators of reading engagement included motivation for independent reading and comprehension as measured by standardized tests on the print book and both e-books. Results showed that format was not as important as students’ identification with setting, characters, and theme of the book. Students did, however, indicate a preference for e-books when given the option of a wide selection of titles and the freedom to choose their own e-book. Students further indicated a preference for the amenities associated with e-book reading such as pop-up definitions and pronunciations of words, automatic page turning, and the option of read-aloud narration. The authors concluded that children quickly become comfortable with e-books and welcomed the technology. However, they are not completely ready to disregard print books.

Key Words: e-books, reading engagement, children, print books, elementary classroom

### **INTRODUCTION**

Reading skills for children are critical for future academic and personal growth. Reading engagement is an important component of a child’s ultimate literacy development. The level and amount of time that a child spends engaged in literacy activities is an accurate predictor of his or her motivation to read including gains in reading achievement (Wigfield, Guthrie, Perencevich, Taboada, Klauda, Mcrae, & Barbosa, 2008). Factors influencing engagement include motivation (Clarke, Power, Hoffman, Kelleher, & Novak, 2003), home

environment (Arzubiaga, Rueda, & Monzo, 2002), independent reading, and gains in reading achievement. It is multidimensional and influenced by the cognitive and emotional engagement of the reader (Wigfield, et al., 2008). Wigfield, et al. (2008) found a strong correlation between reading engagement and reading achievement when they studied the effects of Concept-Oriented Reading Instruction on the reading outcomes of fourth grade children. The authors concluded that children's reading engagement is enhanced when they are provided with instruction in cognitive strategies associated with reading. Children who use sophisticated strategies and enjoy literacy activities are considered to be engaged readers. Consistently engaged readers actively seek appropriate books and become excited about learning new material (Lutz, Guthrie, & Davis, 2006). Marinak and Gambrell (2008) reported that children are motivated to read and remain engaged in reading when rewarded with the opportunity to choose their own books. Arzubiaga, et al., (2002) claimed that context within literacy activities was an important factor crucial to reading engagement and literacy development. Other factors reported include culture of the school, various intervention programs, and the child's home and classroom environment all influence reading achievement.

Based on earlier research, it is known that the materials that parents decide to keep in their home (Arzubiaga, et al., 2002) or the material that teachers select for the classroom (Flowerday, Shaw, & Stevens; 2004) are crucial in shaping the literacy development of children. For example, Arzubiaga, et al., (2002) studied the relationship between the reading engagement and the literacy practices of Latino parents. They found that the cultural practices established by parents as well as the reading material that parents keep in their home greatly influenced the reading achievement of the children. Jewell, Phelps, & Kuhnen (1998) studied the independent reading habits of first graders in three diverse communities and found that children are more likely to become engaged in reading if they have greater access to books through home, school, or public libraries and are able to witness engaged reading by adults. Additionally, Kasten & Wilfong (2007) found that teachers can support children's reading engagement if they provide ample opportunities for independent reading. They found that opportunities for independent reading build fluency and allow children to increase their level of confidence. Support for independent reading is crucial for the reading success of children with limited English proficiency (McGlenn & Parrish, 2002). Flowerday, et al., (2004) also found that children's reading engagement is positively affected if there is high-interest material available for children even when children are not afforded the opportunity to self select their reading material.

All of these findings (Arzubiaga, et al., 2002; Clark, et al., 2003; Flowerday, et al., 2004; Marinak & Gambrell, 2008; McGlenn & Parrish, 2002; Wigfield, et al., 2008) indicate that the availability of materials will play a determining factor in how engaged children are in reading. The classroom material available is evolving as computers are becoming more prominent in classrooms (McGlenn & Parrish, 2002). Children are being introduced to computers in schools at very early ages (Johnson & Christie, 2009). SuccessMaker™ (Pearson Education, Inc.), JumpStart Phonics (Knowledge Adventure, Inc.) and similar multimedia integrated learning systems are designed to teach emergent readers basic skills and provide developmental readers with remedial instruction. In addition, a plethora of interactive websites such as blogs, wikis, and other Web 2.0 resources have created a digital environment in which students are creators of information as well as readers of information. Children are now being acclimatized to technology in their classrooms beginning in preschool and continuing through adulthood. In addition to remedial learning, computer-based technologies in the classroom have the potential to facilitate deep learning and critical thinking skills in children (Hyun, 2004; Lowther, Inan, Daniel, & Ross, 2008). The influx of computer-based technology employed in classroom instruction will ultimately play a role in children's literacy development. Therefore, computer-based technologies are likely to shape the way that children will ultimately view literacy (Mioduser, Tur-Kaspa, & Leitner, 2000).

