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## Teachers' thoughts on e-readers in the elementary school classroom

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Running head: E-READERS IN THE CLASSROOM

Teachers' thoughts on e-readers in the elementary school classroom

### Abstract

Despite the popularity of e-readers and the enthusiasm of some for their use in secondary education, their utility in elementary education has not yet been systematically explored. Some advantages and disadvantages to teaching elementary literacy with e-readers are identified here. A convenience sample of ten teachers from a variety of different types of elementary schools and classrooms who were e-reader novices read a chapter of a grade-appropriate book on a Kindle and evaluated its use for their students. The teachers gave their opinions and ideas on how the devices could be implemented. Three specific technological affordances of an e-reader that carry pedagogical implications are discussed: the text-to-speech and dictionary functions, and the idea of unlimited access to books.

### Teachers' thoughts on e-readers in the elementary school classroom

More and more people are reading on Kindles, or similar electronic devices. Although Amazon does not release official sales numbers, industry estimates say there are as many as 3 million Kindle users (Arrington, 2010) and that number is growing quickly. A survey from the Pew Research Center found that the percent of U.S. adults with an e-book reader rose from 6% to 12% in the first half of 2011 (Purcell, 2011). In addition to pleasure reading, there has been much talk in the media about the successful use of e-readers on college campuses and in high schools (e.g., Freedman, 2009; Pappas, 2009; *Will the Kindle change education?*). Some people have begun investigating the possible benefits of introducing the devices into elementary school classrooms (e.g., Dixit 2010; Larson, 2010; Powers, 2011). The purpose of this research was to discuss the potential usefulness of e-readers in the elementary school classroom.

Other researchers have investigated the factors that explain teachers' intention to use technology. For example, Teo (2011) created a statistical model demonstrating the importance of the following four variables: perceived usefulness, perceived ease of use, facilitating conditions, and attitude towards use. A survey by Grunwald and associates (2010) focused on myths that surround technology implementation. They found that, contrary to stereotype, newer teachers are no more likely to use instructional technology than veteran teachers. They also found that providing teachers with access to technology is no guarantee they will use it. When asked why they do not use specific technologies, most of the elementary school teachers confirmed Teo's findings, and said it is simply not necessary for their lessons. My search did not turn up any academic research that

looked specifically at why or why not elementary level teachers use e-readers with their students. On the other hand, numerous articles in the popular media describe classrooms and teachers who have enthusiastically implemented e-readers (e.g., Barack, 2010; Dixit, 2010) as well as editorials about why e-readers are a bad idea (e.g., Brezicki, 2010-2011; Guernsey, 2011). To date, no one has systematically investigated their implementation.

### *Advantages and disadvantages*

There are many reasons to love reading on an e-reader, but there are also just as many barriers to entry for educators unfamiliar with the devices. The peripheral tools that an e-reader has provide many potential advantages over a traditional book. For example, the Kindle has a built-in dictionary: hover the cursor over any given word, and it will display the contextually correct definition in the footnote. The text-to-speech function and the ability to adjust the text font and size could aid those with visual impairment. In addition, electronic books are generally priced lower than paper books, and each download can be shared with six Kindles. Psychologically, e-readers may also have a distinct advantage for young students who are learning to choose appropriate texts: the length of a book may play less of a role in what students choose to read, since lower-level readers no longer need to feel embarrassed about carrying around thinner books, and the heft of thicker books cannot intimidate. Perhaps the most-often noted advantage to e-readers is motivational: many teachers agree that their students are powerfully attracted to electronics and would therefore be much more likely to read on what they perceive to be a cool toy (e.g., Engel-Unruh, 2010; Powers, 2011).

That said, e-readers have just as many disadvantages. Just learning how to use the hardware—how to turn the machine on and off (it is easy to put a Kindle to sleep and

assume it is off, only to find the battery depleted next time you are ready to use it), how to open a book and turn pages, how to highlight text or look up vocabulary words—is time consuming. One writer noted that figuring out how to hold the device comfortably is no simple task for small hands (Barack, 2010). Learning how to get books (whether purchased, borrowed, or shared) and manage the download process is another challenge for teachers.

In addition, the economic advantage of using e-readers is questionable. Although each book is often less expensive than its paper counterpart, and less expensive still when shared amongst six Kindles, the initial cost of the device itself is still prohibitive for most schools. Assuming that no Kindles are lost to damage or theft, and that a Kindle battery has about the same lifespan as a paper book, my calculations put the cost of e-books at about half of that of mass market paperback books (see Figure 1 for a cost comparison). However, these calculations do not take into account the length of battery life or durability of the machines. The devices are new enough that longevity has yet to be established. And losses due to damage or theft will vary from classroom to classroom.

