E-READERS AND ADOLESCENT ENGAGEMENT:

A FORMATIVE DESIGN EXPERIMENT

By

KRISTINE LYNCH SHURINA

A Dissertation submitted to the

Graduate School of Education

Rutgers, The State University of New Jersey

in partial fulfillment of the requirements

for the degree of

Doctor of Education

Graduate Program in Literacy Education

written under the direction of

Dr. Lesley Morrow

and approved by

_____

Dr. Lesley Morrow

_____

Dr. Erica Boling

_____

Dr. Brian Chinni

New Brunswick, New Jersey

May, 2013

ABSTRACT OF THE DISSERTATION

E-Readers and Adolescent Engagement: A Formative Design Experiment

By Kristine Lynch Shurina

Dissertation Director:
Dr. Lesley Morrow

Introduction

As the use of e-readers becomes commonplace and more affordable, they will make their way into the hands of students. This research provides information about how the devices might be used as a tool to improve adolescent students' reading engagement and also helps to identify the struggles and pitfalls educators may face in implementing classroom use of e-readers.

Purpose of the Study

This study investigated how the use of dedicated electronic reading devices could be implemented as an intervention in an eighth grade language arts classroom to improve students' reading engagement.

Methods and Procedures

Six students from an eighth grade, heterogeneous class in a sizeable suburban middle school in a large, regional district participated in formative design experiment (Reinking & Bradley, 2008). Quantitative and qualitative data were collected prior to and after implementation of the e-reader intervention to determine a baseline of the students' reading engagement and to assess any changes. Additionally, qualitative data were collected throughout the intervention. Quantitative data were analyzed using a paired-samples t-test for the following measures: Reading Engagement Index (Guthrie et al., 2007), Adolescent Motivation to Read Profile (Pitcher et al., 2007), Metacognitive Awareness of Reading Strategies Inventory (Mokhtari& Reichard, 2002) and The Motivations for Reading Questionnaire (Wigfield & Guthrie, 1997). Qualitative data were coded for recurring themes derived from the following sources: classroom observation and field notes, teacher reflective journal, student and intervention specialist interviews and student written reflections.

Results and Discussion

Analyses revealed that using an e-reader for assigned school reading had a positive impact on aspects of students reading engagement. Classroom implications, unanticipated effects and changes to the educational environment are also discussed.

Acknowledgements

Completing this dissertation project has been one of the most challenging and rewarding accomplishments in my career. I could not have done it without the support and guidance of others.

First of all, I would like to thank my committee members Dr. Lesley Morrow, Dr. Erica Boling and Dr. Brian Chinni. Dr. Morrow coached me through each stage of the dissertation process. Her expertise and experience was incalculable. Dr. Chinni and Dr. Boling, in addition to being members of my committee, were inspirations. They are both knowledgeable practitioners and scholars in implementing technology into instruction. Every educator should have the fortune to learn from such passionate and dedicated professors.

I would also like to thank the administrators and teachers in the Bridgewater-Raritan School System for helping to make this project possible. Dr. Michael Schilder, Mrs. Nancy Iatesta and Ms. Karen Jones gave their permission to allow Kindles in the classroom. Suzanne Wooby and Leigh Woznick helped me through the grant writing process. Finally, Kathalyn Messano offered her insight and expertise as the intervention specialist in the classroom during the study.

In addition, I would like to thank the students who participated in the study. I appreciated their blunt honesty and sincerity in helping me to understand how they felt about reading on electronic readers and reading in general.

Thank you also to Dr. Peter Falley for providing revision suggestions and editing comments throughout the writing process.

I would also like to thank my daughters. Emma was my motivation to learn more about language and literacy development, and Avery, who we haven't met yet, encouraged me to finish my dissertation early in 2013 before her arrival.

Most of all, I would like to thank my husband Bill for all of his support. From driving Emma around on a Sunday afternoon so I could finish a statistics final online, to setting me up with the latest laptop and projector to complete and present my work, he made finishing my degree and dissertation a possibility and a reality. I could not have balanced being a wife, a mother, a teacher and a student without his support.

Table of Contents

List of Tables

Table

List of Figures

Figure

Chapter 1: Introduction

Statement of the Problem:

If the goal of literacy education is to create skillful, resourceful and engaged readers, then much of the instruction in our current middle schools is missing the mark. According to some, adolescent literacy achievement across the United States is in a crisis situation as more than eight million students in grades 4 to 12 are identified as struggling readers (Sternberg, Kaplan, and Borck, 2007). These struggling readers are at an elevated risk for failure in their subject area classes and potentially for dropping out of school completely (Snow & Biancarosa, 2003).

The goal of literacy education is to help students develop into independent readers, yet as they move into adolescence, many students have only limited opportunities in school to cultivate their interests in reading, to read at a pace they set for themselves, or to even decide whether or not to read a book (Ivey & Broaddus, 2001).

One way to bridge the disjuncture between the literacy lives of students outside and inside of school is "to expand the types of texts students are exposed to and engaged with at school by turning attention to electronic books, or e-books" (Larson, 2009, p. 54). The devices may be motivating for students because of their technological appeal. Researchers have found that 87% of adolescents go online daily, outside of school, for things such as chatting, reading the news, and playing online games (Beach, 2003), so it makes sense that incorporating technology into reading may be helpful in engaging students. In addition to their potential draw, many e-readers come with tools that can help

students develop the skills they need in order to engage in academic reading. Teachers are not using technology to its fullest extent to engage students despite the abundance of technology available in schools and their heavy use in students' everyday lives, (Songer, Lee, & Kam, 2002).

Some predict that in the near future, most academic reading material including textbooks, reference books, and manuals could be mainly digital (Davidson, Shields, & Biscos, 1997; Levy, 2000; Nunberg, 1993). In 2011 the association of the U.S. book publishing industry reported that electronic books began outselling hardback and paperback books (Wollman, 2011). Despite the prevalence of electronic reading, there are only a few studies available on how college students and elementary students use e-reading devices for academic purposes (Larson, 2010; E-Reader Pilot, 2009), and there are no published studies on adolescent use. Electronic books, in their earliest form, have been available for almost twenty years, but there is a paucity of studies examining how students interact with and respond to the texts, and the results of those studies are inconsistent and conflicting (Larson, 2011).

Research Questions:

1. How does the use of e-readers for assigned school reading impact adolescent students' reading engagement?
2. What benefits, struggles or pitfalls does a formative experiment identify that educators may experience in implementing classroom use of the devices?

Purpose of Study:

As the use of e-readers becomes commonplace and more affordable, they will make their way into the hands of students. This research has the potential to help determine if and how the devices can be used as a tool to improve adolescent students' reading engagement and also to help identify the struggles and pitfalls educators may face in implementing classroom use of the devices.

The purpose of this study was to investigate if and how electronic reading devices could be used as a tool to improve adolescent engagement with assigned school reading. Participants in this intervention included six reluctant readers. Reluctant readers are readers who fall into one of two categories, either those who can read well but do not enjoy it, or those who find reading challenging and avoid it whenever they can (Gunter & Kenny, 2008).

Organization of the study:

This study employed the six phases of a formative experiment (Reinking & Bradley, 2008; Reinking & Watkins, 2000). Formative experiments allow researchers to make and describe justifiable changes to an intervention in order to achieve a valued pedagogical goal and are considered an effective means to bridge the gap between theory and practice (Reinking & Bradley, 2008). Unlike other types of research such as experimental designs or quasi experiments that begin with specific research questions and seek to answer them, formative experiments focus also on the process of achieving a valued pedagogical goal and are guided by broad questions aimed at revealing how the intervention was implemented to achieve the goal (Reinking & Watkins, 2008).

Reinking and Bradley (2008) propose six questions in their framework for designing and conducting a formative experiment:

1. What is the pedagogical goal of the experiment, why is that goal valued and important, and what theory and previous empirical work speak to accomplishing that goal instructionally?

2. What intervention, consistent with a guiding theory, has the potential to achieve the pedagogical goal, and why?

3. What factors enhance or inhibit the effectiveness, efficiency, and the appeal of the intervention in regard to achieving the set pedagogical goal?

4. How was the intervention and its implementation modified to achieve the pedagogical goal more effectively?

5. What unanticipated positive and negative effects does this intervention produce?

6. How has the instructional environment changed as a result of the intervention? (p. 74-77)

These questions each guided the organization of this study. For this formative experiment, the pedagogical goal was to improve student engagement with independent reading and the intervention was the student use of electronic readers. The Review of Literature will focus on the first two phases of a formative experiment. In the review, the researcher will elaborate on why reading engagement for adolescents is an important and valued goal and will establish how the researcher determined that electronic readers had the potential to be an effective intervention. Phases three and four are addressed in the

methods section as well as the findings. Finally, phases five and six are addressed in the findings and discussion sections.

Chapter 2: Review of the Literature

The Review of Literature will address questions 1 and 2 of this formative experiment. The first question asks: "What is the pedagogical goal of the experiment, and what pedagogical theory establishes its value?" (Reinking and Bradley, 2008, p. 74). Since the pedagogical goal of the experiment is to improve adolescent engagement with assigned independent reading, the review will begin with a summary of available research that defines and explores theory related to adolescent reading engagement.

Question two is: "What is an instructional intervention that has potential to achieve the identified pedagogical goal?" (Reinking and Bradley, 2008, p. 74). An instructional intervention that the researcher feels has potential is the use of hand held electronic reading devices. The second section of the literature review will explicate the devices potential and will include an investigation of studies on how technology and reading engagement are linked as well as analysis of studies that have explored how electronic text impacts student reading engagement and performance. The review will also include the few available studies on using dedicated electronic reading devices for academic reading.

Theoretical Framework for the Study

My research is based on the Engagement Theory. The concept of reading engagement is multi-faceted. According to Guthrie and Alvermann (1999), reading engagement theory focuses on the "knowledge and understanding of 'why' people choose to read" rather than the how (p. 17). Guthrie (2000) defines engaged readers as those who are motivated to learn and achieve, apply reading strategies for comprehension and

conceptual knowledge, and who are part of a supportive literate community. Guthrie and Davis (2003) assert that the "qualities of cognitive competence, motivation, and social interaction are dynamically interrelated" and that it is the mixture of qualities that constitute engagement (p.61). According to Guthrie (2001) in order for a reader to be engaged, they must have motivation, be strategic, knowledgeable of the material, and socially interactive.

> Engaged readers are motivated to read for a variety of personal goals. They are strategic in using multiple approaches to comprehend. They use knowledge actively to construct new understanding from text. And they interact socially in their approach to literacy. Engaged readers are decision makers whose affects as well as their language and cognition play a role in their reading practices. (p.11)

Reading motivation and engagement are related, but they are not the same. Kamil, Borman, Dole, Kral, Salinger and Torgesen (2008) define reading engagement as the "degree to which a student processes text deeply through the use of active strategies and thought processes and prior knowledge" (p. 26). They define motivation as "the desire, reason, or predisposition to become involved in a task or activity" (p. 26). The researchers suggest it is possible for a reader to be motivated to finish an assignment without being engaged because the assignment is either too easy or too challenging. Motivation is an essential ingredient to engagement, but it is only part of the puzzle. For this study I will use Guthrie's (2000) definition, which defines engaged readers as those who are motivated to learn and achieve, apply reading strategies for comprehension and conceptual knowledge, and who are part of a supportive literate community.

Guthrie (2001) created a model to illustrate the instructional priorities of classrooms that foster reading engagement. According to Guthrie (2001),

> Reading engagement does not result from a quick fix. Reading motivation strong enough to last across weeks, months, and years is not made in a day. However, when the classroom context contains the practices shown in the outer ring [of figure 2.1], reading engagement grows and becomes self-generating. (p. 9) See Figure 2.1.

In his model, Guthrie (2001) highlighted ten characteristics of classrooms that foster reading engagement. These priorities make up the outer circles of his model and include concept oriented teaching, incorporating instruction related to real-world experience, teaching students to be autonomous, using texts that interest students, teaching reading strategies, allow for collaboration, being involved and interactive with students, rewarding and praising students, evaluating students and providing coherent instruction. Guthrie (2001) feels that making the above characteristics a priority will help facilitate what he calls the "engagement processes" of reading (p. 5)

The next layer of the model includes what Guthrie (2001) calls the engagement processes of the reader. That layer includes the words *motivation, strategy use, social interaction* and *conceptual knowledge*. Guthrie (2001) has an explanation for each of these terms based on the empirical and theoretical work of others. He explains that *motivation* includes "goals, intrinsic and extrinsic motivation, self-efficacy and social motivation" (p. 9). He adds that this process "propels students to choose to read and to use cognitive strategies to comprehend." Guthrie (2001) defines the *strategy use* process as "students multiple cognitive processes of comprehending, self-monitoring, and

constructing understanding and beliefs during reading" (p.9). In addition, Guthrie (2001)

explains that the *conceptual knowledge* process refers to the research that demonstrates

that reading is knowledge driven. "Finally in this middle layer, the *social interaction*

process includes "collaborative practices of learners in a community and the students'

social goals in the classroom" (p.9).

In this model, Guthrie and Alvermann (1999) also provide a detailed list of

motivation constructs for reading that make up the motivation process. Their list includes

six internal motivation constructs. The first is *involvement*, which allows readers to get

lost in a book. The next is *curiosity*, where readers search for topic specific information

they are personally interested in. The third motivation construct they list for reading is

social, where readers choose to read to interact with friends and family. Reading for

challenge is the next motivation, which is when students read a book because it is "more

difficult or stimulating than other choices" (p.22). The fifth reading motivation is

importance which describes when readers read because they feel "it is important for me

to be a good reader" (p. 22). The last internal motivational construct is reading for

efficacy. In this construct, students read because they believe they can read well. This

model also includes external reading motivations including *recognition*, where students

read because they want to be seen by others as a good reader, *competition*, where students

read to be superior to other readers, *grades*, where students read for teacher recognition.

Finally, the last external motivation construct is reading for *work avoidance*. According

to Guthrie and Alvermann (1999) *work avoidance* negatively impacts reading

engagement.

Finally, at the center of the model is a square with the words achievement, knowledge and reading practices. According to Guthrie, those words indicate ways that students can demonstrate their reading engagement and their level of engagement can be measured.

> Achievement may be represented by standardized tests scores, teacher-assigned grades, or performance assessments of literacy. Knowledge acquisition may be indicated through portfolios or standardized measures. Reading practices may be reflected in the amount of independent reading, composite indicators of engagement in reading, or beliefs and preferences about reading. (Guthrie & Wigfield, 2000, p. 417)

According to Guthrie and Alvermann, (1999) reading engagement is dynamic and the four processes of motivation, *strategy use, conceptual understanding* and *social interaction* are interrelated. If students' motivation improves, their use of strategies can improve, their conceptual knowledge can be enhanced as well their textual based social interactions. However, if students have weak strategic skills, it could negatively impact the other processes. My thought was that introducing e-reading devices into the classroom as an intervention could positively impact each of the reading engagement processes and therefore enhance the students' overall reading engagement.

Figure 2.1 Instructional Strategies to Promote Reading Engagement (Guthrie, 2001, p.7)
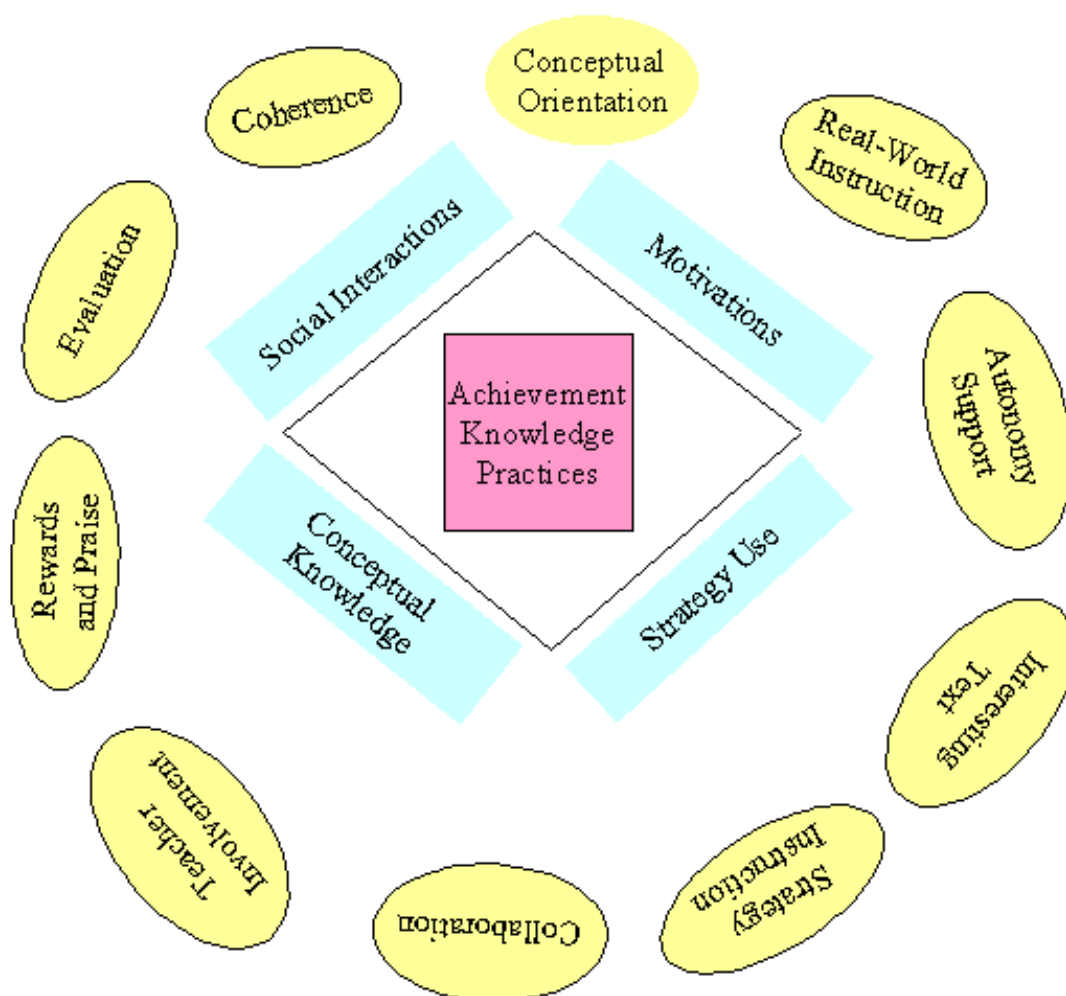
Engagement Research

Reading engagement can have an impact on overall student success despite other factors. When researchers analyzed the 1986 NAEP results for ''fixed'' and ''alterable'' factors associated with reading performance, they found that parent's socioeconomic status could account for the largest amount of variance among the fixed factors, but they also determined that the number of books students read and the amount of time they spent reading were significant factors that altered reading performance. The researchers found that despite socioeconomic status, frequent and extensive engagement in literacy-promoting activities in adolescents was correlated with improved long-term literacy outcomes (Weinstein & Walberg, 1993). Similarly, Guthrie and Wigfield (2000) asserted that, "As students become engaged readers, they provide themselves with self-generated learning opportunities that are equivalent to several years of education. Engagement in reading may substantially compensate for low family income and poor educational background" (p. 404). Ivey (2010) found in her analysis of reading engagement research that "reading engagement has a stronger correlation with achievement than any other student factor, including socioeconomic background, gender, or time spent doing homework" (p. 249).