The movement toward instruction supported by computer-based technology is all taking place in the midst of a major shift in the publishing industry where many book sellers are beginning to actively promote electronic books (e-books) and e-book readers as a less expensive and more efficient method to read. E-books are print books that have been completely converted to or originated in a digital format (Grudzien & Casey, 2008). E-book readers are small computerized devices that store an array of print material (Larson, 2010). One such device, introduced in November, 2007, is Amazon's Kindle. This device allows readers to download books, magazines, and newspapers in less than one minute more than two hundred thousand titles are available for download. The cost of the Kindle, and similar readers, has continued to drop. Thus, many current bestsellers are available at a significantly reduced cost, and more than a million out-of-copyright books are available completely free of charge (Binder, 2008; Lardinois, 2009; Sangani, 2009). Barnes & Noble, Apple, and Sony have all introduced e-book readers to compete with the Kindle. Apple offers the iPad, Barnes & Noble has the Nook, and Sony offers the PRS300 at a lower cost than the Kindle (Bairstow, 2009). Like the Kindle, these devices will enable readers to download and read PDF files and have Broadband, anywhere, anytime, access to reading materials (Binder, 2008). Efficient, inexpensive availability of

electronic resources could easily affect selection of reading materials in K-12 schools.

Electronic books are available through two main sources: online websites and personal electronic devices. The importance of such devices cannot be underestimated. There are several factors influencing the transition from print to electronic format. First, online resources provide instant access to reading materials at the point of need. For example, teachers can search for primary source documents and digitized books that support a variety of curriculum areas (Brown & Dotson, 2004). Whether in a computer lab or through use of a personal hand-held device, students are able to read a wide variety of materials specifically suited to an instructional unit. Secondly, 21<sup>st</sup> century learners are motivated to use personal devices to gain immediate access to answers and to communicate with peers. Reading from a digital screen is comfortable and familiar for most K-12 students. The “read-write” web has produced a generation of readers who are motivated to communicate with their peer writers and established authors. Some experts predict that there will soon be publishing sites comparable to social networking sites such as YouTube.com where writers can share their books with a community of writers (Sangani, 2009). A downside of this trend would be the potential for mass publication of reading materials lacking credibility in both content and sources; however, this also opens the door to new skills in literacy and evaluation of digital resources (Metzger, 2007). The increasing number of e-reading devices and the authors’ embracing of e-books would indicate that the technology is more than a passing fad.

Although e-book readers have yet to forge their way into the classroom, children are being exposed to electronic media in a variety of ways during the school day. A growing number of online resources are available for classroom use (Brown & Hill, 2009). Currently the selection of titles is somewhat limited however there are many benefits in the use of e-books available through well-known publishers such as Scholastic, Inc. (available online [www.scholastic.com](http://www.scholastic.com)). Access through subscription makes it possible for elementary children to view popular fiction books presented through dynamic multimedia websites. Each fiction book is aligned with a nonfiction content area book that provides meaningful context for the animated stories. Additionally, there are a number of free websites that provide well-known fiction and picture books for viewing and reading. For example, the Screen Actors Guild Foundation has developed a website in which well-known movie and television actors perform dramatic readings of children’s books. These “read-aloud” sites make it possible for celebrity role models to read to any child with access to a computer and an internet connection (available online [www.storylineonline.net/](http://www.storylineonline.net/)).