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Figure 1.

Cost comparison of e-books versus paperbacks

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Cost per e-book (based on an average of 12 books read per year and a cost of \$6.99/book<sup>a</sup>)

Kindle (one-time cost): \$139 + Total cost of electronic books for the year: \$83.88

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Number of books read per school year: 12

= \$18.57

Cost of the e-book when shared amongst 6 Kindles: \$3.10

Average cost of a Young Adult mass market paperback in 2011: \$7.77<sup>b</sup>

Average cost of a Young Adult trade paperback in 2011: \$14.52<sup>b</sup>

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<sup>a</sup> This price reflects an average of the range of prices seen on Amazon.com's children's ebooks site (\$2.99 - \$10.99).

<sup>b</sup> Figures from *The School Library Journal*, March 1, 2011. Retrieved from:  
[http://www.schoollibraryjournal.com/slj/printissuecurrentissue/889315-427/better\\_data\\_better\\_libraries\\_statistics.html.csp](http://www.schoollibraryjournal.com/slj/printissuecurrentissue/889315-427/better_data_better_libraries_statistics.html.csp)

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### *Reading and e-readers*

While it is not clear what independent readers reading silently do differently when reading on an e-reader than when reading a traditional book, there is some evidence that adults approach reading differently when they share a picture book on an e-reader with a child. Parish-Morris and Collins (2011) observed thirty-three 3-5-year-old children reading different format books with their parents. They found that content-related utterances differed, depending on whether the participants were looking at a traditional book or an e-book. When reading traditional books, the parents made comments relating the book's content to the child's life. When reading e-books, the parents made behavior-oriented comments, such as telling the child where to click. The authors hypothesize that

this could be due to the parents' comfort level with traditional books: they are more apt to take the lead and play an active role when reading traditional books, whereas they let the e-books lead the experience. Depending on how e-books are to be used in the classroom (for independent reading versus read alouds, for instance), teachers need to be comfortable enough with the technology to take the lead and follow best practice recommendations for teaching literacy.

Proficient reading is the most important ability for school achievement. Students need to be skilled decoders who read fluently and employ comprehension strategies. Unfortunately, it has been well documented that many children enter school enthusiastic about learning to read, but lose motivation as they begin to struggle (see Carbo, 1983). Stanovich (1986) called this the Matthew Effect: the rich get richer, while the poor get poorer. In other words, the students who are strong readers at a young age become even stronger readers due to the self-efficacy they feel. This improvement comes through many mechanisms, including additional exposure to print and the acquisition of vocabulary from that added practice. The weaker readers, however, lose confidence and then, subsequently, interest in reading. Reading self-efficacy has been shown to be a significant positive predictor of reading comprehension scores, along with word reading ability, listening comprehension, and other nonverbal skills (Solheim, 2011). How to reignite a struggling reader's confidence and interest in reading is an important question for many teachers and parents. E-readers may be part of the solution for some of these young students.

On the other hand, Csikszentmihalyi's flow theory (1991) describes the state of being so engrossed in an activity that you forget the world around you and participate in



the activity for its own sake, not for any outside reward. Classroom teachers work hard to create flow experiences for their young readers in many ways, including carefully matching texts to readers in terms of interests and reading level; creating an optimal environment for reading in the classroom; and sending books home with students. An interest in technology will not make reading texts on an e-reader a flow activity. An interest in technology may convince a child to pick up the Kindle, but in the end, the student still needs to *read*. At some point, reading needs to become effortless so that the student can become engrossed in the text and acquire information from it.

### *Purpose of the project*

The general consensus in the literature seems to be that at-risk readers will be more motivated to read when handed an electronic device, than they are when handed a book. While this is certainly possible, it seems to me that the novelty might also wear off quickly, making the monetary investment in the technology unwise. Once the novelty of the technology wears off, I wondered what else, if anything, teachers would find compelling about e-readers for elementary school. Thus this project was designed to answer two specific questions: 1) What role can e-readers play in elementary school classrooms? and 2) What specific affordances of the technology do the teachers find to be advantages or disadvantages?