Middle school students often want to avoid being viewed by their peers as struggling readers and develop strategies that can lead to further disengagement with reading. Guthrie and Davis (2003) reported that students who struggle with reading often protect their self-image by avoiding academic tasks and further disengaging from their school reading assignments. The students might conclude that if their achievement is

poor, their low grades or scores are because of a lack of effort or time spent with their friends outside of school rather than to a "lack of intelligence, intellectual ability, or worth as individuals" (p. 60). The researchers call these strategies self-handicappers and assert that students employ them because they are concerned about how they are viewed by others. Through their research, Guthrie and Davis (2003) found that disengaged middle school readers often do not strive to advance their status by improving their school related literacy skills. Similarly, in her case study research Hall (2009) found that struggling readers, rather than using reading the strategies their teacher suggested, attempted to comprehend assigned texts using other methods which included: (a) listening to classmates' text related discussions, (b) asking their friends for assistance, and (c) watching how the other students gained information from their reading assignments.

There are two strands of research on adolescent reading engagement and both suggest that school practices serve as disincentives because educators do not consider what truly motivates adolescents to read. One strand suggests that adolescents act as meaning makers out of school in their own contexts because schools fail to meet their competency needs. The other strand seems to indicate that adolescents are victims of systems that devalue the literacy practices and activities that adolescents excel in including media-text, electronic games, text messaging, and visual creations, yet at the same time emphasize primarily print-based, content-area texts that cause adolescents to struggle (Pitcher et al., 2007).

Researchers have been able to ascertain ways that schools can encourage student engagement with text. Based on a meta-analysis of two experiments and one quasi-

experimental study with no major flaws to internal validity, three studies of weaker design, six experimental and quasi-experimental studies with low external validity, and two other meta-analyses, Kamil, Borman, Dole, Kral, Salinger and Torgesen (2008) made three recommendations for maximizing student engagement and reading comprehension for adolescents. The first recommendation was to establish meaningful and engaging content learning goals based on the essential ideas of a discipline as well as the specific learning processes students need to understand those ideas. The researchers observed in their analysis that students with specific learning goals were more motivated and engaged and had better reading test scores than students with performance goals. The second recommendation was to provide a positive learning climate that promotes autonomy for student learning. The final recommendation was to make literacy experiences more pertinent to students' interests and lives outside of a school context.

Reading Motivation Research

In considering adolescent reading engagement, it is prudent to also examine studies related to adolescent reading motivation because motivation is a key component of engagement. Reading motivation is shown to decline as students enter their middle school years. As students matriculate through the fourth to seventh grades, their intrinsic motivation for reading declines (Guthrie & Davis, 2003). They define intrinsic reading motivation as "students reading out of curiosity to pursue their interests, expressing a preference for challenging texts that help them think and learn, and demonstrating a disposition to read independently for understanding, as well as for completing assignments and fulfilling teachers' expectations" (Guthrie & Davis, 2003, p. 61).

Guthrie and Davis (2003) also reported that there is a relationship between students who struggle with reading and low motivation. "Struggling readers tend to be notably unmotivated. They are especially likely to have low confidence in their reading, which is termed self-efficacy in the research literature." Guthrie and Davis (2003) suggested that middle school students who struggle with reading are likely to lack confidence in their ability to read as well as their ability to improve their reading skills. They are also likely to be motivated extrinsically rather than intrinsically. Their motivations for reading are more likely to include passing a class or earning a good grade. In addition, Wigfield and Guthrie (1997) observed that students who reported low intrinsic motivation read nearly three-times less per day than the students who reported a high intrinsic motivation.

Gay Ivey and Karen Broaddus (2001) sought to find out what qualities motivated students to read inside and outside the classroom. The researchers felt that by asking students what interested and motivated them to read, educators can best understand the contributing factors involved in student engagement with reading. In a mixed-methods study of 1,765 sixth grade students from 23 schools in the mid-Atlantic and northeastern United States, the researchers found that students valued independent reading and teacher read-a-louds as part of instructional time, most enjoyed reading in class rather than participating in more social activities related to assigned reading, and finally students felt that access to quality and diverse reading materials was the most important factor for school related reading. Access is a theme that comes up often in qualitative research findings regarding reading motivation. When students have access to more books, they

are more likely to want to read more (Baker, 2003; Cole, 2002/2003; Ivey, 1999;

McQuillan & Au, 2001; Pflaum & Bishop, 2004).

Pitcher et al. (2007) created the *Adolescent Motivation to Read Profile* (AMRP)

by combining revised survey questions and follow-up conversational interviews from a

Motivation to Read Profile (MPR) designed by Gambrell, Palmer, Codling, and Mazzoni

(1996). The MPR was developed to aid elementary teachers in assessing the motivation

of their students. After modifying the survey, Pitcher et al. (2007) used it with a diverse

sample size of 384 students from middle and high schools in the Caribbean and across the

United States. Their findings included that females scored significantly higher overall in

reading motivation than males; female students' value of reading increased across grade

levels while male students' value decreased; males' scores decreased progressively in

their later teens, and Caribbean adolescents valued reading significantly more than

Caucasians and students from other ethnicities.

Studies Examining Technology and Reading Engagement

Technology's effects upon the students can change the nature of when, how, and

why they read. It can also transform how students with disabilities are able to access,

acquire, and process information with generally favorable results. (Sternberg, Kaplan, &

Borck, 2007). Students from around the world, not just the United States, exhibit a

decline in reading performance and interest as they make the transition from elementary

to secondary school.

In an analysis of an international standardized assessment, researchers Brozo,

Shiel and Topping (2008) found that engagement accounted for twice the difference in

performance than the effect of socio-economic status. This led them to conclude that

highly motivated adolescents have the potential to experience high academic achievement despite low family income and parents' limited educational attainment. In their study of 1,500 students, the researchers found that boys in particular shared a preference for reading text on a computer monitor. They suggest that to motivate adolescent boys to read, educators should utilize computers as a means to increase boys' engagement in the classroom.

In a technology-based intervention program designed for adolescent struggling readers, researchers found that students who participated in the study improved significantly on standardized test scores compared to the control group. The researchers reported, "For more than five years, we have witnessed how the [technology based intervention] motivates and challenges even the most resistant learners. We believe in the capacity of technology to afford students the instruction and practice they need to become fluent, understanding readers" (p.141).

In a phenomenological study of eight dyads of parents and children in grades three through eight with learning disabilities, who used assistive technology for reading and writing activities, participants reported increased engagement with literacy activities. Jeffs (2006) reported that "once AT was introduced, all participants were extremely motivated to use the Internet and enjoyed making decisions regarding the topics and use of AT in the literacy process. Parents emphasized that they had never been able to get much reading and or so many ideas out of their child before using AT." Parents in the study also expressed surprise at how comfortable their children were using unfamiliar technologies and that they had not expected that their children would take the lead in activities.

Studies Examining how the Features of Electronic Text Impact Reading

Using a computer to present text can offer instant advantages for some readers. In this medium, students can use a computer to alter the orientation of the text, change font faces, sizes, have text read aloud, have concepts defined and explained, or access multiple illustrations or links to gather supportive information that can enhance comprehension (Anderson-Inman & Horney, 2007).

Researchers found that students improved their ability to read books at higher readings levels when the books used a larger sized font (Lowe, 2002). When students used a larger sized text reading errors were significantly reduced. Miscue errors that improved included misreading syllables or words, skipping syllables, words or lines, rereading lines and ignoring punctuation cues. In addition, students increased their reading rates and tracking capabilities. They also improved their ability to chunk text into sections, retain it and understand it. She also found the reduction in miscues reduced anxiety over the process of reading (Lowe, 2002). More white space between lines of print combined with a large font size can help students avoid miscues because it improves their tracking and helps to prevent readers from skipping lines (Bloodsworth, 1993). Researchers have found that there is not a significant difference in speed or comprehension when students read from a screen versus when they read from paper (McKnight, Dillon, and Richardson, 1990; Muter and Maurutto, 1991).

West-Christy (2003) suggests five different scaffolding techniques that can assist reluctant or remedial readers. The five techniques she suggests include offering a range of reading materials, using pre-reading activities to build background knowledge, employing large print materials, pre-teaching important vocabulary and incorporating

multiple modalities. The capacity to provide many of these supporting techniques is built into e-reader devices. E-readers can provide additional books for students which will help to increase the range of available reading materials because there are millions of books that can be downloaded quickly and many times for free. Readers can also manipulate the font size to be enlarged, and they can also select their preferred font style. Many e-readers also have a text-to-speech feature which includes a synchronized highlighting which can be used for multi-modal reading (Weber & Cavanaugh, 2006). E-readers also include an interactive dictionary, which can provide for learning new vocabulary. The newest e-readers also provide internet access which give students links to Wikipedia, Google and other easily accessible information sources to retrieve related background information.

The use of text-to-speech devices has been studied with some vigor and consistency. Originally, it was used for readers who were blind or vision-impaired, but research has supported its use for students with various forms of print reading disabilities. Reading rates and comprehension improved most for struggling readers whose performance without text-to-speech software was the poorest (Anderson-Inman & Horney, 2007).

In a study of eighteen five and six year-old boys researchers found the boys who have low phonological awareness can improve their proficiency significantly through the use of talking books (Chera, Littleton, Wood, 2006). The researchers also found that the boys had a deeper engagement with the talking text than traditional text and that reading electronic books helped give the boys confidence in their word reading skills. The boys involved in the study who had higher phonological awareness were able to engage with

the talking books on a more advanced level as they decoded the text independently, and then turned to the speech portions of the book to help them when needed.

In phenomenological study of 10 fifth graders using electronic books for the first time, Larson (2009) reported that all of the students preferred reading e-books rather than traditional books. The students cited the ability to use digital annotation tools, navigate the text electronically, and manipulate the appearance of the text for their preference.

In a study of 128 5 to 6 year-old kindergartners, Korat & Shamir (2006) sought to determine how e-books can support children's emerging literacy skills including vocabulary, phonological awareness, word recognition, and story comprehension. They compared students reading the e-books with children who had adults read the same book in a printed version. They found that regardless of socio-economic status, students who listened to a read aloud or used the e-book made significant gains compared to students in the control group.

McKenna & Walpole (2007) found that electronic readers had value in helping to evaluate struggling readers because of their capacity to support some aspects of the reading process while others are being evaluated. One suggestion they offered was that by monitoring children as they read electronic books, which had a text-to-speech feature to support decoding, that the students' ability to apply comprehension strategies could be observed independent of decoding.

Zucker, Moody, & McKenna (2009) provided an overview of twenty-seven studies that examined the effects of using e-books with elementary students from pre-kindergarten to fifth grade. They found that in some studies in the lower grades (Pre-K to 3), students scored better after having an electronic book read to them with an adult

present rather than reading the e-book on their own. They also determined that Pre-K to 3 students were easily distracted by electronic books that had an overabundance of interactive features and thus gained low scores on reading comprehension and re-telling. The students who worked with electronic books that simply had text, text-to-speech features and a hyper-text glossary scored higher than the students who used books with more interactive media features.

In a study of 132 9 nine-year-olds, researchers (Grimshaw and Dungworth, 2007) found that certain aspects of an electronic book could enhance reading comprehension in comparison to traditional texts. Researchers observed use of the narration feature significantly improved comprehension; the children's ability to retrieve information and to make inferences both improved. Also, there was a slight increase in enjoyment for students who used the narration feature. Students used the electronic dictionary significantly more than those students who were offered a traditional text with a print dictionary. The researchers noted that for early readers to be able to use the electronic dictionary as a learning tool it is important that the reading level of the dictionary match the reading level of the text.

Research Studies Involving Dedicated Electronic Reading Devices

As this formative design experiment was being conducted, researchers in Dallas, Texas published a mixed methods study that examined how using e-readers impacted reluctant middle school readers (Miranda, Jackson & Rossi-Williams, 2012). The study involved 199 students who were given the choice of using Kindle e-readers or traditional print books. The researchers selected and downloaded 25 books in advance of the study. Books downloaded ranged from classic literature such as *The Wizard of Oz* to more

contemporary titles. Researchers used *The Adolescent Motivations to Read Profile* (Gambrell, Palmer, Codling, & Mazzoni, 1996) as a pre- and post-assessments reported significant gains in students' attitudes about the value of reading as well as improvement in their view of themselves as readers. The study found this to be especially true among the boys. The researchers found in their study, that the novelty of the devices appealed to students. They reported that the new technology motivated many of the students to explore the devices first and then use them to read. Researchers also noted that students quickly learned how to use the features of the device including the electronic dictionary, font manipulation, orientation and text-to-speech features. One of the features that the researchers felt enhanced student engagement was the response-to-text features that allowed students to write comments about their reading using the keyboard and recording them on the device. Another beneficial feature was that students could select easier reading material without their being a stigma because none of the other students could see if they were reading what would be considered an easy or immature book. Also, teachers involved in the study felt the text-to-speech feature was helpful for less skilled readers to hear words pronounced. Although they reported that many readers did not enjoy the monotone, robotic voice the devices employ. In addition to improved reading engagement, researchers also reported that student confidence in using technology increased and that there might be some cost savings involved in using the devices.

   While the previously described Miranda, Jackson & Rossi-Williams(2012) study was the only published study available on using e-reading devices to improve the reading engagement of middle school readers, other studies have been published that examine the use of dedicated electronic reading devices with elementary and college students. Larson

(2010) conducted a case study of two second-grade students including one avid reader and one reluctant reader. The students each used a Kindle to complete class reading assignments. Her findings included that student use of the digital reading devices promoted new literacy practices and enhanced the students' connection with text as they engaged with and manipulated the text using the available tools and features. Larson (2009) found that the students used the devices' annotation features to 1) Understand the story, 2) Make personal meaning from the text, 3) Question the text, 4) Answer questions raised in the text, and 5) Make evaluative comments. Larson (2009) found that the students frequently manipulated the font size and used the built-in dictionary to look up meanings of words and to review the phonetic spelling of words which helped them to sound them out; the students also used the text-to-speech feature to listen to words that they were unfamiliar with.

In a study involving 43 students using Kindles in three different courses at Reed College, researchers reported mixed results (Marmarell & Ringle, 2009). The students used Amazon's Kindle DX as researchers tried to identify the impact of the device on teaching and learning and assess the prospect of using such devices at the higher education level. Students cited the legibility of the text, size of the device and battery life as positive features. However, in contrast to Larson's (2010) findings, the students in this study reported that difficulty using the annotation and highlighting features interfered with their comprehension of the text. The students felt that the devices, in their current state, were better for leisure reading than for academic reading.

Princeton University also conducted an E-reader pilot at Princeton (2010). Fifty-one students and three faculty members from three courses participated in the study. The purpose was to determine if dedicated e-readers could:

> 1.) reduce the amount of printing and photocopying done in the three pilot courses
>
> 2.) equal (or better) the typical classroom experience where more traditional readings were used
>
> 3.) explore the strengths and weaknesses of current e-reader technology to provide suggestions for future devices. (p. 1)

Researchers found that the students did use far less paper in their courses when using the Kindle. Similar to the Reed College study, although students enjoyed the reading experience, they were dissatisfied with the writing features of the device and felt the clumsiness of the annotation and highlighting tools interfered with their ability interact with their texts at the level expected of higher education students. Another common complaint was that it was very difficult to go back and forth between texts for class discussions.