The combination of new-found popularity for electronic reading and computers in classrooms would indicate that these factors will shape children's literacy development in the next decade. Children are still being introduced to literacy through print books, but signs point to electronic reading being a greater part of their literary life as they develop and mature. If the goal of schools is to keep children actively engaged in reading, then educators need to examine the effects of electronic books on the reading engagement of children. As has been stated, engagement also impacts motivation and reading achievement (Marinak & Gambrell, 2008). If the publishing trend of promoting electronic books continues, then it is reasonable to predict these books will eventually make their way into the schools. The purpose of the present study was to examine the reading engagement and comprehension of children as they read electronic books.

### **Research Questions**

The primary research question was "What are the effects of electronic books on third-grade children's reading engagement?" Because engagement impacts comprehension and the degree of satisfaction that children gain from reading, two sub questions were examined. First, "What are the effects of electronic books on third-grade children's reading comprehension?" and second, "What are the effects of electronic books on third-grade children's reading enjoyment?"

### **Significance**

The study has the potential to determine if the features of electronic books will actively engage children in reading material. Many electronic books are accompanied with features such as audio of entire text or audio of specific vocabulary terms. Definitions of such terms are also provided. The books are therefore interactive and allow for children to become actively engaged in the text. By introducing children to electronic books at an early age they will gain experience with all of the characteristics of such technology and become acclimated to twenty-first century devices for reading. Children will also gain valuable twenty-first century skills in the area of information and communication technology (ICT). The ability to use digital resources is a major factor in the success of the future workforce (Law, 2007).

## **METHOD**

### **Participants**

The participants were 22 third-grade children in a single self-contained classroom at an urban school in the southeast region of the United States. The students consisted of 11 boys and 11 girls. Four of the students were Caucasian, one student was Asian-American, and all of the remaining students were African-American. Most of the students read on grade three level, although a few read below grade level. The students were divided into four groups with a mixture of boys and girls in each group. The students were also grouped homogeneously by reading level. The grouping decisions were made by the classroom teacher. The children were grouped homogeneously so that the researchers monitored advanced or average groups of readers while the classroom teacher circulated around the classroom and provided extra support to the most struggling group of readers. This decision allowed the researchers to focus on the study, while the classroom teacher helped students in need. The children were ultimately rewarded with a free pencil and cupcakes for their participation in the project.

### **The Procedure**

Permission was obtained from the parents of each participant. All supplies were provided by the two researchers with the exception of the laptops which belonged to the school. The participants were introduced to the project, and verbal assent was obtained from the students.

#### **Phase I**

The project began with the students reading a traditional print version of *The Yellow House Mystery (The Boxcar Children, No. 3)* by Gertrude Chandler Warner and Mary Gehr. The classroom teacher selected this book because of the children's love of mysteries. This is the third book in a series of mysteries about four children who live with their grandfather and fashion themselves as young detectives. In this book, the children must solve the mystery of a man who disappeared long ago while living in a house on their grandfather's property. The children read aloud in their respective groups with either a researcher or one of two undergraduate research assistants to monitor their reading. The participants read the first three chapters of the book using a process called "bump reading" in which a child reads aloud as long as she or he wishes and then calls on another child in the group to read. The process continues until the passage has been completed.

Upon the completion of each of the first two chapters of *The Yellow House Mystery*, the student groups were given a reading activity by the classroom teacher to measure their comprehension and prediction skills. The students worked in their respective groups to complete a mapping activity and presented their maps to the class. The mapping activity consisted of the students developing a chart divided into three sections. The first section contained questions posed by the classroom teacher. In the second section, students were to list the clues that they thought might help to answer the questions. In the final section students were to list any inferences or predictions that could be made from what the clues in section two were. All students then read chapter three silently. After reading chapter three, students were administered a comprehension test on chapters one through three and an enjoyment survey of the first three chapters. Students were asked to enter their name on the survey so information could be cross tabulated with their comprehension score and observation data. Since students may have concerns about impact on reading grades, the researcher assured students that the scores on the comprehension test or survey would not affect their school grade in any way. The remainder of *The Yellow House Mystery* was read aloud to the students during subsequent days by either the classroom teacher or one of the researchers.