Many of the teachers in the districts in which I live and work have never had the opportunity to explore and consider e-readers as a pedagogical tool. To that end, I began this project by asking teachers with a range of technological savvy and who teach a variety of different age levels to try reading a short passage on a Kindle. Their comments while reading were recorded. When they finished reading, they were asked a series of

questions about the experience and asked to complete a questionnaire about themselves and their technology use. The information collected included the demographics of the teachers; their comfort level and amount of interaction with computers, cell-phones, e-readers, and any other technology; their on-line comments as they read a sample from an unfamiliar text on a Kindle and evaluated it for their classrooms; and their overall impressions of the device and its potential usefulness to their classrooms. While these teachers and classrooms are not necessarily representative of a nationwide sample, the teachers did raise some interesting concerns, both positive and negative, that inform potential practices with e-readers.

#### Methods

The participants were a convenience sample of ten classroom teachers who teach in schools where I supervise pre-service teachers. They were chosen to represent a wide range of different types of classrooms, including grades 2 through 7/8 at a range of schools: large to small, urban to suburban, district and charter, some with more technological resources than others. The teachers themselves were all Kindle novices, but had a range of interest in and proficiency with technology. See Table 1 for more demographic information.

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Table 1. Characteristics of participants.

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Age in years	
Mean	42
Range	24 - 61
Gender	

Female	10
Ethnicity	
White	10
Education	
B.A.	3
M.A.	5
M.A.+	2
Type of School	
Urban	4
Suburban	6
Type of School	
District	8
Charter	2
Grade taught	
2 <sup>nd</sup>	1
3 <sup>rd</sup>	2
4 <sup>th</sup>	1
5 <sup>th</sup>	4
7/8 <sup>th</sup>	2
Technology Used in Classroom	
Computer	10
Response System (i.e., Clickers)	0
Audio/Video Player	10

Projector	9
E-Reader	0
Smartboard	1
Technology Owned at Home	
Cell phone	9
Computer	10
MP3 player	6
Game system	2
E-Reader	0

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Prior to the meeting between interviewer and classroom teacher, each participant completed a three-page questionnaire about her use of technology, both personally and in the classroom (see Appendix). At a meeting after school hours, the teachers were asked to read and evaluate for their students the first chapter of a grade-appropriate book presented on a Kindle, version 3.0. Each of the participants read the first chapter of one of the following titles: *The Book Thief* (Zusak, 2007), *Hoot* (Hiaasen, 2002), *Number the Stars* (Lowry, 1989), *Things Not Seen* (Clements, 2002), or *Where the Mountain Meets the Moon* (Lin, 2009). The instructions were as follows:

I would like you to read the selection silently to yourself. As you read, please try to act as you normally would when evaluating a text for your students, i.e., if you normally write notes in the margins or look up vocabulary words, please try to do so on the Kindle. As you are

completing the task, please think aloud about the experience. I am especially interested in anything you find frustrating or exciting about reading on an e-reader, as well as anything you think might be frustrating or exciting for your students.

The interviewer recorded and transcribed each participant's comments as she thought aloud, then asked her the following questions after she had finished reading:

1. How did you find the experience of reading on the Kindle (exciting, frustrating, ordinary, etc.)?
2. What, if anything, surprised you?
3. Did you change the way you normally read at all? (Were there things you wanted to do, but didn't know how? Did you read faster or slower?)
4. Do you have specific students you think might be particularly motivated by an e-reader? Please describe the student(s).
5. How can you envision using e-readers in your classroom/library?
6. What else would you want an e-reader to do?
7. Do you have any other comments you would like to add?

Most of the think aloud comments represented answers to the above questions. In fact, in some instances, the participant had already thoroughly answered a question while thinking aloud. The interviewer nevertheless read each question aloud to afford the participant another opportunity to respond.

These procedures resulted in an average of three pages of typewritten comments from each participant. The transcripts were then examined and comments were grouped by the categories described in the questions above. An unbiased external reader also

assigned the comments to categories, and differences were resolved in conversation. A total of 57 distinct idea units were culled from the comments. Where there was overlap, the number of participants making the same comment was noted (for example, four participants talked about their struggle to figure out how to change the font size).

Results

Table 2 reports aggregate answers to questions #1-6. Please note that every teacher did not answer every question and some teachers provided more than one answer for some questions. The number reported is the number of times a comment fell into the reported category, with sample quotes for clarification.

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 Table 2. Aggregate answers to interview questions with selected comments.

Question #1

	Positive	Negative	Neutral
How did you find the experience of reading on the Kindle?	2	2	2

Comments: "...technology makes me feel sophisticated."

"It's new."

"I found it cumbersome."

"Frustrating."

"It bothers my arthritis."