Not everyone is in support of using electronic text with students. Edyburn (2007) asserted that some educators are hesitant to offer performance enhancing reading tools, such as an electronic reading device, to students because it unfairly puts them on a level playing field with more advanced readers. "The notion that technology can be used to enhance performance challenges traditional entitlements held by those who can complete a task and claim that their performance is superior to the performance of those who must

rely on technology" (p. 147). He suggested that in order for electronic reading tools to be used more often with students that bias must be overcome.

Anderson-Inman & Horney (2007) suggest that in spite of its inherent possibilities, electronic text by itself is limited in its usefulness to student readers, unless an electronic reading environment is established. They feel that using technology to transform text into something that supports comprehension and extends meaningful learning is something students must be taught.

Conclusion

To fully understand the impact that electronic readers can have on adolescent readers' engagement it is important to consider all three qualities of reading engagement including "cognitive competence, motivation, and social interaction" (Guthrie and Davis, 2003, pg. 61). While there is available literature defining and exploring adolescent reading engagement in general and linking technology to adolescent reading engagement, most of the research that investigates how electronic text impacts reading strategies and processing has centered on elementary school students. Currently, there is little research on adolescent use of dedicated electronic reading devices for academic purposes. Most published studies have focused on students in the primary grades and at the college level. Coupling the potential that electronic text and dedicated reading devices have for engaging and assisting adolescent readers with the fact that electronic books are now outselling hardback and paperback books (Wollman, 2011) and becoming more widely used in higher education, it is imperative for educators and researchers to further explore their use with adolescent readers.

Chapter 3: Methodology

Design Overview

This study was a formative experiment I conducted as a participant-observer in an eighth-grade language arts and literature classroom. The purpose of the investigation was to positively affect adolescent students' engagement with assigned school reading in English class. An instructional intervention believed to achieve that goal was implemented. The intervention involved the student use of electronic reading devices to read in place of traditional printed material. The experiment consisted of finding methods and resources to successfully implement the intervention in order to accomplish the pedagogical goal. Participants in this intervention were six reluctant readers. Reluctant readers are readers who fall into one of two categories, either those who can read well but do not enjoy it, or those who find reading challenging and avoid it whenever they can (Gunter & Kenny, 2008).

Qualitative data were collected for the duration of the study through classroom observation, artifact analysis and interviews with students and their intervention specialist. Quantitative data were collected before the experiment began to establish a baseline of performance and again at the conclusion of the study to assist in determining the effects of the intervention. The data were analyzed within an existing framework of questions developed to guide the management of a formative experiment.

This study was designed to investigate what takes place when electronic reading devise are used as intervention to try to improve adolescent engagement with assigned independent reading. I chose to develop a formative experiment for this study because formative experiments can be especially useful when researching technology integration

into literacy instruction. According to Reinking and Watkins (2000), "formative experiments not only fill a methodological gap in the research, but also are especially well matched to studying how new technologies can be integrated into literacy instruction" (p. 388). Unlike quasi-experimental and experimental design studies, formative experiments attempt to use authentic environments that are less controlled. Rather than creating tightly controlled laboratory-like settings to examine a treatment against a control group, formative experiments focus on describing and analyzing what takes place when an intervention is implemented into an authentic environment. Since there is no control group, a formative design study cannot be used to determine whether or not a given treatment caused a given effect (Reinking & Bradley, 2004).

At this point it is important to note that this research methodology is relatively new to literacy research, and there is still some dissention on the terminology and slight differences in methodological approaches exist (Reinking & Bradley, 2008). Some researchers use the term *design research* (Brown, 1992; Cobb, Confrey, DiSessa, Lehrer, & Schauble, 2003; Van den Akker, et al., 2006). Those who use the term *design research* "tend to see their work more directly as an extension of conventional laboratory work grounded in quantitative methods" (Reinking & Bradley, 2008, p. 15). Their intent is focused on developing theories (Cobb, et al, 2003). Other researchers use the term *formative experiment* and lean toward more pragmatic and qualitative methods in their research. Their intent is to inform is focused on informing practitioners (Reinking & Bradley, 2008). Despite the slight differences between design research and formative experiments, they are essentially the same in two significant aspects. First, they both involve an instructional intervention designed to achieve a valued pedagogical goal in an

authentic instructional context, and second, both allow formative modification of the instructional intervention during the course of the study in response to data collected that either enhances or inhibits the effectiveness of the intervention (Reinking & Bradley, 2008). In this study I will use the term formative experiment since my primary goal is to improve instructional practice more so than to develop a theory.

While formative experiments are comparatively new to literacy research, they are becoming more commonplace and have been employed in a variety of areas of literacy education. The most reputable journals in the field of literacy education have included formative design studies in their publications. Published studies include a study of how to facilitate engaged reading and writing in a language arts classroom of middle school native Spanish speakers (Ivey & Broaddus, 2007), a study of enhancing vocabulary development (Baumann, Ware, & Edwards, 2007), a study improving oral reading fluency through the creation of talking (Oakley, 2003), an investigation of how independent reading is affected by the use of electronic portfolios (Reinking & Watkins, 2000), the effectiveness of cognitive reading strategy instruction for Latino readers (Jiménez, 1997), and the impact that a balanced and intensive summer literacy program has on elementary students' reading growth (Duffy, 2001). In the last few years, the number of formative design studies used in dissertation research has also increased.

These investigations, taken together in consideration, help to illustrate the defining characteristics of formative design studies, and exemplify the use of established methodology, primarily mixed methods, in carrying out formative experiments. When conducting a formative experiment, researchers employ flexibility as they take into account the interacting variables of classrooms rather than attempt to control them

through statistical or experimental design. "Data are collected to determine what is and is not working and why, and then the intervention is adapted accordingly" as the experiment proceeds (Reinking & Bradley, 2008, p. 20). Reinking and Watkins (2000) argue that formative experiments exist simultaneously within two domains of research including both systemic, which is the study of complex learning environments undergoing change and analytic, which involves the study of causal relations among selected variables. For that reason they suggest that formative experiments transcend quantitative and qualitative paradigms, and that both qualitative and quantitative data may be useful in conducting formative experiments. In choosing both qualitative and quantitative methods for data collection and analysis for a formative experiment, it is essential that the researcher be able to justify how the methods "further understanding about the effects of the intervention, how it could be implemented more effectively or how it might help to define theory" (Reinking & Bradley, 2008, p. 21).

As stated previously in this paper, this study followed Reinking and Bradleys' (2008) framework for designing and conducting a formative experiment. The use of their framework for this specific study will be further explained in this section of the proposal. The framework calls for systematically answering six questions. In the review of literature, I addressed the first two questions:

1. What is the pedagogical goal of the experiment, why is that goal valued and important?

2. What theory and previous empirical work speak to accomplishing that goal instructionally, and what intervention, consistent with a guiding theory, has the potential to achieve the pedagogical goal, and why? (p. 74)

During the data collection and analysis, I addressed questions three, four, five and six of their framework:

3. What factors enhance or inhibit the effectiveness, efficiency, and the appeal of the intervention in regard to achieving the set pedagogical goal?

4. How was the intervention and its implementation modified to more effectively achieve the pedagogical goal?

5. What unanticipated positive and negative effects does this intervention Produce?

6. How has the instructional environment changed as a result of the intervention? (p. 74-77)

Next, I will provide an outline and justify the specific mixed methods for data collection in this study.

Role of Researcher

For this study, I was a participant-observer and had the roles of classroom teacher and researcher (Creswell, 2007). There was also an intervention specialist who took an active role in implementing and assessing the intervention. This helped to balance the dual roles of the researcher as a participant and observer. In the past, two formative experiments have been published in the literacy field where the researcher also took on the role of classroom teacher. One study was Duffy (2001) and the other was Garfield (2000). According to Reinking and Bradley, 2008, the "most realistic and justifiable role for a researcher conducting a formative experiment is that of a participant-observer" (p. 79).

My background knowledge of incorporating technology into instruction impacted the analysis and interpretation in this study. I have facilitated a number of professional development courses for teachers on integrating technology into instruction, and I am very interested in how using electronic readers will impact the students' reading engagement. While I am very interested in the topic and personally enjoy using electronic reading devices as a reader, I did not have any preconceived notions on whether or not the devices would have a definite positive or negative impact on all reluctant adolescent students' reading engagement. While implementing this formative design experiment, I was not only interested in finding out how the devices could be used as a tool to improve reading engagement, but was also committed to finding "the flaws weaknesses, and limitations" of the intervention as well as "the inadequacy of theories underlying its use" which Reinking and Bradley (2008) assert is crucial "to maintaining rigor and ultimately the credibility of findings" (p. 60).

Data Collection

Research Site

This research study took place in central New Jersey with students from a large regionalized middle school that pulls from a few local, suburban communities. There is rich diversity in every aspect of the community population. Socio-economic status varies widely. There is a large population of residents who work in various levels for the local pharmaceutical, telecommunications and financial industries; there is also a high, professional commuting population. In addition there is large portion of the community that work in service and retail positions. This regional school includes grades 7 and 8.

Research Sample

This study employed purposeful and convenience sampling (Patton, 1990) to select the participants for this study. The sample is purposeful based on the fact that the researcher chose possible participants who met specific criteria, and the sample was one of convenience since all possible samples were students who were a part of a specific section of the researcher's 2011-2012 class of eighth grade students. This class of students was selected because the eighth grade literacy intervention specialist worked in the classroom during instructional time.

Twenty-two students comprised the eighth grade classroom at the beginning of the study, twelve males and ten females. No students were added or dropped from the course during the study. Twenty of the students were classified as Caucasian and two as Latino. Four students were on free or reduced lunch. Permission forms were sent home to all students' parents to follow Institutional Review Board (IRB) instructions. All students returned the parent permission form. All students in the classroom had access to e-reading devices at various points in the study.

The study focused on six students because of the large amount of qualitative data that was collected. The sample included six participants who fulfilled the following criteria:

- a history of being a reluctant readers.

- willing to be observed and interviewed.

- willing to use electronic reading to complete classroom reading assignments.

I chose six students from a range of reading abilities with the least interest in reading outside of school and in the classroom. I selected students based on pre-intervention data including quantitative assessments, input from the intervention specialist and my understanding of the students as the classroom teacher. The quantitative assessments included *Reading Engagement Index* (Guthrie et al., 2007), *Adolescent Motivation to Read Profile* (Pitcher et al., 2007), *Metacognitive Awareness of Reading Strategies Inventory* (Mokhtari& Reichard, 2002) and *The Motivations for Reading Questionnaire* (Wigfield & Guthrie, 1997). I purposely selected both students who were and were not part of the district's response to intervention program. While I wanted to get more of a balanced gender representation, there was really only one girl in the classroom who had a true history of being a reluctant reader.

Role of Intervention Specialist

The intervention specialist's role was to remediate the skills of six targeted students enrolled in a section of English. A few, but not all of the targeted students were selected for the study. The targeted students in the classroom were scheduled together in an otherwise heterogeneous class. The intervention specialist had the flexibility to push into the classroom or pull students using her professional judgment. A committee of administrators, specialists and teachers selected the students targeted in the classroom at the end of the previous year based on standardized test scores, teacher recommendation and classroom performance. Throughout the school year I met with the intervention specialist daily to plan differentiated lessons in the classroom to help meet the needs of the targeted students and to evaluate their progress and instructional needs. The intervention specialist was also a certified language arts teacher. Conducting the study in

the class section I shared with her allowed flexibility during class time for data collection and more importantly provided a nonbiased professional opinion about the impact the that study was having on the participants.

Selection of the Kindle II as the Electronic Reading Device for Study

After reviewing multiple electronic reading devices, I selected the Kindle Keyboard for the study. My main reasons for choosing this device were economical. I wanted to choose a device for the study that I might be able to use with students for multiple years after the study ended, so I needed to choose a brand that was doing well. Otherwise, I might end up with devices that I could not find books for. For example, some companies stopped producing and selling e-readers as I was designing this study. The two companies that were dominating the electronic reader market as I was designing this study were Barnes and Noble and Amazon. Amazon, the company that sold Kindle devices at the time of this study, allowed users to download purchased books on up to six devices. Barnes and Noble only allowed one download per purchase. Downloading and using six copies of a book rather than just one saved an average of twenty-five dollars per title and in some cases it saved over fifty dollars. As I was working with a 1,500 dollar grant, and I needed 10 devices, it was important to consider economics.

After deciding to purchase devices through Amazon, I had to decide which model to purchase. At the time I was planning this study, there were two models available. Both could access wireless networks to download material, had keyboards, which I thought would be helpful for data entry and offered text-to-speech features. They also each had relatively long battery lives, with the Kindle lasting two-months per charge and the Kindle DX lasting three weeks. The Kindle DX, which had a 9.7" inch screen, sold for

over 350 dollars per device and the Kindle, which had 7" inch screen, sold for 114 dollars

per device. Financially it made sense to purchase the Kindle see Figure 3.1 rather than

the Kindle DX.
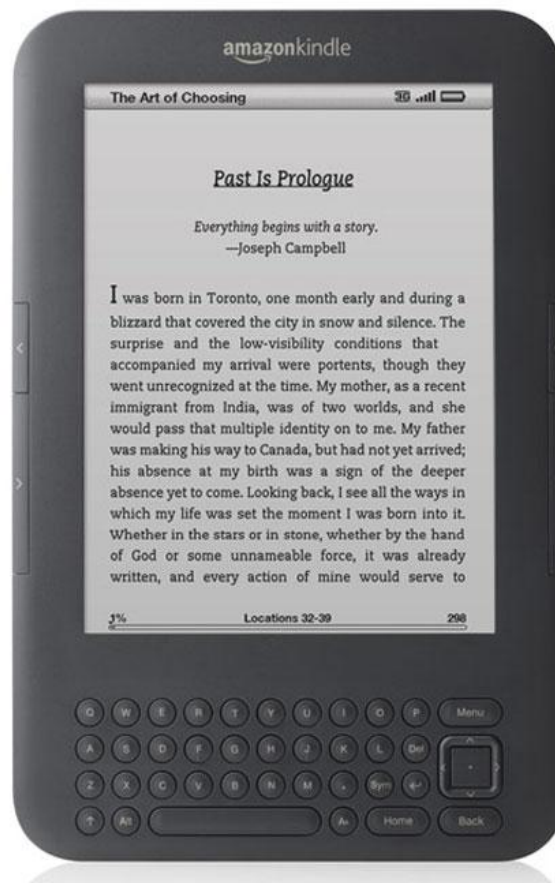
Figure 3.1 [Untitled Photograph] Kindle from Amazon.com (2012)

Data Collection Strategies and Procedures

All methods of research and data collection took place over the students' second semester of their eighth grade year. For this study, students were given an electronic reader, or allowed to use their own if they had one, to complete language arts and literacy class reading assignments including both self-selected reading and assigned novels for the entire class. Students also read at least one self-selected book and assigned book in a traditional print form to help them compare the experiences. To introduce the devices, I did a brief whole class demonstration using an LCD projector with a picture of Kindle and also a Kindle to show of the each of the features of the device including font manipulation, annotations, text-to-speech and the built in dictionary. I explained how to access the features and explained how I use them when I read.

Observations and interviews took place during normally scheduled classroom reading conferences with the teacher. Quantitative assessments associated with this study took place in class. All students in the class, not just participants, completed the quantitative assessments. I conferenced with each participant weekly for a brief discussion and conducted at least one observation of each participant each week. I conducted three more in-depth interviews during the study, including once near the beginning, once in the middle and one at the end with each participant.

Qualitative Measures

Interviews

I interviewed each student three times. In planning and conducting interviews, I kept in mind what Patton (1990) emphasized, "The purpose of open ended interviewing is

not to put things in someone's mind…but to assess the perspective of the person being

interviewed" (p. 278). The first interview employed the conversational interview from

Adolescent Motivation to Read Profile (Pitcher et al, 2007, see appendix B). This

instrument was created to be individually administered. It includes 14 scripted, open-

ended items designed to encourage free response while assessing the participants'

motivation for narrative, informational and general reading.

 For the second and third interviews, I used what Patton (1990) called an interview

guide approach. He described it as being conducive to a conversational style but also

conducive to keeping the interview focused to make efficient use of time. Please see

attachment G.

 I also interviewed the language arts and literacy intervention specialist, who worked

with some of the students to remediate their literacy skills. She was in the classroom

multiple times a week. For these interviews, I used an interview guide (Patton, 1990).