## Phase II

During Phase II of the study, each student was provided with a school-owned laptop. Participants were then introduced to the subscription website Raz-Kids.com and provided instructions for the login process. Each participant was given login identification and a password. Students were also informed that they would be able to log into the site and read books at home on their own time. A researcher provided instruction in interactive features of the books on the website. Students were then given opportunities to investigate and experiment with the online features. These included electronic page turning, vivid color graphics, and access to a library of approximately 100 titles grouped by reading level. Each title had two options for viewing. The students could listen to a computerized read-aloud version or view text and pages as e-books with links to the glossary and selected words that include audio pronunciations. The design of the study required students to access only the assigned books while data were collected, however, it was later discovered that access to a wide variety of titles was a strong motivator for engagement.

After instruction on how to use the website and its features, students were then instructed to rejoin their original groups and to “bump read” a story called *The Mystery Wind* by Cheryl Ryan and Hough Armstrong from the Raz-Kids.com website. *The Mystery Wind* was about a little girl in Africa who discovers a

mysterious wind that brings good fortune to her village. This story was selected because of its relation to a mystery. One student read at a time, while others followed along. The student who read aloud at any given time was the only one with permission to use the interactive features accessible from the website. Others in the group were instructed to continue reading along silently until it was their turn to read. Again, the observers videotaped the sessions and took field notes. After completing *The Mystery Wind* students were again assigned a comprehension activity by the classroom teacher. Students completed a mapping activity similar to the first one in their respective groups and shared their ideas with the class. Students then completed a comprehension test in the same fashion as the test in Phase I. They also completed a survey to measure their enjoyment of *The Mystery Wind*.

### Phase III

During Phase III of the study, students “bump read” another book from Raz-Kids.com entitled *The Sweet Potato Challenge* by Vera Ogden Bakker and Joel Snyder. This e-book was about a cooking contest and contained recipes for various desserts. This book centered on children living in America and challenging each other to make the best sweet potato pie. Although not a mystery, this story was selected because of its appeal to children in the age group. Again, only the student reading aloud at any particular time was the only one with permission to use the interactive features. Students were again assigned a mapping activity comparable to the first two. Upon completion, students were then given a comprehension test and administered an enjoyment survey of the book. Students were also administered a fourth survey to gauge their overall enjoyment of reading electronic books. Students were finally given an opportunity to read or listen to any book from the website and play with all of the features as they read. All materials were then collected by the researchers and undergraduate students recruited as research assistants. Students were informed that they would be able to read books from Raz-Kids.com from home using the same login I.D. and password.

### Data Analysis

The primary data were the scores on the comprehension tests and the answers to the survey items. The observation data were secondary. All comprehension tests were created by the researchers based on research by Johns and Lenski (2005). All three comprehension tests were designed using skills identified in the state-mandated “Grades 3-5 End of Grade Reading Test” which measure reading comprehension as reflected in the English Language Arts Standard Course of Study. The comprehension tests for the study were written in collaboration with the classroom teacher. These authors concluded that effective assessment of



reading comprehension hinged upon students being able to a) preview the text, b) activate prior knowledge, c) identify main ideas, d) sequence, e) make predictions, f) make inferences, and g) draw conclusions. At least one question was included in the comprehension tests to assess each one of the aforementioned cognitive skills. The researchers also scored each assessment and entered the data into a statistical processing program. The initial three surveys were designed to measure a) the students' level of enjoyment with each selection, b) the ease with which they read, c) their self assessment of comprehension, d) their motivation to read more of each selection, e) their desire to read other comparable books, f) the likelihood of reading the book outside of school, g) the recommendation they would give to a friend about the selection, and h) their satisfaction with the selection. The final survey was designed to measure their preference for traditional print books or e-books. The data from the surveys and the comprehension tests were entered into PASW Statistics 17™ for final analysis. The survey items were assigned a value and entered into the same software program. A repeated measure ANOVA was performed on the comprehension tests data to measure the variation in test scores depending upon the format of the book. The survey data were cross tabulated with the comprehension data to measure the interaction between their enjoyment of the books and their comprehension scores. Ch-Square was used to identify any relationships between preferences for selected titles and format of books.

## RESULTS

The repeated measure ANOVA revealed no significant difference in the mean scores between comprehension tests one and three. However the mean score on comprehension test two differed significantly from the other two tests. Table 1 provides mean scores for the three tests.