## Question #2

	Notes	Unsophisticated	Easy/fun	Marvel at tech
What, if anything, surprised you?	4	1	1	1

Comments: “I didn’t realize you could highlight and take notes on it.”

“All of that on one little thing...”

“I’m surprised you can highlight, take notes, change the font. With a book you ruin it... sometimes I accidentally take notes in a book, then put it back on the shelf.”

## Question #3

	Faster	Slower	No change
Did you change the way you normally read?	2	2	1

Comments: “I think I might have been reading faster...”

“I was distracted. I like that you can change the font to make it bigger.”

“I don’t think I read faster or slower. I think I’d be able to do notes faster on paper, though.”

Question #4

	Higher level	Lower level	Other
Do you have specific students who would be motivated by an e-reader?	3	1	2

Comments: “Probably my higher-achieving students, but those are the ones who are motivated anyway. I find that the kids in the top of the class are the ones who are normally attracted to technology.”

“All of them! But the reluctant readers for sure... b/c it’s technology, they would be drawn to it.”

“I think kids would be interested in it because it’s tactile.”

Question #5

	Not at all	Replace books	As assistive technology
How can you envision using e-readers in your classroom?	3	2	2



Comments: “I’d have one each and let them use it all the time. Alpha Smarts used to be an accommodation, but when we got them for everyone, it turned out that lots of students were better writers, they just don’t like writing out long hand.”

“If I had money for technology I would buy other things first, like a projector, a screen... These would be distracting. I feel like the kids would just be off on tangents doing other things.”

“With this particular crew [I could use them]... not with every second grade I’ve had. I would not have used them last year, because they would have been broken.

Question #6

	Touch screen	Print	Color/pictures	Teacher control
What else would you want an e-reader to do?	3	2	2	3

Comments: “Is there a way to block features?”

“Can you sync five or six Kindles with the teacher’s, so that she can take control of their machines? That’s essential in computer labs for keeping the kids on task and showing them how to do new things...”

“Print. I’m thinking of (our phonics workbooks)... I’d be more interested in an e-reader for workbooks than for chapter books.”

“I would expect, if they are going to have e-readers in the elementary classroom that they might have comprehension questions or lessons built in. Or a project/prompt. It has to be fine tuned for our age group. Just to look for the summary, I had to hit another button. On a book, you can just flip to the back. And black and white... no—kids need color.”

“It needs a help button. There’s nothing obvious or easy, like the little [Microsoft] paperclip guy.”



For the last question (“Do you have any other comments you would like to add?”), the teachers reported being surprised at how much they liked the device in general; they like the size and portability of so many books at once. That said, they thought it important that children’s books be presented in color, they worried about damage to the devices, thought it needed a larger keyboard, and brainstormed many features that would make it more classroom-friendly.

In their think-aloud comments, the teachers were consistently surprised at how much they enjoyed the reading experience on the Kindle. The interface looked better than they expected: comments about the superiority of the e-ink technology revealed that most of the participants had expected the reading experience to be similar to reading on a

computer. In addition, most were able to identify at least one student whom they felt could benefit from the use of an e-reader. For example, one of the third grade teachers has a seeing-impaired student in her classroom. Although the student has a Braille machine, a projector, and an aide with him in the classroom, the most prevalent modification made to include the student in classroom activities is to reproduce every material used in class in 30-point font. Assuming that the books used in her classroom are available for the Kindle, it could be a welcome assistive technology tool for this visually impaired student.

Most of the teachers agreed that the technology would be a novelty that could be useful in engaging their reluctant readers, although some wondered how long the attraction would last. Others thought that the technology could be a distraction for the reluctant readers. For example, one of the teachers spoke about the struggle she has using calculators appropriately in the classroom, because the students want to spend all of their time typing numbers that will spell out words on the interface. Finally, in opposition to the general wisdom that e-readers would be of the most benefit to reluctant readers, three of the teachers immediately thought of their more proficient readers when asked if they could identify specific students for whom they thought the Kindle would be most appropriate/useful. One teacher commented, “Right now my students with higher abilities that have a thirst for books would think this is absolutely fascinating—they wouldn’t have to look for books, they could just come to this and find lots of books.”

One popular feature of the e-reader was the ability to insert notes right into the text without defacing the book. One teacher said, “[I like that you can] sync your notes—you could put in ‘What do you think this word means?’ or ‘Predict here’... You can’t do

that in classroom books unless the students purchase them. It would be great for questioning techniques.”