Please see attachment E. All interviews were recorded using an audio recording device

Illustrations

 As a way to better understand how students are processing reading experiences,

researchers Pflaum and Bishop (2004) argued for having students illustrate their reading

experiences and then using those illustrations for discussion. For this study, students

individually illustrated themselves as readers at the beginning of the study and then

discussed the picture. Each student for his or her second and third interview drew a

picture of him or herself using the electronic reader and another with a traditional text

and then discussed the illustrations. I collected the illustrations and documented the

interview as part of the data for this study

Student Reading Journal from Previous Semester and Studied Semester

The participants in this study kept a reading journal during the first semester of the school year to respond to their reading assignments in language arts and literature class, and they will continued to keep the journal during the study. The journals were also used for students to keep track of their reading for the school year and to reflect on their experience as readers. Students were required to talk about their use of reading strategies in their journals. Student cognitive processing and use of reading strategies are one of three components of reading engagement (Wigfield, 2000). I made photocopies of entries and lists kept in the journal to collect as data relating to student use of reading strategies. Merriam (1998) suggests that personal documents, such as a journal, may help a researcher to better understand lived experiences without the interference of research. She notes that it is important to make sure the documents are trustworthy. In using the students' reading journals as data, it will be important to glean from them if they feel their entries are coerced, or if they truly represent their perspective on previous reading experiences.

Observations and Field Notes

At least once per week I observed and recorded notes on students' reading engagement behavior in both independent and whole class reading units. Throughout the study I employed the use of the Silent Reading Behaviors Observation Checklist created by Kelley, Nicki Clausen-Grace (2009, see appendix E). This form helped to streamline notes and observations about students' off task behaviors when they are participating in independent reading. After each observation, I transcribed descriptions of what occurred in class as soon as possible and recorded reflective notes on possible themes, emerging

codes, and concerns (Creswell, 2007). I also took photographs to help capture and later

analyze behavior related to student reading engagement.

Participant-Researcher Journal

I kept a journal to record observations and insights from the perspective of a

classroom teacher implementing the intervention. Entries included data about the

students' reading engagement as well as nuances of integrating the technology into

instruction. Again I reviewed my notes weekly to identify potential themes and codes,

and concerns related to my research questions and relevant to a formative design study

(Creswell, 2007).

Quantitative Measures

Adolescent Motivation to Read Profile

This study employed four quantitative measures. For the first quantitative

measure used was the reading survey from *Adolescent Motivation to Read Profile*

(Pitcher et al, 2007, see appendix B). This instrument was designed to assist secondary

teachers in better understanding their students' motivations to read and is appropriate for

the purposes of this study. The MRP includes two instruments. The first instrument is a

reading survey and the second is a conversational interview. The reading survey is made

up of 20 items and employs four-point scale. Ten questions help to assess the

participants' self-concept as a reader, and ten items help to assess their value of reading.

This tool helped the researcher to understand the participants' motivation at the beginning

of the study. This measure was administered at the beginning and end of the study to help

assess any changes in the students' motivation.

Metacognitive Awareness of Reading Strategies Inventory

The second quantitative measure this study employed was the *Metacognitive Awareness of Reading Strategies Inventory* (Mokhtari& Reichard, 2002, see Appendix D). The measurement was designed to assess adolescent and adult readers' metacognitive awareness and perceived use of reading strategies while reading academic or school- related materials. Guthrie and Wigfield (2000) cited strategic and cognitive thinking as being essential to reading engagement. Participants took this assessment at the beginning and end of the study as pre-test and post-test measure of their perceived use of strategies. The instrument includes three strategy subscales: Global Reading Strategies, Problem-Solving Strategies, and Support Reading Strategies (Mokhtari& Reichard, 2002). Global Reading Strategies include:

> setting a purpose for reading, activating prior knowledge, checking whether text content fits the purpose, predicting what the text is about, confirming predictions, previewing text for content, skimming to note text characteristics, making decisions in relation to what to read closely, using context clues, using text structure, and using other textual features to enhance reading comprehension. (p. 259)

Problem Solving Strategies include "reading slowly and carefully, adjusting reading rate, paying close attention to reading, pausing to reflect on reading, rereading, visualizing information read, reading text out loud, and guessing meaning of unknown words" (p. 259). Finally, Support Reading Strategies include:

> taking notes while reading, paraphrasing text information, revisiting previously read information, asking self questions, using reference materials as aids,

underlining text information, discussing reading with others, and writing

summaries of reading (p.259).

The subscales were used to quantify the participants' self-described strategic reading

skills, which are an essential aspect of reading engagement.

Reading Engagement Index

In addition to the quantitative tools used in my pilot study, I also added Reading

Engagement Index (REI) as a pre and post assessment for this formative design study.

This instrument was added to assist in quantifying the students' engagement and to help

determine if there were any changes during the intervention study. To avoid any

researcher bias, the intervention specialist in the classroom, rather than the participant-

observer in the study, used the tool to assess students before and after the intervention.

The REI (Guthrie et al., 2007) is a teacher rating of each student's reading engagement.

The tool was developed to provide a teacher rating of the extent to which each student is

an engaged reader in the classroom. The REI is a set of items each teacher completes for

each student in their class. The instrument is designed so that teachers can measure

student engagement in their classroom in a 20-minute session. Initially, the researchers

created the REI as an outcome measure for examining the effectiveness Concept-

Oriented Reading Instruction (CORI), which is a of a professional development

intervention, designed to enhance students' reading engagement and increase reading

comprehension (Guthrie, McRae, & Klauda, 2007). For this instrument, the term

"engagement" is used to describe readers "who are behaviorally active (reading

frequently), internally motivated (liking to read), and cognitively active (uses strategies in

reading)" (Guthrie, 2004, p. 1). The categories teachers use to rate individual students in

their class include:

      1. This student often reads independently.

      2. This student reads favorite topics and authors.

      3. This student is easily distracted in self-selected reading.

      4. This student works hard in reading.

      5. This student is a confident reader.

      6. This student uses comprehension strategies well.

      7. This student thinks deeply about the content of texts.

      8. This student enjoys discussing books with peers. (p. 1)

The items above are scored on a scale of one to four with a score of one being not true and a four being very true. Item number three is reverse scored.

Motivations for Reading Questionnaire

I added a fourth quantitative measurement to the study that was not part of the original pilot. In order to get a more in depth understanding of the students' reading motivation, I had the students complete the *Motivations for Reading Questionnaire* (MRQ) (Wigfield & Guthrie, 1997, see appendix J). This assessment allowed a more individualized understanding of each student's unique motivation for reading or not reading for class. The Motivations for Reading Questionnaire is a student rated assessment of the extent to which each student is motivated to read. Wigfield and Guthrie (1997) developed the MRQ to assess different aspects of student reading motivation in 1995. In 1997, Wigfield and Guthrie modified the MRQ by grouping questions into 11 constructs of reading motivation using 53 items. The constructs measured in the assessment include:

1. Reading Efficacy (3 items)

2. Reading Challenge (5 items)

3. Reading Curiosity (6 items)

4. Reading Involvement (6 items)

5. Importance of Reading (2 items)

6. Reading Work Avoidance (4 items)

7. Competition in Reading (6 items)

8. Recognition for Reading (5 items)

9. Reading for Grades (4 items)

10. Social Reasons for Reading (7 items)

11. Compliance (5 items)

Pilot Study

In the fall of 2011, I carried out a pilot study to determine if all of the procedures would work as expected. One student participated in the pilot. I selected the participant from my assigned students for the school year. The student was identified as a reluctant reader based on his records from the previous year including grades and report card comments, his reading journal entries, his summer reading journal and reading conferences. In place of reading traditional texts, the student read books on a Kindle during an independent reading unit. I was able to field test each of the methods for this proposed experimental design study. The qualitative instruments piloted included the interview protocols with the student as well at the intervention specialist, observation protocols, participant illustrations and the use of a researcher journal. Quantitative measures piloted included the *Adolescent Motivation to Read Profile* (Pitcher et al, 2007,

see appendix A) and the *Metacognitive Awareness of Reading Strategies Inventory*

(Mokhtari& Reichard, 2002, see Appendix C).

Pilot Study Findings

In the pilot study, the participant answered the questions from the first interview

as briefly as possible, and his answers indicated he enjoyed reading both in school and at

home and that he felt that he comprehended most of what he was reading. What the

student said in the interview did not correlate with how the student was performing in

class or with reading assessments the intervention specialist had given the student on

reading comprehension and use of reading strategies.

In addition, the students' early journals were contrived. The student included

notes in his journal about his summer reading, but he hadn't actually read the book. His

notes were a work of fiction based on what he knew about reading strategies and what he

got from skimming through the book. His notes indicated that he had a solid knowledge

of reading strategies such as making connections, asking questions or drawing

conclusions, but he just didn't want to take the time to read the book. The early journals

showed that the student went to great lengths to not have to complete his school reading

assignment while at the same time indicate to his teacher that he did the reading.

The participant was much more candid in the second and third interviews. His

answers were not clipped as they were in the first interview. In addition, the participant

provided information that helps to answer question 6 of a formative assessment: what

unanticipated positive and negative effects does this intervention produce? The student

indicated that he liked using the electronic device for word study. When other students

used a dictionary for vocabulary assignments, he used his device to look up the words.

The student also indicated that he really liked to listen to the electronic reading voice.

The researcher found during the pilot study that the illustrations were successful in getting the student to talk honestly about his feelings about reading. The first illustration was very negative, and the student talked more freely about his negative feelings towards reading than he did initially in his first interview. After his initial drawing and follow-up interview, he was more willing to discuss his feelings and attitude toward reading.

Figure **3.2** Pilot Study Student Illustration of Feelings About Reading

Interviews with the classroom intervention specialist were helpful in gathering

data for a formative design experiment. The interview data was especially helpful for answering question three, "what factors enhance or inhibit the effectiveness efficiency, and the appeal of the intervention in regard to achieving the set pedagogical goal and question?" And question four, How can the intervention and its implementation be modified to achieve more effectively the pedagogical goal?" (Reinking & Bradley, 2008, p. 74-76). In the pilot study, the intervention specialist was keenly aware of the student's reading engagement and reading abilities. She identified that using an electronic reading device seemed to have a novelty impact, and the student couldn't put the device down and had an immediate impact on his enthusiasm for completing assigned reading at home. She felt that his interest in the device waned, but that he read enough of the story *Hunger Games* on the device, that he was hooked and wanted to read the book. In interviews, the intervention specialist shared insight about difficulties she saw in implementation of the intervention such as the length of time required to download a book for a student, or the initial struggle that the student has in learning to use the device. She made suggestions in the interviews which helped to improve the intervention.

The researcher's daily journal entries were also helpful in answering questions 3 and 4 a formative design experiment (Reinking & Bradley 2008). For example question 3 asks, "What factors enhance or inhibit the effectiveness, efficiency, and the appeal of the intervention in regard to achieving the set pedagogical goal" (p. 75). By keeping a journal, the researcher was able to capture data about the frustrations and pitfalls of setting up and distributing the electronic devices to middle school students. Keeping the journal and making modifications based on recorded observations and reflections allowed the researcher to answer question 4 of a formative design experiment, which is "How can

the intervention and its implementation be modified to achieve more effectively the

pedagogical goal?" (p. 76). The notes from the journal helped the researcher to identify

areas of implementation that could be improved.

Based on the student's annotations recorded on the device during the pilot study,

the researcher was able to determine that the reader was applying reading strategies as he

was reading. Learning how to annotate the text using the electronic device and to retrieve

the comments was at first tricky for both the researcher and the participant, but after an

initial period of frustration, it became easier to manage.

In the pilot study, the researcher found that in addition to observing the student

using a protocol, it was helpful to take pictures of the subject to analyze later. The

researcher noted in observation which was corroborated with the intervention specialist,

that the student exhibited far fewer off-task behaviors when using the device.

In the pilot study, the participant, the participant-researcher and intervention

specialist all felt that the two quantitative measurement tools, the *Adolescent Motivation*

to Read Profile (Pitcher et al, 2007, see appendix A) and the *Metacognitive Awareness of*

Reading Strategies Inventory (Mokhtari& Reichard, 2002, see Appendix C), captured the

participant's feelings towards reading as well as his perception of his use of reading

strategies. The instruments were helpful in establishing a baseline for the participant's

reading engagement. For example, the MPR reading survey results were that student

scored an 80% on his self-concept as a reader and a 60% on his value for reading; the

student confirmed that this made sense to him. Additionally, the *Reading Strategies*

Inventory results suggested that student had an average use of global reading strategies, a

medium use of support strategies and a high use of problem-solving strategies. At the

end of the six weeks, the student's self-concept as a reader remained nearly the same as did his perception of his use of global reading strategies, support strategies and problem-solving strategies. The student's value of reading went up slightly to a 65% on the MPR.

Changes to the Pilot Study

There are two quantitative measurements that I collected for this formative design experiment that were not piloted. As data collection started, I felt I needed a more in depth understanding of each individual student's motivation to read, so I added the *Motivations for Reading Questionnaire* (MRQ)(Wigfield & Guthrie, 2007) described earlier in this methods section. In addition, I asked the classroom intervention specialist to assess the students before and after the intervention using the *Reading Engagement Index* (REI) to help quantify the students' reading engagement and add depth to the data collected for analysis.

Data Collection Timeline

This study took place over the second semester of the students' eighth grade year.

Reinking & Bradley, 2008 suggest that data be collected in six phases. The phases, an

explanation and a preliminary timeline are included below.

Phase	Description	Anticipated Time Frame
Phase 1	Obtained permission from students, parents and administrators to conduct study.	Fall of 2011
Phase 2	Acting as teacher-researcher, I gather demographic data to create thick descriptions (Creswell, 2007) of the class, school and community.	Fall of 2011
Phase 3	Collected baseline quantitative data and conducted first interviews to determine where participants were in relation to the pedagogical goal before implementing the intervention.	February 2012
Phase 4	Implemented the electronic reader intervention and gathered qualitative data to determine what factors "enhance or inhibit its effectiveness, efficiency and appeal" in achieving the goal of improved reading engagement (Reinking & Bradley, 2008, p. 75).	February through May of 2012
Phase 5	Conducted final post-assessments to collect quantitative data and conducted final interviews to compare to data collected in phase 3.	June 2012
Phase 6	Consolidated findings and write report.	Summer and Fall of 2012

Data Analysis Strategies and Procedures

Qualitative Data Analysis

In keeping with the focus of helping students reach the pedagogical goal of

becoming engaged readers, data analysis took place throughout the study to determine if

modifications were needed for the e-reader intervention. I analyzed qualitative data

during Phases 3, 4 and 5 according to the framework Reinking and Bradley (2004/2008)

suggested. Phase 3 involved collecting baseline data, which was essential to analyzing

data in Phase 4. In Phase 4, I collected and analyzed data to determine the factors that

enhanced or inhibited the effectiveness of the intervention in achieving the pedagogical

goal, the modifications of the intervention that were required in order to better achieve

the pedagogical goal, the unanticipated effects of the intervention, and finally whether the

intervention led to any notable changes in the learning environment. Using the Phases of

the framework (Reinking, Malloy, Rogers & Robbins, 2007), I first analyzed data with

the following codes:

(a) factors that enhance the intervention

(b) factors that inhibit the intervention

(c) necessary modifications and improvements

(d) unanticipated effects;

(e) changes in the environment.

Using the online qualitative software program Dedoose and the constant-

comparative method (Merriam, 1998), I sorted all of my qualitative data using the above

codes. After initially sorting data using codes a-e, I organized the data into smaller sub-

categories as well as new categories that emerged. For example, I also added the codes (f)

indication of engagement, (g) indication of reluctant behavior, (h) outright comparisons

and (i) student instructional preferences.

Quantitative Data Analysis

The data from the four quantitative measures was analyzed for changes from

pretest- to post-test. Consistent with a mixed-methods approach (Creswell, 2007), pre-

and post- intervention quantitative comparisons were not conducted to establish causal

relationships; rather they were used to complement the qualitative data. To do this, independent one-sample t-tests were conducted. The t-tests examined pre and post differences on a) *the Adolescent Motivation to Read Profile*, b) *Metacognitive Awareness of Reading Strategies Inventory* total score, c) the subscale of Global Reading Strategies, d) the subscale of Problem-Solving Strategies, and e) the subscale of Support Reading Strategies, f) *Reading Engagement Index*, g) The subscales of the Reading Engagement Index, h) *Motivations to Read Questionnaire*, i) The subscales of the *Motivations to Read Questionnaire*. Given the number of t-test that conducted, an alpha level of .01 was employed in addition to .05. This was to assure that any significant findings were not due, by any chance, to the larger number of tests run. These t-tests were used to demonstrate any differences in scores from pre to post measures for the six participants as a whole group.

Validity

There are a number of things to consider with regard to the validity of a formative experiment. First the researcher will consider the validity of a formative experiment, then that of the qualitative data and finally the validity of the quantitative data.

Validity in Formative Design Experiment

Formative Design Experiments have unique validity concerns. According to Reinking and Bradley, 2008, when conducting a formative experiment, the researcher needs to consider both systemic and consequential validity. In order for the study to be systemically valid, there needs to be a "close alignment of theory, research and practice" (p. 54). A formative design experiment should be "theoretical, goal oriented intervention

centered, adaptive and iterative, transformative, methodologically inclusive and pragmatic" in order to have consequential validity (p. 54). The researcher designed this study using theory and research to explore the issue of adolescent engagement with text and to determine that use of electronic devices could potentially serve as an effective intervention. The researcher worked to conduct this study with careful consideration of theory and research at each phase of the design experiment in order to maintain systemic and consequential validity.

Validity of Qualitative Data

Throughout the research stages in Phases 2, 3 and 4, the researcher had participants take part in member checks (Creswell, 2007) to ensure that the qualitative data accurately represented their thoughts and feelings.