Table 1. Comparison of mean scores for the three reading comprehension tests.

	<i>Descriptive Statistics</i>		
	Mean	Std. Deviation	N
SMEAN(Test1)	80.2619	17.84848	22
SMEAN(Test2)	65.8000	17.52038	22
SMEAN(Test3)	81.6250	18.71266	22

The post-hoc test was used to conduct pairwise comparisons. The pairwise comparisons revealed levels of significance among the three mean scores. The difference between test one and test two yielded a significance value of 0.023,  $p < .05$ . The mean score on test two also yielded a significant difference from test three with a significance value of 0.002,  $p < .05$ . The mean scores from tests

one and three were not significantly different. The level of significance was 1.00,  $p < .05$ .

Table 2. Pairwise tests providing level of significance in mean score differences.

Pairwise Comparisons						
Measure: MEASURE_1						
(I) Test	(J) Test	Mean Difference (I-J)	Std. Error	Sig. <sup>a</sup>	95% Confidence Interval for Difference <sup>a</sup>	
					Lower Bound	Upper Bound
1	2	14.462*	4.889	.023	1.744	27.180
	3	-15.825*	3.930	.002	-26.050	-5.600
3	1	1.363	3.536	1.000	-7.835	10.561
Based on estimated marginal means						
*. The mean difference is significant at the .05 level.						
a. Adjustment for multiple comparisons: Bonferroni.						

The participants scored significantly lower on test two even though it assessed comprehension of a book delivered in the exact same format as the book for test 3. Test one assessed comprehension of a print book, and test three assessed the comprehension of an e-book. However, the scores for test 1 (print book) compared with test 3 (e-book) were nearly identical. Test items were written using standardized tests typically used in the subjects' classroom.

Unlike the test items, the survey items were intended to measure the level of enjoyment that the participants experienced while reading the books in the various formats. Additionally, Chi-square cross tabulations were conducted to reveal any interaction among the four surveys. The first three surveys measured enjoyment of each book, and the fourth survey measured their preference for reading books in either print or electronic format. The only significant interaction among the first three surveys was the question regarding enjoyment of the books. The participants indicated an equal level of enjoyment regardless of the book format.

The survey items regarding ease, self-assessed comprehension, motivation, self-selected reading, and recommendations did not yield any significant interaction results. The final survey measured their preference for reading books in either of the two formats. Most of the students indicated that they would prefer to and would continue to read books in either format. The students showed no particular preference for reading the books in either format. There was one item of interest-- subjects indicated that they were impressed with reading the wide selection of e-books and the various features of the computer program. They

also indicated that they would like to log into the Raz-Kids website from home and read more books from home. The students did not have difficulty with navigating the books on the computer, and they did not find it confusing.

### Nonparametric analysis

Survey 1 measured the enjoyment for *Yellow House*, and Survey 3 measured enjoyment for *Sweet Potato*. In terms of the enjoyment question on Survey 1 compared to Survey 3 *Sweet Potato*, the response to Enjoy is 62.5% for *Yellow House* compared to 71.4% for *Sweet Potato*. See also the response to somewhat true at 25% for *Yellow House* compared to 33.3% for *Sweet Potato* in Table 3. This shows more students responded at a higher level of enjoyment for *Sweet Potato* e-book than for *Yellow House* print book.

Table 3. Comparison of enjoyment of *Yellow House* (print) with enjoyment of *Sweet Potato* (electronic)

Compare Survey 1 with Survey 3		Not True	Somewhat True	True	Total
True	Count	1	2	5	8
	Expected Count	1.5	3.0	3.5	8.0
% within Survey 1 Enjoy		12.5%	25.0%	62.5%	100.0%
% within Survey 3 Enjoy		33.3%	33.3%	71.4%	50.0%
		6.3%	12.5%	31.3%	50.0%

Compare this to Table 4 as shown below. Students' response to the enjoyment question for *Mystery Wind* compared to enjoyment question for *Yellow House* is the same. The format print book compared to e-book does not appear to be a factor. This leads to the conclusion that content, theme, setting, and plot may have a stronger effect on children's reading motivation than format.