Overall, most of the teachers expressed skepticism at the utility of the e-reader for elementary school classrooms. For the most part, they felt that the cost of e-readers outweighed the potential benefit to their students. They made comments such as, “If you have kids with behavior issues, this would be an expensive tool. I know a classroom where the kids would throw them,” and “I wonder if it would be cost effective. We buy paperbacks, but after 2 months in a kid’s hands, it needs replacing.”

The participants wished the Kindle had the capacity to do other things, such as print or highlight in different colors. Everyone intuitively wanted the Kindle to have a touch screen and found the joystick controls difficult to maneuver. Some liked the idea of a text-to-speech function, but wished it sounded more like natural speech and/or included the option to let the teacher record herself reading. The ability to control the students’ reading was another option the teachers would want to see in an e-reader: they would like the ability to sync a number of e-readers so that the teacher could take over all of the machines in order to demonstrate functions, call attention to specific parts of the text, and/or encourage all students to focus on the same section.

In sum, while participants were more impressed with the Kindle than they expected to be, they argued that, for e-readers to be useful in the elementary classroom, the technology needs to be fine-tuned for the age group and for educational purposes.

#### Discussion

The teachers brought up many interesting ideas for implementing the Kindle. Two of their biggest concerns—the cost of the device itself and the lack of a touchscreen—

will no doubt be remedied by Amazon before long (possibly before this article sees the light of day). However, three integral features of the Kindle that carry pedagogical implications and that are universal on all e-readers came up in conversation again and again: the text-to-speech and dictionary functions, and the idea of unlimited access to books. These three affordances are worthy of discussion for a few reasons. First, each one represents a vital piece of what a good reader does: reading aloud and listening to model readers is the chief way in which students learn fluency (Stahl & Kuhn, 2002); dictionary skills and word analysis can be an important part of students' vocabulary and spelling development; and access to books is one of the most important factors in developing skilled and enthusiastic readers. They are also worth talking about because, if a reader takes advantage of these three affordances, the reading process is fundamentally different from that of a traditional book. Thirdly, these three affordances are common to all e-readers, regardless of the make and model. Other devices that function as e-readers also provide additional affordances (i.e., access to the Internet, games, or other computer-like applications), but all e-readers include text-to-speech, dictionaries, and access to a plethora of titles. The teachers were not uniformly positive or negative about any of these features of the e-reader.

#### *Text-to-Speech Function*

Beers (1998) described a fifth-grade classroom in which many of the students read along with audiobooks. Every student read for the entire free-reading period, and the classroom teacher reported that the result of encouraging her struggling readers to listen along as they read is that reading ability, interest in books, and students' self-confidence have all increased in her classroom (Beers, 1998, p. 31). In addition, the students reported

benefits such as vocabulary development. One student said, “I like books on tape because they can teach you words you do not know” (p. 32). Other researchers have reported student gains in fluency, comprehension, and motivation from listening to audiobooks (see Wolfson, 2008). Expert readers model the pacing, intonation, tone, and inflections necessary for comprehension. Wolfson (2008) also points out that audiobooks can be especially useful for students with auditory, attention, or limited English language needs, since the experience is personalized. Headphones help to keep the listener on task, volume can be increased or decreased, and the pace can be controlled with frequent pauses for comprehension checks. English Language Learners can improve their language and literacy skills through increased exposure to the spoken word with audiobooks (Goldsmith, 2002; Lopez, 2005). Franklin (1996) found that reluctant readers who do not struggle prefer to listen to audiobooks. Furthermore, students who followed along with the printed text while listening were more likely to read ahead and focus on the print. All of this research points to the advantages of a device that can provide both the audio and print editions of a text.

The text-to-speech (TTS) function on the Kindle, however, is not the same as an audiobook. It was widely decried by the teachers as sounding robotic and monotonous. Often the audio moved ahead before the page turned automatically, causing even the skilled readers (the teachers) to lose their place in the text. If the TTS function on the Kindle is improved, either through a more natural sounding mechanical voice, or the use of real actors to provide the audio, the teachers I spoke to thought it could be a valuable tool in their classrooms. Alternatively, one teacher suggested that she would like the ability to record herself reading the book aloud for students to access on their personal

Kindles.

### *Dictionary Function*

The teachers who commented on the automatic dictionary function of the Kindle (place the cursor over any word and the meaning and pronunciation of that word automatically pop up) also all reported teaching dictionary skills in their classrooms. The Common Core State Standards, however, do not stipulate the teaching of dictionary skills. In fact, the only mention of a dictionary is that students in grades 6-8 should be able to verify a preliminary meaning through use of a dictionary (Common Core State Standards, 2010). So, is the teaching of dictionary skills obsolete?