Validity of Quantitative Data

With regard to quantitative data, it is important to note that in formative experiments, statistical analyses of quantitative data are not necessarily conducted with the intent to establish unequivocal causal relationships. Rather, "they are conducted to support or refute inferences about linkages among certain factors or events" (Reinking & Watkins, 2000). Regardless of the intent of using quantitative data, all of the quantitative instruments to be used had formal assessments of their validity and had been determined to be valid measurements.

The Adolescent Motivation to Read Profile (Pitcher et al., 2007) was derived from the *Motivation to Read Profile* (Gambrell et al., 1996). The original instrument was field tested to enhance both its validity and reliability. During field tests, more than 100 test

items were critiqued for their construct validity relating to reading value or self-concept until one hundred percent agreement was reached. Items were placed into categories measuring self-concept and value of reading and the only items included in the final study were those that received one hundred percent teacher agreement. When adapting the *Motivation to Read Profile* (Gambrell et al., 1996) for adolescent use to create the Adolescent Motivation to Read Profile (Pitcher et al., 2007), researchers field tested the profile using eleven researchers at eight sites to administer the reading survey and conversational interview. To ensure reliability and validity, participants included teenage students from public, charter, alternative, and government-sponsored schools across the geographic areas of the United States including students from the West, Southwest, Northeast, Midatlantic, Southeast and the Caribbean. Researchers administered surveys to 384 adolescents and then completed approximately 100 interviews with the teenage students.

For the *Metacognitive Awareness of Reading Strategies Inventory* (Mokhtari& Reichard, 2002) researchers completed a pilot study of using a sample of 443 students in grades six through twelve to test the reliability and validity of their final instrument. The researchers determined that the "psychometric data demonstrate that the instrument is a reliable and valid measure for assessing students' metacognitive awareness and perceived use of reading strategies while reading for academic purposes" (p. 264). The researchers also determined that "the instrument is ready to be used as a tool for assessing students' metacognitive awareness of reading strategies while reading" (p. 265).

Researchers Wigfield and Guthrie (1997) conducted a factor analysis to test the validity of their *Motivations to Read Questionnaire*. Their findings demonstrated that

there was construct validity evidence for each of the eleven factors for the 53-item revised MRQ in a study of 4th and 5th grade students. The majority of the reading motivation factors also correlated positively from low- to moderately high levels providing evidence of construct validity. In their field test, Wigfield and Guthrie (1997) also found that the factors "Work Avoidance" and "Competition in Reading" aspect correlated negatively with other factor scores (p. 427).

The *Reading Engagement Index* (Guthrie et al., 2007) has also been field tested for validity. In testing the validity researchers (Wigfield, et al., 2008) found in their factor analysis construct validity evidence to support one factor. The measure was positively correlated with achievement. The correlation was found with the Gates-MacGinitie at the individual student level and also on a separate researcher designed assessment of text comprehension. In addition, Guthrie et al. (2007) found that teacher ratings of individual student reading engagement (on the REI) moderately correlated with the student self-reports of motivation in reading (on the MRQ).

Chapter 4: Results

Overview

Using the methodology of a formative experiment (Reinking & Bradley, 2008), this study investigated how the use of dedicated electronic reading devices could be implemented in an eighth grade language arts classroom to improve students' reading engagement. This study sought to answer the questions:

- How can e-readers be used as a tool to improve adolescent students' reading engagement?

- What benefits, struggles or pitfalls does a formative experiment identify that educators may experience in implementing classroom use of the devices?

In keeping with the structure of a formative design experiment, the results speak to the last four questions of the experimental design experiment framework introduced in chapter one. The four questions remaining questions to be addressed in this section include:

3. What factors enhance or inhibit the effectiveness, efficiency, and the appeal of the intervention in regard to achieving the set pedagogical goal?

4. How can the intervention and its implementation be modified to achieve more effectively the pedagogical goal?

5. What unanticipated positive and negative effects does this intervention produce?

6. How has the instructional environment changed as a result of the intervention? (Reinking & Bradley, 2008 p. 74-77)

When conducting an experimental design study, researchers Reinking and Bradley (2008) suggest the use of six Phases. The findings of this study will be reported in order of the final four Phases, which were outlined in chapter 3. The first two Phases were already addressed in previous chapters. The data presented in this chapter will begin with the third Phase, which included collecting baseline quantitative data and conducting first interviews to determine where participants were in relation to the pedagogical goal before implementing the intervention. The fourth Phase was the implementation of the electronic reader intervention and gathering qualitative data to determine what factors "enhanced or inhibited its effectiveness, efficiency and appeal" in achieving the goal of improved reading engagement (Reinking & Bradley, 2008, p. 75). The fifth Phase was to conduct post-assessments in order to collect quantitative data and conduct final interviews to compare to data collected in Phase 3, and the final Phase was to compile the findings.

Phase 3: Baseline Data Collection

Before implementing the use of electronic readers in the classroom, I first collected both qualitative and quantitative data from each of the six students in the study to get a better understanding of their reading engagement and establish a baseline before the intervention. Qualitative data included participant interviews and illustrations, review of students' previous reading journals and observations. For observation, I used the *Silent Reading Behaviors Observation Checklist* (Kelley, Nicki &Clausen-Grace, 2009, see appendix E). Quantitative data included in the initial round consisted of three students surveys and *The Reading Engagement Index* (Guthrie et al., 2007), a teacher survey completed by the classroom intervention specialist. The quantitative surveys the students

completed included the *Adolescent Motivation to Read Profile* (Pitcher et al, 2007, see

appendix B), *Metacognitive Awareness of Reading Strategies Inventory* (Mokhtari&

Reichard, 2002, see Appendix D), and the *Motivations for Reading Questionnaire* (MRQ)

(Wigfield & Guthrie, 1997, see appendix J). For each participant, I will begin with a

presentation of the baseline qualitative data and follow with the baseline quantitative

findings. For the mean and standard of deviation of the group for each of the pre-

assessment measures please see tables 4.1 through 4.4.

Claire

Claire was the only girl selected for this study, as she was the only girl in the class

who expressed a strong distaste for reading at the beginning of the school year. Claire

was a targeted student in the intervention program for language arts. She was put in the

program based on teacher recommendation and grades from the previous school year.

She did not have NJ ASK scores, so her standardized test scores were not a factor in her

placement in the program. Claire had been enrolled in the district for four years and did

not participate in any organized in school or after school activities.

At the beginning of the study, Claire expressed little interest in classroom reading.

She did not have a favorite author. During independent reading units, she often read a

different book every day and did not read at home. When asked how she selected books

for independent reading in class, she stated, "I just randomly pick them up from the

shelf."   She was focused on reading each day for the entire reading period. Occasionally,

during observations, it was noted that she talked, but that was rare. For the most part,

whenever time was given to read, Claire appeared to be reading. During whole class

reading units, she would read during class time but did not complete any reading assignments at home.

Claire reported that at home she spent more than three hours each night on her phone. During those hours, she spent most of her time reading her friends' Facebook and Twitter posts, conducting Google searches, listening to music, playing games, and taking and posting pictures using the photography application Instagram. Claire also shared that she spent an additional hour on her family computer and said that she spent about a half hour each night reading to her seven-year-old sister and three-year-old niece that lived with her.

When asked about what she could do to be a better reader, she suggested that she wanted "to improve her stamina" and her vocabulary. Claire said that she could never sit in front of a book for more than fifteen minutes without being distracted. She shared that English was not her first language, and she spent the first few years of her life in in Brooklyn. She felt those two factors caused her to have a weaker vocabulary than her classmates.

Claire also said that when her teachers talk about books it gets her excited about reading. She also shared that she prefers reading books as a whole class rather than independently because she likes getting help from her classmates and having her teachers talk about what she's reading.

Claire's initial score, on the *Reading Engagement Index* (Guthrie et al., 2007), a teacher survey completed by the classroom intervention specialist, was a 17 out of 32. Claire also completed three quantitative surveys including the MRP, MARSI and the MRQ with similar results. On the MRP, *Adolescent Motivation to Read Profile*

(MRP)(Pitcher et al, 2007, see appendix B), which measured Claire's motivations for reading, Claire scored a 55% for her self-concept as a reader, 62.5% for her value of reading and an overall combined score of 57.5%. On the *Metacognitive Awareness of Reading Strategies Inventory* (MARSI)(Mokhtari& Reichard, 2002, see Appendix D), which measured Claire's perceived use of reading strategies, Claire's mean score for global reading strategies was 2.92. This put her in the medium range. She scored a 4 for problem solving strategies, which was considered high. Finally, she scored a 2.11 for reading support strategies, which was considered low. Claire's overall score on the MARSI was a 2.6, which is considered a medium perceived mastery of reading strategies use. The final baseline quantitative measure was the *Motivations for Reading Questionnaire* (MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a 4-point scale to measure how to students are motivated to read for efficacy, challenge, curiosity, enjoyment, importance, compliance, grades, recognition, work avoidance, social and competition. According to Claire's results, she was least motivated to read by efficacy, where she scored a 1 and most motivated by challenge and curiosity, where she scored a 2.6. She also scored a 3.25 for work avoidance indicated that she avoids putting effort into reading.

Nick

Nick was not a student in the Response to Intervention program. He had been enrolled in the district since kindergarten. Despite an open animosity toward reading, Nick maintained high grades in his English classes. In the last three years, he never earned less than a B. Nick was very involved on an international sports team. He spent

hours each night practicing and sometimes missed school for weekly stretches to attend competitions.

Nick was emphatic during baseline data collection that he did not like books. During the initial interview his stated, "I don't hate reading. I hate reading books." He also reported that he could not remember the last time he read a book for school, but he was sure it had been at least three years. He shared that he only skimmed assigned reading. When asked about his favorite author, he laughed and did not offer an answer. He stated in the initial interview "To be honest, I hate reading because I find it very boring, and I never really like any books I read." While he didn't have a favorite author, when I asked what book he disliked the least, he said, "Outsiders because it was realistic and a book that keeps you on your toes."

During classroom observations, it was noted that most days Nick stopped reading at intervals of five minutes to ten minutes and looked around the room. If someone looked back at him, he would make faces at the person until the person laughed and then go back to looking at his book. On average, Nick displayed ten off task behaviors in a forty minute reading period.

Nick reported that he spends over three hours each night on his phone using the applications Facebook, Twitter and Instagram, texting, sending email, creating photos and videos, listening to music and searching Google. He also shared that his mother, father and college-aged sister were avid readers. He said that his older brother, also in college, liked reading more than he did. He said that his mother often tried to give him books and that his father cut out sports related articles from the newspaper for him to read

a few times a month. Nick shared that his parents think he has ADHD or Dyslexia because he dislikes reading so much.

When asked what any teachers have done in the past that he liked related to reading, he at first responded there was nothing. Then he paused and mentioned that he enjoyed listening to books read aloud or played from iTunes. When asked what he could do to improve his reading skills he stated, "I find myself a good reader because I understand a lot and learn from books I read." He then added that he wants to improve his vocabulary because he feels that there are a lot of words he doesn't know.

Nick's baseline quantitative data indicated that he was a confident reader, but that he had little motivation to read. Nick's initial score, on the *Reading Engagement Index* (Guthrie et al., 2007), a teacher survey completed by the classroom intervention specialist, was a 22 out of 32. Nick completed three quantitative surveys including the MRP, MARSI and the MRQ. On the MRP, *Adolescent Motivation to Read Profile* (MRP)(Pitcher et al, 2007, see appendix B), which measured his motivations for reading, Nick scored a 95% for his self-concept as a reader, 47.5% for his value of reading and an overall combined score of 71.25%. This indicates that before the study, Nick perceived himself as a solid reader, but he wasn't interested in reading. On the *Metacognitive Awareness of Reading Strategies Inventory* (MARSI)(Mokhtari& Reichard, 2002, see Appendix D), which measured Nick's perceived use of reading strategies, his mean score for global reading strategies was 2.7, which is considered medium. His score was a 4.3 for problem solving strategies, which is high. Finally, he scored a low 1.7 for his perceived use of reading support strategies. His over and over all score of 2.77, which falls into the medium category.

The final baseline quantitative measure was the *Motivations for Reading Questionnaire* (MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a four-point scale to measure how to students are motivated to read for efficacy, challenge, curiosity, enjoyment, importance, compliance, grades, recognition, work avoidance, social and competition. Nick was least motivated by challenge, curiosity, enjoyment, importance, grades, recognition, social and competition. He scored a one for each of those factors. He was most motivated by efficacy and avoiding work, where he scored a 2.5.

Max

Max was not enrolled in the Response to Intervention program at the beginning of this year, but was moved into the program early in the first marking period, based on failing grades in multiple classes, the recommendations of his eighth grade content area teachers and his below proficient scores on reading and language arts section of the 2011 NJ ASK.

Max was adamant in his initial interview that he did not enjoy reading. He did not have a favorite author. In observations during independent reading time, Max always asked to leave the room multiple times. Most days, he left whatever book he was reading on his desk at the end of class. He did not read at home. He also took no initiative in choosing a book to read during independent reading time.

When asked what his teachers have done in that past in reading class that he enjoyed, he responded, "Let me watch a movie." When asked who gets him excited about reading, he replied, "No One. I don't read at all." Then he mentioned that he had read and enjoyed the graphic novel *Diary of a Wimpy Kid* last year. He added that he doesn't

consider it "a legit book" because it has pictures. However he enjoyed the book thought it was funny.

When asked what he could do to improve his reading skills, he said that he needs to focus and suggested that he thinks he was ADHD. He also expressed that he wanted to improve his vocabulary because there are so many words in language arts class.

Outside of school, Max was involved in local recreational sports programs. According to himself, his parents and his peers, he was a talented athlete. He often asked to do stunts and acrobatic moves in the classroom. Max felt that no one his family was interested in books or reading. He said that he liked to talk about "bikes and movies, not books" with his bothers.

When asked about using technology outside of school, Max said, "I am on my computer all day at home. I am either sleeping, eating or on the computer if I am not outside." He spent most of his time on the computer reading Facebook posts and video chatting online using a program called OoVoo. He also listened to music and watched videos on his iPod. Max did not have a cell phone. Max estimated that between computer and iPod, he spent more than three hours a day absorbed in activities.

Max was the youngest boy in his family. He had three older brothers and a younger sister. While Max was failing all of his classes, his siblings were all honor roll students.

Max's baseline quantitative data indicated that he was not a confident reader and that he had little motivation to read. His initial score, on the *Reading Engagement Index* (Guthrie et al., 2007), a teacher survey completed by the classroom intervention specialist, was a 17 out of 32. Max also completed three quantitative surveys including

the MRP, MARSI and the MRQ. On the MRP, *Adolescent Motivation to Read Profile*

(MRP)(Pitcher et al, 2007, see appendix B), which measured his motivations for reading,

Max scored a 37.9% for his self-concept as a reader, 30% for his value of reading and an

overall combined score of 35%. This indicates that before the study, Max perceived

himself as a poor reader, and he did not attribute any value to reading. On the

Metacognitive Awareness of Reading Strategies Inventory (MARSI)(Mokhtari&

Reichard, 2002, see Appendix D), which measured his perceived use of reading

strategies, his mean score for global reading strategies, problem solving strategies and

perceived use of reading support strategies were each a 1 making his overall perceived

use of reading strategies a 1. The final baseline quantitative measure was the *Motivations*

for Reading Questionnaire (MRQ) (Wigfield & Guthrie, 1997, see appendix J). The

MRQ uses a four-point scale to measure how to students are motivated to read for

efficacy, challenge, curiosity, enjoyment, importance, compliance, grades, recognition,

work avoidance, social and competition. Max's responses indicated he was least

motivated by enjoyment, social reasons and reading for competition. He scored a one for

each of those factors. He was most motivated by avoiding work where a scored a 3.25

followed by curiosity where he scored a 2.3.

Andrew

Andrew was also enrolled in the Response to Intervention program based on a

request from his mother, his previous grades and his NJ ASK scores. Andrew was

selected to participate in the study because of his negative attitude and resistance to

reading. In the previous school year, Andrew reported only reading four books.

Andrew mentioned that his family is very concerned about his lack of interest in reading. He said both his mother and his cousin frequently try to take him to bookstores and the library to get him interested in books, but that it doesn't work. When asked who gets you excited about reading, he said that, "Sometimes teachers book talk books. I get excited, but then I realize this is crap when I start to read it." When asked what teachers have done in the past to get him excited about reading, Andrew couldn't think of anything. When asked what he could do to improve his reading skills, Andrew suggested improving his vocabulary.

During initial observations of Andrew during independent reading time, he exhibited an average of six off task behaviors a period. Some of his off task behaviors included looking around the room for extended periods of time or tapping his fingers. He usually stayed in his seat for the duration of the period. I also noted in observations, that Andrew took a long time to get started during independent reading periods. He would flip through his things, talk to his classmates or try to engage the intervention specialist in random conversations to stall opening up his book and reading. More often than not, during whole class reading units, Andrew came unprepared to class. He would forget to complete the reading assignments at home, or complete the reading and forget to bring in notes for discussion. He also had a difficult time getting started in discussing his reading with classmates. He would often start unrelated conversations rather than focus on discussing the text.

Outside of school, Andrew is very involved in multiple local sports programs. He attends practices and competitions year round for soccer and in the early spring and early summer for baseball. He is not involved in any school related activities.