Table 4. Comparison of enjoyment of *Yellow House* (print) with enjoyment of *Mystery Wind* (electronic)

Survey 1 to Survey 2 Enjoy		Not True	Somewhat True	True	Total	
Survey 1 to Survey 2 Enjoy	True	Count	1	0	6	7
% within Survey 1 Yellow Enjoy		14.3%	.0%	85.7%	100.0%	
% within Survey 2 Mystery Enjoy		25.0%	.0%	85.7%	46.7%	
Total		6.7%	.0%	40.0%	46.7%	

In Table 5, Chi-square reported a significant relationship between students' response to Survey 3 *Sweet Potato* enjoyment with Survey 4 Choice ( $r = 12.97$ ,  $p < .01$ , 2-tailed). The variable Choice refers to being able to choose from many

book titles. There is a strong correspondence in survey response between those students who enjoyed the e-book *Sweet Potato* with students who liked being able to choose from a wide selection of book titles. This suggests that students who enjoyed the e-book *Sweet Potato* are motivated when given the opportunity to choose their own reading materials.

Table 5. Significant relationship between “enjoyment” and “freedom to books to read”

Chi-square Tests for Pearson correlation between “Enjoy” Sweet Potato with “choice of titles”			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-square	12.974 <sup>a</sup>	4	.011*
Likelihood Ratio	9.709	4	.046
Linear-by-Linear Association	4.532	1	.033
N of Valid Cases	18		

Reading motivation and engagement are enhanced when students have a choice in reading material. These findings are consistent with the findings of Flowerday, et al. (2004). The wide selection of titles possible through online e-book websites is motivational for children. This is similar to the freedom of choosing any book from the classroom or school library collection. One benefit in use of e-books is improved access to a greater number of reading selections. Currently most e-books for K12 classrooms are limited to subscriptions sites with several restrictions. First, in most schools the district technology director must grant privileges for download of e-books to any particular school server. This is a minor obstacle but does require time and effort on the part of the teachers. In addition, the authors discovered very few current titles available online; for purchase or for free. Older book titles that do not require copyright are available in abundance. Most children in this study, however, preferred books that relate to their own culture and environment. Finally, Chi-square showed a perfect correspondence between enjoyment scores for the print book *Yellow House* compared to the e-book *Sweet Potato*. This suggests that format is not important as the content, theme, and general writing style of the book. Although students responded favorably to such features as pop-up windows with definitions and word pronunciation, this study showed no significant effect on students' reading comprehension. Earlier research in multimodal learning reported positive effects on learning when more than one modality is used for reading instruction (Love, 2005). The findings from the current study contradict the previous research as there was little effect on the reading comprehension scores of participants in this study with multimedia interactive e-books. These findings warrant further research in the special features of e-books and how they might enhance reading motivation and ultimately reading comprehension.

## DISCUSSION

The results of the ANOVA yielded interesting results since the students scored significantly lower on the second test based on a book that was read in the same electronic format as the third book. The survey results also indicated that the participants enjoyed the first and third books more than the second book. The mean enjoyment score for book one was 2.32 which was identical for the mean enjoyment score for book three. The mean enjoyment score for book two was 2.11 which was significantly lower. This coincided with the significantly lower score on the comprehension test for book two, while the comprehension scores for books one and three were nearly identical. These findings would indicate that the format of the book did not matter as much as the level of enjoyment that the children received from the storyline. All three books were read in the same fashion with the children “bump reading” in the same reading groups for each session. The groups also had the same facilitator for each session. The groups also all engaged in the same extension activities after reading each selection. The homogeneous groupings also ensured that their reading levels were comparable. The only difference in the study design was the format of the books. Readings of the print book and the second e-book resulted in comparable amounts of enjoyment and comparable comprehension scores.

The first reading selection was the first three chapters of *The Yellow House Mystery*. The first three chapters of the book were read in groups, and participants were subsequently tested on those three chapters. The remainder of the book was read aloud to the students with the teacher or a researcher reading a chapter a day after recess.