Beck et al. (2002) explain that effective vocabulary instruction should be based on explanations, rather than definitions. The difference is that explanations use language and images familiar to the students, with examples culled from their background knowledge. Dictionary definitions tend to be too formal and unfamiliar to elementary school students. Dictionary definitions are most appropriate once the reader knows something about the word, or for use in writing.

Moreover, Beech (2004) examined the dictionary usage of 7-11-year-olds. He noted that the dictionaries were not reported to be used frequently enough to have a significant impact on vocabulary development: if vocabulary development is estimated at about 3,000 words per year (Beck, McKeown, & Kucan, 2002), the child would have to be looking up at least several words per day for this method to be influential. Only a minority of the children reported using a dictionary even once per day. The self-reported rate of use of the dictionary correlated significantly with the younger group's spelling performance, but not with reading performance: the younger children who used the

dictionary more frequently were the better spellers. However, this was not true of the older students. Beech suggested that this may mean that the children who are more active and interested in spellings are more likely to use a dictionary in the earlier years, and therefore develop into better spellers.

These results suggest overall that it may be more important to teach dictionary skills for the impact dictionary use can have on spelling, than for vocabulary development. In this light, teaching dictionary skills is not incompatible with the use of digital e-readers that provide automatic access to dictionary information: young readers would be expected to use a traditional dictionary during *writing* activities more frequently than during *reading*.

One teacher complained that the automatic dictionary function on the Kindle provides too much help, in that students would get used to being told the dictionary definition and never bother to attempt the use of context clues to figure out the meaning independently. Alternatively, another teacher discovered that the Kindle does not choose the context-specific definition: the word “shower” was used in her chapter as a verb, but the Kindle gave the rain shower definition on the screen and a hyperlink to click for more definitions. She thought this might be a good thing, in that students would still be prompted to use context clue strategies to determine the right meaning, but expressed doubts that many would click on the “more definitions” hyperlink.

#### *Access to Books*

To become better readers, students need books. Allington and his colleagues (2010) found that simply providing elementary school students from low-SES families trade books over the summer resulted in statistically significant gains on state reading



assessments. So, while the concept of having so many books at the fingertips is a good one, the reality is that digital titles are not free. E-readers are designed to make it easy to buy books; however, most teachers will find it essential to remember to turn the wireless off (especially if a credit card number is stored in your on-line account). This means that students will not be able to browse “similar titles” or search for content that interests them. While the teachers brought up both of these affordances as beneficial aspects to the Kindle, most schools will not have the unlimited funds to allow students these luxuries.

This raises the question, how do public libraries fit into the equation? Whitehead (2004) found that students with library cards who visit their community libraries outperformed students who did not on reading assessments. Many public libraries currently offer some titles as e-books, but the selection is limited and the download process confusing. Perhaps, in the future, public libraries will be able to fine-tune their procedures to provide easy access to a wealth of titles accessed directly from an electronic device.

### *Conclusions*

E-readers appear to be poised to replace traditional books in the adult market. The future of traditional books for children is not so clear. Too often, there is a rush to adopt new technology in the classroom without fully exploring the educational impact and potential benefits. The new technology ends up stored away in a closet. E-readers have the potential to serve important functions, such as serving as an assistive device for students with special needs, but the technology is as yet untested. The first step in exploring what e-readers can add to classroom instruction is to enable teachers and schools the opportunity to try out and evaluate e-readers and think about their utility for

teaching and learning.

The data collected here was intended to answer the following questions: 1) What role can e-readers play in elementary school classrooms? and 2) What specific affordances of the technology do teachers find to be advantages or disadvantages? No clear answer emerged for that first question. Two of the ten teachers dismissed the idea of using them in an instructional context altogether. These teachers thought that their students would have trouble working the device and/or would break it. Of the teachers who were more positive, two thought that the e-reader could replace books altogether in the classroom. One teacher commented, "I can see [using] it in a controlled setting like a guided reading group, then building to the whole classroom." And two of the teachers saw the e-reader as more of an assistive device that could augment instruction for students with special needs. For example, one teacher speculated that she has students who would be more willing to take notes in the text if they did not have to write those notes out by hand. The remaining teachers were unsure of how they could best implement e-readers. One teacher commented that she would want to use e-readers in conjunction with other technology, such as a projector, in order to ensure that the students do not become distracted. While she did not rule out the use of e-readers altogether, she saw their implementation as requiring more prep work than did some of the other teachers. The next step in this research, therefore, would be to put a set of e-readers into an elementary classroom and document the success and failures of the technology.