Andrew reported spending about two hours a day on the computer. He spent most of that time using reading and responding to friends on Facebook, watching YouTube videos and video chatting with friends. He said the only reading he likes to do on the computer is reading Facebook posts and comments that other users post on Facebook. Andrew also reported that he spent about 10 minutes a day on his phone texting.

Andrew's baseline quantitative data indicated that he was not a confident reader and that he had little motivation to read. His initial score, on the *Reading Engagement Index* (Guthrie et al., 2007), a teacher survey completed by the classroom intervention specialist, was a 17 out of 32. Andrew also completed three quantitative surveys including the MRP, MARSI and the MRQ. On the MRP, *Adolescent Motivation to Read Profile* (MRP)(Pitcher et al, 2007, see appendix B), which measured his motivations for reading, Andrew scored a 45% for his self-concept as a reader, 42.5% for his value of reading and an overall combined score of 43.75%. This indicates that before the study, Andrew perceived himself as a poor reader, and saw little value in reading. On the *Metacognitive Awareness of Reading Strategies Inventory* (MARSI)(Mokhtari& Reichard, 2002, see Appendix D), which measured his perceived use of reading strategies, his mean score for global reading strategies, problem solving strategies and perceived use of reading support strategies were each low. His mean score for global reading strategies was 1.7. He scored a 2 for problem solving strategies and a 1 for reading support strategies. His overall score was 1.57. The final baseline quantitative measure was the *Motivations for Reading Questionnaire* (MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a four-point scale to measure how to students are motivated to read for efficacy, challenge, curiosity, enjoyment, importance, compliance,

grades, recognition, work avoidance, social and competition. Andrew's responses indicated he was least motivated by enjoyment and social reasons where he rated a 1.6 and 1 respectively. He was most motivated by grades at 3.2 and compliance at 3.75 each. He was also motivated to avoid work with regard to reading and scored a 3.25 in that category.

Ryan

Ryan expressed an aversion to reading at the beginning of the school year. He was not enrolled in the Response to Intervention program, and maintained a high honor roll average each marking period. He had been a student in the district since kindergarten. Ryan was selected for the study based on his previous year's reading journal and teacher conferences during the first two marking periods where he indicated a strong dislike for reading.

When asked about favorite books in the baseline interview, Ryan mentioned two books that he had read in recent weeks. One was *Sleeping Freshmen Never Lie* by David Lubar and the other was *A Child Called It* by David Pelzer. He enjoyed *A Child Called It*, a child abuse memoir, because it was "a bad kind of intriguing" and he enjoyed *Sleeping Freshmen Never Lie* because it was funny and reading the book was "like watching a TV show."

During independent reading time in class, Ryan was engaged almost the entire time. He read at home and brought his books back and forth to school. Ryan also regularly completed his reading assignments during whole class reading units.

Ryan felt that to improve as a reader, he needed to read much faster. "I am really slow, because I try to understand everything." When asked about what teachers can do to

get him more excited about reading he said they could recommend good books for him to read in school. He also added, "At home, I'd rather go play soccer than read a book."

When asked about spending time on the computer or on his phone, Ryan said he spent about a half an hour a day on his own computer. Aside from typing up homework assignments, he liked to look at cleats and shoes online. In addition, he spent just under three hours a day texting, listening to music or talking on his phone. His parents also had a tablet computer that he spent about half an hour on doing Google searches and reading Facebook posts.

Ryan was very involved in school activities and recreational sports. He had one older brother, a high school honor student. Everyone in his family read books and magazines at home.

Despite Ryan's initial indications before the study began that he was not an engaged reader, the baseline quantitative data indicated that he was a very confident reader and that he was motivated to read. His initial score, on the *Reading Engagement Index* (Guthrie et al., 2007), a teacher survey completed by the classroom intervention specialist, was a 28 out of 32. Ryan also completed three quantitative surveys including the MRP, MARSI and the MRQ. On the MRP, *Adolescent Motivation to Read Profile* (MRP)(Pitcher et al, 2007, see appendix B), which measured his motivations for reading, Max scored a 77.5% for his self-concept as a reader, 70% for his value of reading and an overall combined score of 73.75%. This indicates that before the study, Nick perceived himself as an average reader, and he did not attribute average value to reading. On the *Metacognitive Awareness of Reading Strategies Inventory* (MARSI)(Mokhtari& Reichard, 2002, see Appendix D), which measured his perceived use of reading

strategies, his mean score for global reading strategies, problem solving strategies and

perceived use of reading support strategies were all high. His mean score for global

reading strategies was 3.9, he scored a 5 for problem solving strategies, and he scored a

4.78 for reading support strategies. His overall score of on the MARSI was a 4.46. The

final baseline quantitative measure was the *Motivations for Reading Questionnaire*

(MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a four-point scale to

measure how to students are motivated to read for efficacy, challenge, curiosity,

enjoyment, importance, compliance, grades, recognition, work avoidance, social and

competition. Max's responses indicated he was least motivated by enjoyment, social

reasons and reading for competition. He scored a one for each of those factors. He was

most motivated by avoiding work where a scored a 3.25 followed by curiosity where he

scored a 2.3.

Jack

Jack was enrolled in the Response to Intervention Program based on his grades

the previous year, his 7th grade English teacher's recommendation and his NJ ASK

Scores. Jack was selected to participate in the study because of his negative attitude

toward reading.

During the primary interview, Jack stated that no one gets him excited about

reading and that none of his teachers have ever done anything with reading that he really

enjoyed. Despite that he said no one gets him excited about books, and that his teachers

haven't done anything in reading class he enjoyed, Jack was able to name a book he

enjoyed. In the weeks before the study began, Jack read the books *A Child Called It,* a

child abuse memoir by David Pelzer. I had recommended the book to Jack, and he

enjoyed it because, "It was based on a true story, and I felt for the character." He mentioned that he was interested in reading the sequel *The Lost Boy.*

During initial observations, Jack exhibited an average of seven off task behaviors a reading period. This included getting out of his seat. The intervention specialist prompted Jack a couple of times each day of observation. "Jack. Please ask yourself, 'Why am I standing here?'' After the redirection, Jack would return to his seat to read. During whole class reading novel units, Jack regularly completed his assignments. Jack was enrolled in an independent study period where he had forty minutes a day to work on his homework assignments or get extra help from his classroom teachers. He usually used this time to read so that he didn't have to do it at home. When asked what he needed to do in order to improve his reading skills, Jack suggested that he should get interested in more books and find a genre that he liked.

Jack reported spending about two hours a day on his home computer. He spent most of that time reading and commenting on Facebook. Jack was the oldest in a family with five children and very active in a sports program outside of school. He said that he did not talk about reading with his family members.

Jack's baseline quantitative data indicated that he was not a confident reader and that he had very little motivation to read. His initial score, on the *Reading Engagement Index* (Guthrie et al., 2007), a teacher survey completed by the classroom intervention specialist, was an 18 out of 32. Jack also completed three quantitative surveys including the MRP, MARSI and the MRQ. On the MRP, *Adolescent Motivation to Read Profile* (MRP)(Pitcher et al, 2007, see appendix B), which measured his motivations for reading, Jack scored a 62.5% for his self-concept as a reader, 32.5% for his value of reading and

an overall combined score of 47.5%. This indicates that before the study, Jack perceived

himself as a poor reader, and saw very little value in reading. On the *Metacognitive*

Awareness of Reading Strategies Inventory (MARSI)(Mokhtari& Reichard, 2002, see

Appendix D), which measured his perceived use of reading strategies, his mean score for

global reading strategies, problem solving strategies and perceived use of reading support

strategies were each low. Jack's mean score for global reading strategies was a 1.92. He

scored a 2.5 for problem solving strategies and 1.4 for reading support strategies. His

overall score on the MARSI was 1.91which indicated that Jack did not perceive himself

as a skilled and strategic reader. The final baseline quantitative measure used was the

Motivations for Reading Questionnaire (MRQ) (Wigfield & Guthrie, 1997, see appendix

J). The MRQ uses a four-point scale to measure how to students are motivated to read for

efficacy, challenge, curiosity, enjoyment, importance, compliance, grades, recognition,

work avoidance, social and competition. Jack's responses indicated he was least

motivated by social reasons where he rated himself a 1. He did not rate himself above a 2

in any category, except work avoidance where he scored a 2.75.

Group Scores on the Pre-Assessment Measures

In order to gain an understanding of each student's reading engagement, I used

multiple quantitative measurements. I looked at the students' scores individually, which

was discussed above. To help quantify the success of the intervention, I also looked at the

student scores on each measurement as a whole both before and after the intervention.

On the teacher survey completed by the classroom intervention specialist called

the *Reading Engagement Index,* see Table 4.1 (Guthrie et al., 2007), the average student

score was an 18.4 with a standard deviation of 1.85. The highest possible score was a 32

meaning that overall there was a lot a room to grow. On the index, students' average

scores were the highest, 3.0 for enjoys discussing reading with peers and the lowest for

reads independently and has favorite authors, where the average score was a 1.2.

Table 4.1

Overall Mean of Participant Scores on the Reading Engagement Index

Indicator	Mean	Standard of Deviation
Reads Independently	1.20	0.40
Reads Favorite Topics and Authors	1.20	0.40
Easily Distracted in Self-selected reading	2.20	0.40
Works Hard in Reading	2.80	0.75
A Confident Reader	2.80	0.40
Uses Comprehension Strategies Well	2.60	0.49
Thinks Deeply about the Content of Texts	2.60	0.49
Enjoys Discussing Books with Peers	3.00	0.00
Total	18.40	1.85

On the MRP, *Adolescent Motivation to Read Profile* (MRP) (Pitcher et al, 2007,

see appendix B), which measured motivations for self-concept as a reader, the average

student score was a 59.08 with a standard deviation of a 19.83. The average student score

for value of reading was 43, with a standard deviation of 11.66. Finally, the average

overall percentage was a 51 with a standard deviation of 12.43. An average score of a

51% on the pre-assessment measure shows that in general the participants had a low self-

concept and valued reading even less. See Table 4.2.

Table 4.2

Overall Mean of Participant Scores on the Motivations to Read Profile

Attribute	Mean	Standard of Deviation
Self-Concept Raw	23.6	7.81
Self-Concept Percentage	59.08	19.83
Value Raw	17.2	4.66
Value Percentage	43	11.66
Overall Raw	40.8	9.95
Overall Percentage	51	12.43

The *Metacognitive Awareness of Reading Strategies Inventory* (MARSI) is tool used to measure the students' perceived use of reading strategies (Mokhtari& Reichard, 2002, see Appendix D). The measurement divides reading strategies into three categories including global strategies, problem solving strategies and support strategies. On this pre-assessment the global reading mean was a 2.05 with a standard deviation of .7. The mean score for perceived use of problem solving strategies was a 2.76 with a standard deviation of 1.24. The mean score for perceived use of support strategies was a 1.44 with a standard deviation of .43. Finally, the overall mean of the participants' perceived use of reading strategies was a 1.98, with a standard deviation of .66. These averages indicated that, as a group, in each category, the students did not perceive themselves as a skilled and strategic reader. See Table 4.3.

Table 4.3

Overall Mean of Participant Scores on the Metacognitive Awareness of Reading

Strategies Inventory

Reading Strategy	Mean	Standard Deviation
Global	2.048	0.70
Problem Solving	2.76	1.24
Support	1.442	0.43
Overall	1.98	0.66

The final baseline quantitative measure used was the *Motivations for Reading Questionnaire* (MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a four-point scale to measure how to students are motivated to read for efficacy, challenge, curiosity, enjoyment, importance, compliance, grades, recognition, work avoidance, social and competition. The mean of the students' scores for all of the categories was a 1.92 with a standard deviation of .40. The mean scores for the participants indicated that as a group the participants were least motivated by social reasons with a score of 1.17 and standard deviation of 0.34. As a group, they also scored low in reading for enjoyment with a score of 1.61 with a standard deviation of 0.49. As a group, the students scored high on work avoidance with a mean score of 3 with a standard deviation of .32. See Table 4.4.

Table 4.4
Overall Participant Scores on the Motivation to Read Questionnaire

Measure of Engagement	Mean	Standard of Deviation
Efficacy	1.75	0.57
Challenge	1.76	0.51
Curiosity	1.95	0.54
Enjoyment	1.61	0.49
Importance	1.90	0.92
Compliance	2.16	0.65
Grades	2.10	0.90
Recognition	2.00	0.68
Work Avoidance	3.00	0.32
Social	1.17	0.34
Competition	1.70	0.58
Overall	1.92	0.40

Phase 4: Intervention Implementation Data

In phase 4 of this experimental design study, I implemented the electronic reader

intervention and gathered qualitative data to a) determine the factors that might have

"enhanced or inhibited its effectiveness, efficiency and appeal" in achieving the goal of

improved reading engagement, b) identify modifications to the intervention, c) determine

changes to the learning environment, and d) identify any unanticipated changes (Reinking

& Bradley, 2008, p. 75). Qualitative data collected during this phase included interviews

with the classroom intervention specialist, participant interviews and illustrations,

photographs, review of students' reading journals and observation of participants. For

observation, I used the Silent Reading Behaviors Observation Checklist (Kelley, Nicki

&Clausen-Grace, 2009, see appendix E). I will first discuss each participant's progress

toward the pedagogical goal and then discuss my findings in regards to the

implementation of the intervention.

Progress Toward Pedagogical Goal During Intervention

Claire

At the beginning of the study, Claire expressed a strong interest in using the Kindle. In observations of Claire at the beginning of the study, she expressed enthusiasm about reading for independent reading on a device. The first book that she wanted to read was *A Child Called It* by David Pelzer. Other classmates had read it, and she had been waiting for a paperback copy to become available. She was happy that with the Kindle she didn't have to wait for the book. She read the book, which is a memoir about an abused child, within a week, and then over the next two weeks read the sequel *The Lost Boy* and *A Brother's Journey* written by the Dave Pelzer's brother who also survived child abuse. During the first three-week independent reading unit, Claire brought her Kindle to class every day and consistently read the same book rather than changing books every day or randomly selecting books from the shelf as she had before the intervention. Both the intervention specialist and I noticed the marked improvement in Claire's consistency, which took place early in the intervention.

During the second interview which took place about two-months into the study, it seemed the novelty of the Kindle was wearing off for Claire. She asked why we're using "regular" Kindles and not Nook Colors or Kindle Fires. I explained that when I purchased the Kindles for this school year, those two products were not available. She stated, "If I had to choose between a Nook Color and the regular Kindle, I'd choose the Nook because you can play games. I like it better because it's color and touch screen." Then she added," On my side, to be honest, I would have played games on it instead of reading."

I conferenced with Claire early in the study about how to change the font size and orientation of the Kindle devices, but she was not interested. She said she liked to use it how it comes. Meaning whatever setting the previous student chose who was using the Kindle, those were the settings Claire used.

After the novelty of using the Kindle wore off, Claire's enthusiasm for reading seemed to remain. For the rest of the school year, during independent reading units, Claire came to class prepared with her book and read at home for at least fifteen minutes a night.

During the study Claire also used the Kindle to complete two whole-class reading assignments. She read *Shakespeare Stealer* and *Night* on the Kindle. When we conferenced during the units, she expressed a dislike for *Shakespeare Stealer* because she could not relate to it and the vocabulary from the historical fiction novel was losing her. She reported that using the dictionary feature and the text-to-speech to help with the pronunciation was helpful. She enjoyed reading *Night,* a memoir, because she thought it was an important story and she wanted to find out what was going to happen to the author. Claire read assigned whole-class novels in traditional print as well. She read *A Christmas Carol* and *The Pearl* as printed texts.

Nick

Nick began the study enthusiastic and hesitant to use the Kindle. He indicated multiple times that he was nervous about breaking or losing the device, since he lost multiple paperback books before the study and had broken the screens on multiple cell phone devices.

In the second interview Nick shared how he felt about using the Kindle in general and what the positives and negatives were. When I asked Nick how he felt about reading using the Kindle he said, "Alright. Probably better than a book, but that doesn't mean much. It is more technical. Reading a book sucks." In a reading journal entry written around the same time, Nick wrote, "I've read two books on the Kindle, and I do like it better than the book." When I asked about what he felt some of the negatives were with using a Kindle, he replied, "It's yours, and if I lose it, I'd feel bad." He also added that there were no page numbers, so he didn't know how far he was from finishing the book. When we discussed some of the features such as changing the orientation or font size he said that, "Unless I am bored, I leave it alone." He also added that he liked using the built in electronic dictionary for vocabulary work in the classroom, and that he sometimes used the text-to-speech feature for pronouncing words or so he could walk around without losing his place, but he did not like that the electronic voice did not pay attention to punctuation and sounded like a machine. Nick would recommend using the Kindle but only to responsible students. During the study, Nick lost a Kindle two times, and they were found. In addition, three of the Kindles he was using broke while he had them and had to be returned to Amazon.