The third book that the participants read in electronic format was entitled *The Sweet Potato Challenge*. This e-book was about a cooking contest and contained recipes for various desserts. This book centered on children living in America and challenging each other to make the best sweet potato pie. The children “bump read” this entire book and were also able to click on highlighted vocabulary words to either have the word pronounced or have the definition displayed. The facilitators ensured that the only child who was allowed to use the interactive features was the child who was reading aloud. The book also contained a feature that would allow children to change pictures without changing the page. Therefore, some children clicked the “enter” button expecting the page to change while only seeing a different picture. The text remained the same. In responding to the survey, children did not find this feature difficult or annoying.

The second book was also read in electronic format. This book was entitled *The Mystery Wind*. Again, the research design remained the same. Children “bump

read” and used the interactive features. One difference was that this was the first book that the children read using the electronic format. They were allowed to explore the other books in the Raz-Kids site before reading *The Mystery Wind*, but this was the first e-book that the children had ever read. Another notable difference between this book and the other two was that *The Mystery Wind* was about a little girl in Africa who discovers a mysterious wind that brings good fortune to her village. The program offered sound effects of the wind blowing and had other similar features to the third book that the participants read in electronic format.

The most notable difference between this book and the other two was that this book was not set in America and did not contain a setting that was automatically familiar to the participants. The huts in which the characters lived and the oxen that roamed around the village may not have been as easy to understand as the settings of the other two books. The students also did not enjoy the story as indicated on the survey. Their lack of enjoyment was also reflected in their comprehension scores. It is possible that their reading engagement was lower because of their lack of interest in the story.

A central finding in these data was the strong correlation between enjoyment of the final e-book that the children read and their preference for a choice of books. As Flowerday, et al., (2004) found, children are highly motivated to read and remain engaged in literacy activities when afforded a choice of what to read. The participants in this study all rummaged through the Raz-kids site to find other books which might interest them when given the opportunity to do so. This correlation between enjoyment of *Sweet Potato*, an e-book, and a preference for self-selected reading material suggests that the electronic format combined with the opportunity for choosing books was a highly motivating factor for children to read.

According to data from the fourth survey, the participants had no preference for reading in either format. Over half of the participants wanted to continue to read both print and e-books. Only three participants indicated that they would only like to read e-books in the future, while just one participant indicated a future preference for print books only. Three participants also indicated no preference at all for either format. The interactive features of the e-books did not sway them to a desire for using electronic formats as their sole source reading. The observation data revealed that the children clearly displayed an interest in the interactive features such as having the books read to them, having vocabulary words pronounced for them, viewing various pictures, and sound effects. The data also revealed that they thoroughly enjoyed roaming through the vast selection of e-books and reading selections of their own choosing. However,

they still indicated that they would like to continue reading books from both formats.

The results from both the comprehension tests and the surveys indicated that the format in which children read the material is not an important indicator for this study. The e-book format did not significantly increase comprehension, enjoyment, or engagement. The data clearly indicated that children prefer to have a choice of reading material and that the format was not as central to reading engagement as a connection with the story's characters and setting. As publishers and teachers begin to introduce electronic reading to younger children, strong consideration must be given to the quality and quantity of the books provided for children to read. The results of this study indicated that the format in which the book was delivered did not matter as much as the suitability of character, theme, and setting of the books and how these align with personal preferences of the reader. A second outcome is further evidence which suggested a wide variety of reading choices and the opportunity to select books does impact reading engagement and ultimately reading comprehension.

#### **LIMITATIONS**

While the study demonstrates the capabilities of children to adapt to e-books, there were some limitations to the study that must be mentioned. The primary limitation was the small sample size. The researchers were limited to one third-grade classroom limiting the sample size to 22 subjects. Another limitation was the limited availability of quality literature on the internet. It was difficult to find the same book available in both print and electronic formats for a reasonable cost. Such a study would require individual e-reading devices that were not available for this study. Books within the same genre were selected to compensate. A final limitation was the lack of support while students read the print books. The electronic books contained features such as audio pronunciations of words, pop-up glossaries, read-aloud narration, sentence highlighting, and automatic page turning. The print books obviously lacked such features. Since the classroom teacher selected a trade book, there was no teaching guide or glossary to accompany it.

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