For the second question, what specific affordances of e-readers do teachers find to be advantages or disadvantages, three important functions emerged. The teachers talked enthusiastically about the uses of a good audio recording of elementary-level books, but

also decried the text-to-speech function of the Kindle as robotic and inaccurate. They were mixed in their opinions of an online dictionary that is easily accessed while reading, and they found difficulties (including the wrong definition of words with multiple meanings being offered first) in the use of the dictionary on the Kindle. Finally, most of the teachers were in awe of the access to books provided by an e-reader. They commented in surprise about the number of titles available. One teacher said, “They hate being in bookstores or libraries... it’s too much to look at all at once. If they have it in their hands and can search it, they have it right at their fingertips. They’re digital natives, they know how to search.” That said, it was unclear to everyone where the money would come from for e-books and how they would manage the students’ access to books while restricting and/or carefully managing their credit card usage.

In sum, for teachers who have enthusiasm for the technology and a clear vision as to how the machines can be used to aid or motivate particular students, the technology may be useful. For everyday use in the majority of elementary classrooms, however, the jury is still out on the usefulness of the e-reader. This research was limited by the small sample size. Moreover, these conversations were intended to be an overture to actual classroom implementation. More research is needed in how to best utilize and manage the technology in an instructional setting. Future studies should take a more applied tack and place e-readers into the students’ hands.

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## Appendix

### E-READER BACKGROUND SURVEY

Please complete the following questions:

Age: \_\_\_\_\_

Sex:  Male  Female

Race:  Caucasian  Hispanic  Asian  African-American  Other: \_\_\_\_\_

Grade/Job: \_\_\_\_\_ Education:  Bachelors  Masters  Masters+

TECHNOLOGY:

1. What types of technology do you use during your leisure time?

	How often do you use it?	Type of ...	Often I .... On my ....
<b>Computer</b>	<input type="checkbox"/> Never/ Don't Have <input type="checkbox"/> Once a week or less <input type="checkbox"/> Few times a week <input type="checkbox"/> Daily - Less than hour <input type="checkbox"/> Daily 1-2 hours <input type="checkbox"/> Daily 3 or more hours	<input type="checkbox"/> Desktop <input type="checkbox"/> Laptop <input type="checkbox"/> Netbook <input type="checkbox"/> Other	
<b>Cell Phone</b>	<input type="checkbox"/> Never/ Don't Have <input type="checkbox"/> Once a week or less <input type="checkbox"/> Few times a week <input type="checkbox"/> Daily - Less than hour	<input type="checkbox"/> Basic <input type="checkbox"/> Smart phone	

	<input type="checkbox"/> Daily 1-2 hours <input type="checkbox"/> Daily 3 or more hours		
<b>E-Reader</b>	<input type="checkbox"/> Never/ Don't Have <input type="checkbox"/> Once a week or less <input type="checkbox"/> Few times a week <input type="checkbox"/> Daily - Less than hour <input type="checkbox"/> Daily 1-2 hours <input type="checkbox"/> Daily 3 or more hours	<input type="checkbox"/> Kindle <input type="checkbox"/> Nook <input type="checkbox"/> Sony E-Reader <input type="checkbox"/> IPAD <input type="checkbox"/> Other	
<b>Portable MP<sup>3</sup> Player</b>	<input type="checkbox"/> Never/ Don't Have <input type="checkbox"/> Once a week or less <input type="checkbox"/> Few times a week <input type="checkbox"/> Daily - Less than hour <input type="checkbox"/> Daily 1-2 hours <input type="checkbox"/> Daily 3 or more hours	<input type="checkbox"/>	<input type="checkbox"/>
<b>Game System</b>	<input type="checkbox"/> Never/ Don't Have <input type="checkbox"/> Once a week or less <input type="checkbox"/> Few times a week <input type="checkbox"/> Daily - Less than hour <input type="checkbox"/> Daily 1-2 hours <input type="checkbox"/> Daily 3 or more hours	<input type="checkbox"/> Nintendo DS <input type="checkbox"/> Wii <input type="checkbox"/> Playstation <input type="checkbox"/> Other	