Observations of Nick indicated that he was more focused when using the electronic device. Some of the observations recorded about Nick's behavior when reading on the Kindle included "deeply engaged today. Other students are working on a loud project around the room, and he's engrossed." Another comment was, "very engaged in reading today. Nick was excited about reading *The 4th Stall*. He started reading without needing individual direction." Finally, "Nick had no off task behaviors today!" In

contrast, some of the comments recorded on three different days when Nick was reading a traditional text included, "Noticed five off task behaviors including staring off into space and talking," "still reading the *Heaven is for Real* book after a month, and "looked around multiple times for someone to engage with." My observations seemed in line with the intervention specialist's conclusions as well. She felt Nick was less distracted on a Kindle than when reading a book. She pointed out that daily during reading time, he would put on the text-to-speech feature and walk around the back of the room while listening to the book for a few minutes. She also added that Nick is less distracted on a Kindle than on a computer or Tablet. When the features are available, he will play games, shop and listen to music instead of reading.

During the study, Nick read *Night, A Child Called It, Lost Boy, A Brother's Journey,* and *The Fourth Stall* on a Kindle. He read *Shakespeare Stealer, Diary of Wimpy Kid, Heaven is for Real, The Pearl* and *A Christmas Carol* in traditional print. There didn't seem to be a relationship between the books he enjoyed the most and whether or not he read them in electronic form. "My favorite book this year is *Heaven for Real* because it is about my religion." In reflections he also said, "I liked the *Lost Boy* because it had a lot of description about things that happened in Dave's childhood." Genre rather than medium was important. Nick said repeatedly in reading reflections and interviews that his favorite genre was historical fiction, yet out of the seven books he chose for himself during his eighth grade school year, five of them were memoirs.

Max

Max was hesitant to use the Kindle at the beginning of the study. Unlike other students in the class, he was not excited about reading on the device. He agreed to

participate in the study, but was not enthusiastic. In his first interview, after starting a book on the device, he stated, "I don't like it. It sucks." When I asked what he disliked he added, "It's not like a book. It doesn't have page numbers. It feels awkward." He did enjoy using the dictionary to look up words for vocabulary assignments. When asked whether he would recommend using the Kindle to other students, he said yes citing that it can hold more than one book, it's great for word study, and they can use the text-to-speech feature.

 In a conference early in the study, when I conferenced with Max about the text features on the Kindle, he stated that he liked the portrait orientation and that he wanted to make the font as small as possible, so it's like a book. I showed him other ways that readers orient the text for example using a larger font or holding the Kindle in landscape rather than portrait. He started using a large size font and propping the Kindle up on his desk, sitting in one of the teacher's chairs and leaning back while reading, or putting the Kindle in his lap and reading with his head down. Manipulating the text seemed to increase his interest in using the device in class. However, he was very concerned about losing or breaking the Kindle, and would hide it in the back of the classroom rather than take it home. Every time Max was reading a book on the Kindle, I had to obtain a traditional print copy for him to take home. Despite his careful handling of the device, Max broke two Kindles during the study by dropping them.

The intervention specialist commented that Max always made the font larger and seemed to enjoy that the Kindle was less cumbersome. When using a Kindle, she noted that, "He spends far less time meandering around the room." With the Kindle, when he walked around the room, he was still listening to a book. The intervention specialist

commented that Max spent a lot of class time adjusting the font. She was also concerned that he seemed very upset both times he broke a Kindle. Another concern from the intervention specialist was that not having a page numbers was an issue when reading whole class novels. For examples, when Max read *Shakespeare Stealer*, he didn't know where to stop each night because that book used percentages rather than page numbers.

During the student Max read *A Child Called It, Found and Shakespeare Stealer* on the Kindle. He read *Diary of Wimpy Kid: The Last Straw, Crash, The Pearl, Night* and *A Christmas Carol* in traditional print form. Max's favorite book was the graphic novel *Diary of a Wimpy Kid: The Last Straw.* Although he stated the didn't think it was a real book "cause it had pictures and stuff."

Andrew

At the beginning of the study, Andrew was eager to participate. More than any of the students in the class, Andrew wanted to enjoy reading more and to read more. In first interview after using a Kindle, he stated, "It's not as annoying as a book." Andrew liked that he could control how the text looked on the screen. He showed me how he liked to enlarge the font and stated, "It's easier to read. You can make it how you want it. You can customize it." Andrew also liked clicking a button rather than flipping the pages of a traditional text. He did not like that the books he was reading had percentages rather than page numbers.

His positive remarks about using the Kindle were similar to what the intervention specialist noted about him in her interview. She felt that Andrew didn't protest or try to get out of reading in the classroom when he was reading on the Kindle. She also felt he was less distracted when he read on the Kindle and didn't ask to leave the room as

frequently. The intervention specialist's comments were similar to the notes I made during classroom observations. There was a clear contrast in focus between when Andrew read on the Kindle and when he read a traditional text. For example, some of my field observations about Andrew throughout the study when he was reading a traditional text included 1) Andrew complained repeatedly, 2) he got out of his seat and talked to others multiple times, 3) very off task. Does not seem to enjoy the book he is reading at all, 4) Andrew was calling out and jumping into conversations, all over the room but eventually got involved in his book. In contrast, my observations throughout the study about Andrew reading on his Kindle included 1) Shockingly on-task, 2) into book today and 3) excited about reading today.

During his interviews, Andrew expressed a strong preference for reading whole class novels rather than choosing books for himself. He stated, "I like whole class novels because if one of us gets lost in it, you can ask someone else for help. If you were reading an independent reading book, and you're confused you couldn't ask anyone for help. Another reason why I think reading whole class novels are better is because you can read out loud. When you read out load independently with a separate book, there would be a bunch of random words." He also shared in another interview that, "I like reading whole class novels better because it is better for me when we discuss the book because I would have a better understanding of the book." It was slightly surprising that Andrew expressed such a preference for whole class reading because he did not rate the whole class novels highly. His favorite books during the year were the ones he selected for himself. Early in the study, he stated, I am reading *A Child Called*; it's the best book I've

ever read. As a book that he enjoyed the least, he cited *A Christmas Carol,* which was a whole class novel.

Jack

In the beginning of the study, Jack was interested in reading on a Kindle because it was not reading a book. Reading a book was his least favorite school activity, so he felt reading on a Kindle device could only be better. In his first interview after the intervention began, Jack shared that three weeks into the study, he'd already finished two books on his Kindle. When I pointed that out to him that he seemed to be reading more than he had earlier in the year and asked him if he had any insight, he stated, "It's easier to use than a book. I hate the rough feeling of a book. It's better than a book. It's smaller." He also added that he enjoyed reading the Kindle application on the desktop computer when he left his Kindle at home. He liked that he didn't have to start a new book, and he enjoyed sitting in the "comfortable", teacher computer chair and looking at the large monitor. I asked if there was anything he did not like about the device and he responded that the Kindle "can get confusing. Like when you press a button and don't know where it's gonna go and you have to find your way back to the book."

In a conference early in the study, Jack and I discussed how he orients the text when he reads. He shared that he did not attempt to manipulate the text, "I read whatever way I get it. Usually it's portrait."

The intervention specialist felt that using the Kindle helped improve Jack's reading engagement in class. One of the most positive aspects of using the Kindle for Jack was that he had instant access to books. Right before the study began, Jack read *A Child Called It*. He immediately wanted to download and read the sequel, *The Lost Boy*

and then asked for another similar story. He also found the child abuse memoir *Why Me?* on Amazon and downloaded it. He read the book in two nights. The intervention specialist observed that during the intervention, Jack's rate improved and he spent less time actively avoiding reading in class.

Observations of Jack revealed that his engagement for reading was situational based on genre. For example, when reading memoirs, regardless of the medium, he was on task during independent reading time and did not resist sitting down and reading. During the study he chose to read *Why Me?, The Lost Boy,* and he was assigned to read *Night* as a whole class novel. He focused on the memoirs in class and read them at home. However, when reading the historical fiction book *Shakespeare Stealer* in traditional form and *Ms. Peregrine's School for Peculiar Children* on the Kindle, Jack had a difficult time getting started, was distracted in class and did not read at home.

In a reading conference Jack and I discussed whole class versus independent reading. Jack indicated that he strongly preferred read books as a whole class novel rather than independently. "I like whole class novels more than independent novels because it is easier to read. It also helps because if you were stuck on one page then you can ask a person and catch up." This was interesting since his favorite book for the year was *A Child Called It*, a self-selected novel, and his least favorite was *Shakespeare Stealer*, which was a whole class novel.

Effectiveness, Efficiency and Appeal of the Intervention

During Phase 4, as I assessed and collected qualitative data on how the students were progressing toward the goal of becoming more engaged readers, I also collected and analyzed qualitative data in order to answer the remaining essential questions of a

formative design experiment (Reinking & Bradley, 2008). The remaining questions

address the implementation of the experiment and include:

4. What factors enhance or inhibit the effectiveness, efficiency, and the appeal of

the intervention in regard to achieving the set pedagogical goal?

5. How can the intervention and its implementation be modified to achieve more

effectively the pedagogical goal?

6. What unanticipated positive and negative effects does this intervention

produce? (p. 75)

In analyzing the qualitative data during the study, I found multiple factors that

enhanced and inhibited the effectiveness, efficiency, and the appeal of the intervention. I

will begin with the factors that enhanced the effectiveness of the study. Using the devices

allowed faster access to books that the students wanted to read. Each time there was a

book talk in class, at least one of the participants asked to read the book and was able to

start reading the book immediately. For example, during the course of the study, *Ms.*

Peregrine's School for Peculiar Children, *The Fourth Stall, Girls Drums and Dangerous*

Pie, The *Hunger Games trilogy and Found* were all requested and started before the end

of the school day. We also had the local public librarian and school media specialist come

into the classroom and recommend books, and each time participants in the study as well

as other students in the class requested a Kindle so they could start reading a book the

same day. Also, when I purchased a book on Amazon, their policy allowed me to

download a copy of the book onto five other devices. So purchasing one book for around

six dollars meant that at six students could be reading a new title at the same time.

Another benefit of the intervention towards reading engagement was that when students left their Kindle at home, they could use a free software program called Kindle Cloud. I would log into my Amazon account, and I could download any of the books I had purchased and students could read it on the computer monitor. This was beneficial for students who has organizational issues and left their e-readers at home. This was helpful to students and helped reduce the frustrations and complications of not being prepared for class. Another factor that enhanced the appeal of the intervention was that students could use the devices for word study assignments. During independent reading units, students began class by completing assignments based on the school curriculum's eighth grade vocabulary words. Students were often unfamiliar with the words and had to look them up in the dictionary. All of the students in the study much preferred the built-in Kindle dictionary to using traditional dictionary for word study. In addition, students were much more likely to look up a word they didn't know while using the Kindle because all they had to do was click a button rather than get out of their seat, find a dictionary and manually look up the word. Faster access to books and more focus on vocabulary helped to improve students' motivation and efficacy as readers.

An additional appeal of the intervention was that using Kindles allowed students options in the physical activity of reading. Because students could change the font and orientation of the text, they had more choices for how to hold and read a book than they would with a traditional print text. The intervention specialist and I both observed that the four boys who participated in this study, sat still for longer when they were reading on the devices. It seemed with all of the options, they were better able to find a comfortable position in the classroom when using the devices. Some students also requested

occasionally to read their Kindle book on a classroom desktop. In figure 4.1, the student

has placed the keyboard upside down, oriented a portrait page and is listening to the text-

to-speech feature. In Figure 4.2, another student has propped up a Kindle on a crate and

is resting his head on his hand while reading. Figure 4.3 shows a student reading with a

Kindle propped between his stomach and desk with the device in portrait mode.

Similarly, Figure 4.4 shows a student propping the book between his chest and the desk,

but in landscape mode, and finally, Figure 4.5 shows a student reading with his head in

his hands while resting the book on his desk in portrait mode. Figure 4.6 shows a student

reading on classroom desktop.

Figure 4.1 Using Portrait Orientation, with an upside down keyboard and headphones for the text-to-speech feature
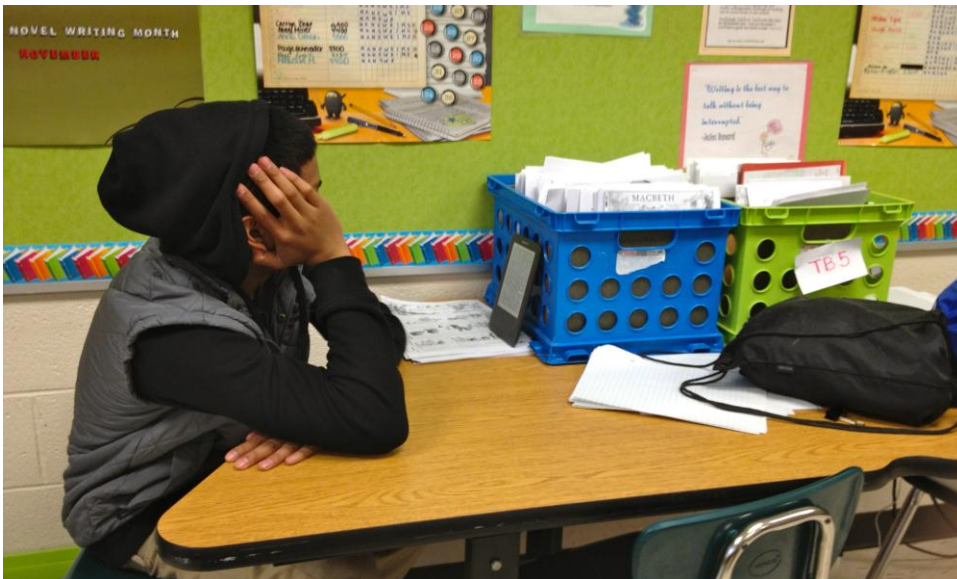
Figure 4.2 Propping the Kindle and Using a Large Font
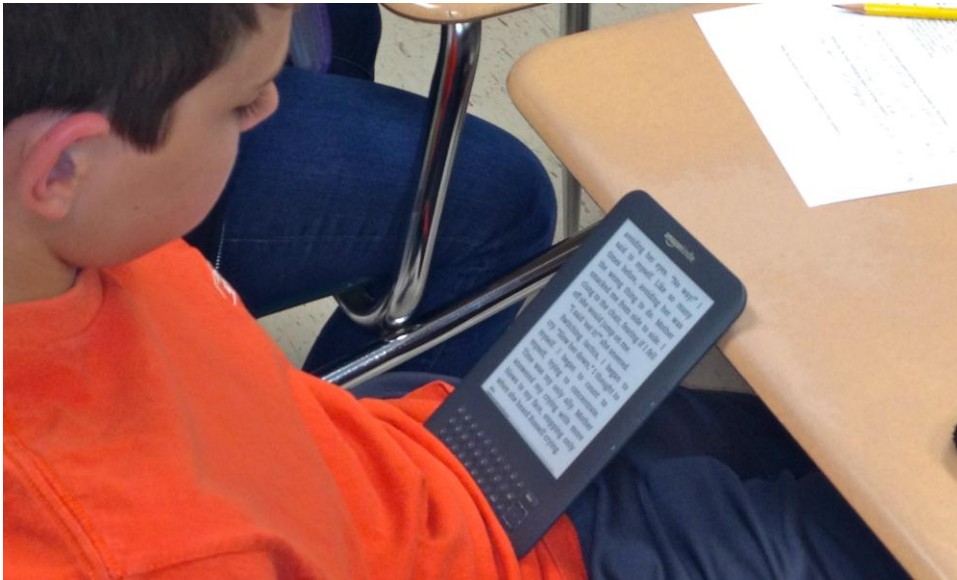
Figure 4.3 Reading with a Kindle propped between stomach and desk with the device in portrait mode
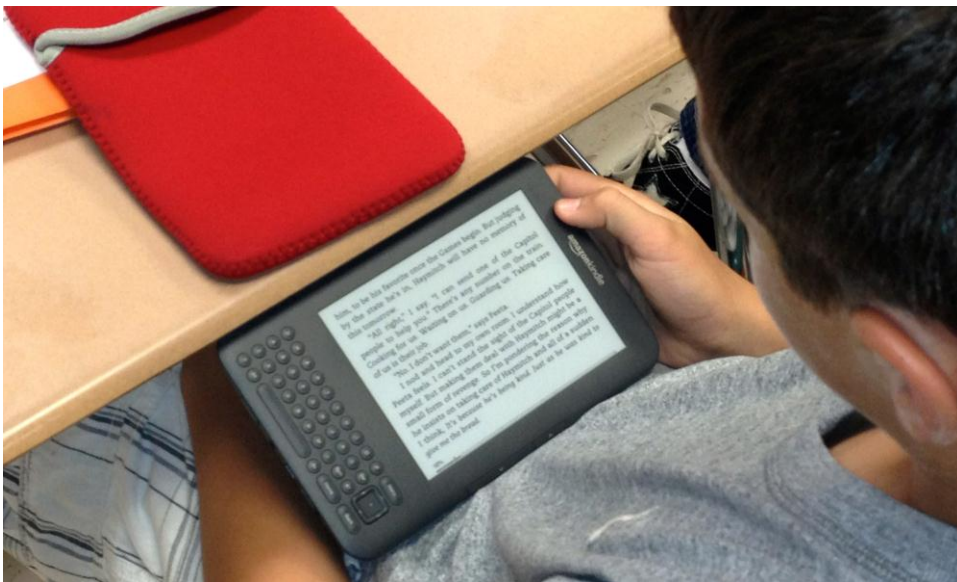
Figure 4.4 Reading with a Kindle propped between chest and desk with the device in portrait mode

Figure 4.5 Reading with head propped in hands, listening to text-to-speech in portrait mode.