2. What types of technology do you use during the school day?

	How often do you use it?	Type of ....	Often I .... On my ....
<b>Computer</b>	<input type="checkbox"/> Never/ Don't Have <input type="checkbox"/> Once a week or less <input type="checkbox"/> Few times a week	<input type="checkbox"/> Desktop <input type="checkbox"/> Laptop <input type="checkbox"/> Netbook	

	<input type="checkbox"/> Daily - Less than hour <input type="checkbox"/> Daily 1-2 hours <input type="checkbox"/> Daily 3 or more hours	<input type="checkbox"/> Other	
<b>Response Systems</b>	<input type="checkbox"/> Never/ Don't Have <input type="checkbox"/> Once a week or less <input type="checkbox"/> Few times a week <input type="checkbox"/> Daily - Less than hour <input type="checkbox"/> Daily 1-2 hours <input type="checkbox"/> Daily 3 or more hours	<input type="checkbox"/> Clickers	
<b>E-Reader</b>	<input type="checkbox"/> Never/ Don't Have <input type="checkbox"/> Once a week or less <input type="checkbox"/> Few times a week <input type="checkbox"/> Daily - Less than hour <input type="checkbox"/> Daily 1-2 hours <input type="checkbox"/> Daily 3 or more hours	<input type="checkbox"/> Kindle <input type="checkbox"/> Nook <input type="checkbox"/> Sony E-Reader <input type="checkbox"/> IPAD <input type="checkbox"/> Other	
<b>Audio/Video Player</b>	<input type="checkbox"/> Never/ Don't Have <input type="checkbox"/> Once a week or less <input type="checkbox"/> Few times a week <input type="checkbox"/> Daily - Less than hour <input type="checkbox"/> Daily 1-2 hours <input type="checkbox"/> Daily 3 or more hours	<input type="checkbox"/> VCR <input type="checkbox"/> DVD player <input type="checkbox"/> MP3 Player <input type="checkbox"/> CD Player	
<b>Projector</b>	<input type="checkbox"/> Never/ Don't Have <input type="checkbox"/> Once a week or less <input type="checkbox"/> Few times a week <input type="checkbox"/> Daily - Less than hour <input type="checkbox"/> Daily 1-2 hours <input type="checkbox"/> Daily 3 or more hours	<input type="checkbox"/> Document Camera <input type="checkbox"/> LCD Projector <input type="checkbox"/> Overhead <input type="checkbox"/> Other	

3. How do you learn to use a new piece of technology or software?

<input type="checkbox"/> <b>Manual</b>	<input type="checkbox"/> <b>Try it out</b>	<input type="checkbox"/> <b>Tutorial by technology company</b>
<input type="checkbox"/> <b>Ask a friend/colleague</b>	<input type="checkbox"/> Look on the internet	<input type="checkbox"/> Other _____ _____

READING:

1. Approximately how many minutes a day do you read for leisure? \_\_\_\_\_ for school/work? \_\_\_\_\_

2. What do you read on the internet, on an electronic device, in paper format?

<b>Novels</b>	<input type="checkbox"/> <b>On the internet</b> <input type="checkbox"/> <b>on an electronic device</b> <input type="checkbox"/> <b>in paper format</b>
<b>Newspapers</b>	<input type="checkbox"/> On the internet <input type="checkbox"/> on an electronic device <input type="checkbox"/> in paper format
<b>Magazines</b>	<input type="checkbox"/> On the internet <input type="checkbox"/> on an electronic device <input type="checkbox"/> in paper format
<b>Nonfiction texts</b>	<input type="checkbox"/> On the internet <input type="checkbox"/> on an electronic device <input type="checkbox"/> in paper format
<b>Manuals</b>	<input type="checkbox"/> On the internet <input type="checkbox"/> on an electronic device <input type="checkbox"/> in paper format
<b>Other: _____</b>	<input type="checkbox"/> On the internet <input type="checkbox"/> on an electronic device <input type="checkbox"/> in paper format
<b>Other: _____</b>	<input type="checkbox"/> On the internet <input type="checkbox"/> on an electronic device <input type="checkbox"/> in paper format

3. When reading what strategies do you use to remember and understand what you have read?

<input type="checkbox"/> <b>Take Notes</b>	<input type="checkbox"/> <b>Underline/Highlight</b>	<input type="checkbox"/> <b>Annotate text</b>
<input type="checkbox"/> <b>Look up words in the Dictionary</b>	<input type="checkbox"/> Re-read	<input type="checkbox"/> Preview cover, headings, pictures
<input type="checkbox"/> <b>Discuss with others</b>	<input type="checkbox"/> Other: _____	<input type="checkbox"/> Other: _____