Figure 4.6 Reading on classroom desktop

Impediments to the Intervention

In analyzing the qualitative data collected during and after the study, I identified multiple factors that impeded the efficiency of the study. Most of the issues had to do with managing the use of the devices. First and foremost was the problem of students losing or breaking the devices. The Kindles were relatively expensive compared to a paperback book. During the study, I had to mail back 17 devices to Amazon, and a student lost a Kindle that was never recovered. It was time consuming to have to have online chat or call the company to exchange them. Depending on the representative the returns took between fifteen and forty-five minutes. The constant outgoing and incoming of the new and damaged Kindles also made it confusing to keep track of which students were using devices at any given time.

Another concern was that it was difficult to keep track of which books were downloaded on the devices. Keeping track of multiple accounts was confusing. Amazon allowed 6 devices per email address, so it was necessary to have two Amazon accounts. One account had six of the devices and the other with four. Sending back a device or multiple devices in a week made it difficult to sort out which devices were assigned which account.

Another device management concern was the company required that a credit card be linked to each account. The devices came in with the default setting of what is called a "one-click Amazon." This meant that whenever students selected the Amazon store and searched for books, all they had to do was click the purchase button and the book was purchased and downloaded onto the device. Only one student purchased an unauthorized item during the study.

Another impediment that came up during the intervention had to do with accessing the internet. The students did not have access to the school's Wi-Fi network on the devices, so they could not access the internet to look up background information. Also, even if I logged on to each device using the school's teacher password, browsing websites was very cumbersome on the devices because the screen had to be navigated with buttons on the keyboard rather than a touchscreen or mouse.

Modifications to the Intervention

During the course of the study, I had to make some modifications to improve the intervention. Formative design experiments allow for modification of the instructional intervention in response to data collected in order to improve the effectiveness of the intervention (Reinking & Bradley, 2008). One modification that I made was providing explicit instruction on how to use the features of the device. I realized early in the study that students did not know how to change the font and orientation of the text, use the text-to-speech feature, or access the online dictionary features. I had thought a whole class demonstration would be enough. However, what I observed was that the students were not using the features and they didn't know how, so I had to conference with each student about how to use the device and model the features for them individually. After conferencing with the students, they experimented with each of the features and used them. I am not sure they would have used the features without explicit instruction.

When the study first began, I wanted to be in charge of downloading the books onto the devices for the students, but it was too time consuming and students would end up waiting half the period for me to get through the line of students who wanted to new

books. To make the process of obtaining new titles more efficient, I showed students how to download the books themselves, but they had to ask permission.

Another change I made during the study was allowing students to search for their own titles on Amazon. Initially, I did not want them to go onto the website because I was nervous that they would purchase titles without permission and possibly end up reading inappropriate material. Another concern I had was students would be exposed to inappropriate advertisements while searching on Amazon. Since the website is not blocked by the school's internet filter, the website is not monitored for questionable content. I decided after a couple of weeks that the benefits of students shopping for their own books outweighed the risks of exposure to advertisements. The students seemed to really enjoy browsing through books and choosing titles, and it was helpful as teacher and researcher to see what prompted them to select a book when they had thousands to choose from. Once they were allowed to select their own titles, the students preferred browsing for books on a classroom desktop rather than on their individual device. When I asked about their choice during conferences, they liked seeing a large color version of the cover page and that it was easier to read reviews on the desktop. Each of the participants chose at least one book from the online Amazon store to read.

Phase 5: Post-Intervention Quantitative Data and Final Interviews

Post-Intervention Quantitative Data

Individual Findings

Ryan

On the *Metacognitive Awareness of Reading Strategies Inventory* (MARSI)(Mokhtari& Reichard, 2002, see Appendix D), which measured his perceived use of reading strategies, Ryan's perceived use of reading strategies went down in two categories and up in one. His use of global strategies went up from a mean score of 3.9 to a 4. However, his mean score for problem solving strategies went from a 5 to a 4.63, and his use of support strategies dropped from a 134 to a 128. His overall mean dropped from a 4.46 to a 4.27. On the MRP, *Adolescent Motivation to Read Profile* (MRP) (Pitcher et al, 2007, see appendix B), which measured his motivations for reading, Ryan's self-concept score went from a 77.5% to a 72.5%. His value of reading score also dropped from a 70% to a 60%. This brought overall MRP score from a 73.75% to a 68.5%. On the *Reading Engagement Index* (Guthrie et al., 2007), a teacher survey completed by the classroom intervention specialist, Ryan's score increased slightly with a score of 28 on the pre-assessment and 29 on the post-assessment. His scores remained the same in all categories except reads favorite topics and authors where he went from a 3 to a 4. The final baseline quantitative measure used was the *Motivations for Reading Questionnaire* (MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a four-point scale to measure how to students are motivated to read for efficacy, challenge, curiosity, enjoyment, importance, compliance, grades, recognition, work avoidance, social and competition. On the MRQ subcategories some of Ryan's scores went up, some remained the same and some went down. Ryan's scores increased from a 3 to 3.33 for his motivation to read for curiosity, reading for enjoyment went up from a 2.83 to a 3, reading for compliance went from a 2,8 to a 3.2,

Andrew

On the *Metacognitive Awareness of Reading Strategies Inventory* (MARSI)(Mokhtari& Reichard, 2002, see Appendix D), which measured his perceived use of reading strategies, Andrew's perceived use of reading strategies went down in every category. His overall mean dropped from a 1.57 to a 1.43. On the MRP, *Adolescent Motivation to Read Profile* (MRP)(Pitcher et al, 2007, see appendix B), which measured his motivations for reading, Andrew's self-concept score went up 7.5% while his value of reading score went down 5%. This brought his overall post-assessment score to 1.25% points higher than his pre-assessment score. On the *Reading Engagement Index* (Guthrie et al., 2007), a teacher survey completed by the classroom intervention specialist, Andrew's scores increased in every category except enjoys discussing books with peers where he dropped a point. His overall score went from a 17 to a 21. The final baseline quantitative measure used was the *Motivations for Reading Questionnaire* (MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a four-point scale to measure how to students are motivated to read for efficacy, challenge, curiosity, enjoyment, importance, compliance, grades, recognition, work avoidance, social and competition. On the MRQ Andrew's scores went up in some subcategories and down in others. His motivations for reading for efficacy and enjoyment went up while reading for challenge, curiosity, importance, compliance, grades and recognition all went down. His score for work avoidance went down which is a positive sign of improved reading engagement. Andrew's motivation for competition score remained the same.

Jack

On the *Metacognitive Awareness of Reading Strategies Inventory*

(MARSI)(Mokhtari& Reichard, 2002, see Appendix D), which measured his perceived

use of reading strategies, Jack's perceived use of reading strategies went down in the

global and problem solving, but went up slightly in the support subcategory. His overall

mean dropped from a 1.93 to a 1.8. On the MRP, *Adolescent Motivation to Read Profile*

(MRP)(Pitcher et al, 2007, see appendix B), which measured his motivations for reading,

Jack's self-concept score went down 2.5% while his value of reading score went up 7.5%.

This brought his overall post-assessment score up 1% from his pre-assessment score. On

the *Reading Engagement Index* (Guthrie et al., 2007), a teacher survey completed by the

classroom intervention specialist, Jack's overall score remained an 18. His scores

increased in multiple categories including reads independently and reads favorite topics

and authors. His scores went down in the categories of a confident reader, thinks deeply

about content of texts and enjoys discussing books with peers. His scores did not change

on the subcategories of easily distracted, works hard in reading or used comprehension

strategies well.

The final baseline quantitative measure used was the *Motivations for Reading*

Questionnaire (MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a

four-point scale to measure how to students are motivated to read for efficacy, challenge,

curiosity, enjoyment, importance, compliance, grades, recognition, work avoidance,

social and competition. On the MRQ some of Jack's subcategory scores went up, some

went down, and some remained the same. Jack's scores for reading for challenge and

compliance each went up slightly from a 1.6 to 2.2 and a 1.2 to a 1.8 respectively. His

subcategory scores remained a 1.75 for efficacy, a 2 for enjoyment, a 1.5 for importance, a 1 for social and a 2 for competition. His subcategory scores for his motivation to read for curiosity went down from a 2 to a 1.67, his motivation to read for grades went from a 2 to a 1.25, and his motivation to read for recognition dropped from a 1.6 to a 1.4. Jack's score for work avoidance went up from a 2.75 to a 3.75 ,which is a negative indication of reading engagement.

Max

On the *Metacognitive Awareness of Reading Strategies Inventory* (MARSI) (Mokhtari& Reichard, 2002, see Appendix D), which measured his perceived use of reading strategies, Max had relatively large increases. His perceived use of reading strategies went up in each subcategory. Initially his mean score was a 1 in each category on the pre-assessment, and on the post assessment he scored a 2.38 for global reading strategies, a 2.88 for problem solving strategies and a 1.66 for support strategies. His overall mean increased from a 1 to a 2.3. On the MRP, *Adolescent Motivation to Read Profile* (MRP)(Pitcher et al, 2007, see appendix B), which measured his motivations for reading, post-assessment Max's self-concept score went up 4.6% while his value of reading score went up 27.5%. This brought his overall post-assessment score up 26.25% from his pre-assessment score. On the *Reading Engagement Index* (Guthrie et al., 2007), a teacher survey completed by the classroom intervention specialist, Max's post-intervention score was 22 compared to 17 on the pre-test. Max's scores increased for reads independently, reads favorite topics and authors and works hard in reading. His scores went down in the category of enjoys discussing books with peers. His score for using comprehension strategies, being a confident reader and thinking deeply about the

text remained the same. The final baseline quantitative measure used was the *Motivations for Reading Questionnaire* (MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a four-point scale to measure how to students are motivated to read for efficacy, challenge, curiosity, enjoyment, importance, compliance, grades, recognition, work avoidance, social and competition. On the MRQ some of Max's scores on the subcategories went up while others dropped and a couple remained the same. Max's scores on the subcategories of reading for enjoyment, reading for importance and reading for competition increased by 0.14, 0.5 and 0.17 points respectively. Max's scores remained the same for the subcategories with a score of 2 for reading for grades and 1 for reading for social reasons. Max's scores dropped from a 1.25 to 1 in the efficacy category, a 1.8 to 1.6 in the challenge category, a 2 to a 1.8 for reading for compliance, and 2 to a 1.2 for reading for recognition. Max's score for reading work avoidance also went up from a 3.25 to a 3.5 which a negative growth in reading engagement.

Nick

On the *Metacognitive Awareness of Reading Strategies Inventory* (MARSI) (Mokhtari& Reichard, 2002, see Appendix D), which measured his perceived use of reading strategies, Nick's perceived use of reading strategies increased in two categories and dropped in one. His score on the global and support categories went up, while his problem solving score went from a 4.3 to a 3.25. On the MRP, *Adolescent Motivation to Read Profile* (MRP)(Pitcher et al, 2007, see appendix B), which measured his motivations for reading Nick's self-concept score went down 10% while his value of reading score also went down 10%. This brought his overall post-assessment score down 10% from his pre-assessment score. On the *Reading Engagement Index* (Guthrie et al.,

2007), a teacher survey completed by the classroom intervention specialist, Nick's post-assessment score of 24 was slightly higher than his pre-assessment score of 22. Nick's scores went up 1 point each in the categories of reads independently, a confident reader, uses comprehension strategies well and thinks deeply about the text. He went down 1 point in the subcategories of enjoys discussing book with peers and works hard in reading. The final baseline quantitative measure used was the *Motivations for Reading Questionnaire* (MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a four-point scale to measure how to students are motivated to read for efficacy, challenge, curiosity, enjoyment, importance, compliance, grades, recognition, work avoidance, social and competition. On the MRQ, Nick's scores went up in most subcategories and remained the same or dropped in a couple. Nick's scores rose 0.25 points for reading for efficacy, 0.8 points for reading for challenge, 0.67 points for reading for curiosity, 1 point for reading for enjoyment, 1.5 points for reading for grades and 0.5 points for reading for competition. His scores remained the same for reading for importance, social reasons and recognition each with a score of 1. Finally, Nick's scores fell from a 2 to 1 for reading for compliance and a 2.5 to a 1.75 for reading for work avoidance, which both could be considered positive signs of reading engagement.

Claire

On the *Metacognitive Awareness of Reading Strategies Inventory* (MARSI) (Mokhtari& Reichard, 2002, see Appendix D), which measured her perceived use of reading strategies, Claire's score for her perceived use of reading strategies went up in each of the three subcategories including global, problem solving and support strategies. Her overall mean increased from a 2.63 to a 3.13. On the MRP, *Adolescent Motivation to*

Read Profile (MRP)(Pitcher et al, 2007, see appendix B), which measured her

motivations for reading, Claire's self-concept score went up 5% while her value of

reading score stayed the same at 62.5%. This brought her overall post-assessment score

up 3.75% from her pre-assessment score. On the *Reading Engagement Index* (Guthrie et

al., 2007), a teacher survey completed by the classroom intervention specialist,, Claire's

score increased the most with a score of 18 on the pre-assessment and 29 on the post-

assessment. Her scores went up at least two points in every category except easily

distracted in reading. Her greatest gains were in reads independently where she went

from a 1 to 5 and reads favorite topics and authors where she went from a 1 to a 4. The

final baseline quantitative measure used was the *Motivations for Reading Questionnaire*

(MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a four-point scale to

measure how to students are motivated to read for efficacy, challenge, curiosity,

enjoyment, importance, compliance, grades, recognition, work avoidance, social and

competition. On the MRQ Claire's scores went up in most subcategories and fell in two.

Claire had increases of 1.5 points in reading efficacy, 1.1 points in reading for curiosity,

1.2 points in reading for enjoyment, 0.4 points in reading for compliance, 0.8 points in

reading for recognition and 0.17 points for reading for competition. Her scores dropped

0.5 points for reading for importance, and 0.57 points for reading for social reasons. Her

scores remained the same in the subcategories of with a score of 2 for reading for

challenge and a score of 1.75 for reading for grades. Claire's work avoidance score rose

from a 3.25 to a 4, which shows a decrease in engagement.

Post Intervention Group Quantitative Data

In order to gain an understanding of each student's reading engagement, I used multiple quantitative measurements and collected pre-and post-intervention results. .I looked at the students' scores individually, which was discussed above, and to help quantify the success of the intervention, I also looked at the changes to student scores on each measurement as a whole, and ran paired sample t-tests on the pre and posttest gains to identify any significant changes.

REI

On the teacher survey completed by the classroom intervention specialist called the *Reading Engagement Index,* see Table 4.1 (Guthrie et al., 2007), the average student score before the intervention was an 18.4 with a standard deviation of 1.85. The highest possible score was a 32. In the post intervention the average score was a 22.80 with a standard deviation of 3.66. In a paired-sample t-test, the overall change was considered statistically significant with the probability being less than or equal to .03. The post assessment produced both positive and negative results in the subcategories. Negative results included that on the post-assessment, the students' scores went down an average of .80 points for "enjoys discussing books with peers." Also, students' scores for "easily distracted during independent reading" went up by .40 points. In every other category on the measurement related to positive signs of reading engagement including "Reads Independently", "Reads Favorite Topics and Authors", "Works Hard in Reading", "A Confident Reader" and "Uses Comprehension Strategies Well", students' scores went up. Subcategories for the REI that were found to be statistically significant included the increase from a 1.2 to a 2.0 for "reads independently", an increase from a 1.2 to a 1.8 for

"has favorite authors", and finally an increase from a 2.6 to a 3.2 for "uses reading

strategies well." Table 4.5 shows the mean and standard deviations for the pre and

posttests as well as the gains in each subcategory.

Table 4.5

Means and Standard Deviations for Students' Scores on Reading Engagement Index

	Pre	**Post**	**Gain**
Reads Independently	1.20 (.40)	3.20 (.98)	2.00*
Reads Favorite Topics and Authors	1.20 (.40)	3.00 (.63)	1.80**
Easily Distracted in self-selected reading	2.20 (.40)	2.60 (1.02)	.40
Works Hard in Reading	2.80 (.75)	3.00 (.89)	.20
A Confident Reader	2.80 (.40)	3.00 (.89)	.20
Uses Comprehension Strategies Well	2.60 (.49)	3.20 (.40)	.60*
Thinks Deeply about the content of texts	2.60 (.49)	3.20 (.75)	.60
Enjoys Discussing Books with Peers	3.00 (.00)	2.20 (.98)	-.80
Total	18.40 (1.85)	22.80 (3.66)	4.40*

*p<.05   **p<.01*

On the MRP, *Adolescent Motivation to Read Profile* (MRP)(Pitcher et al, 2007, see appendix B), which measured motivations for self-concept as a reader and value of reading a paired sample t-test showed increases, but none were considered statistically significant at the .05 level. The average student score on the pre-assessment for self-concept was a 59.08 with a standard deviation of a 19.83. On the post-assessment the

average student score went up to a 60 with a standard deviation of .92. Also on the pre-

assessment the average student score for value of reading was 43, with a standard

deviation of 11.66. That score went up to an average score of 47.05 with a standard

deviation of 12.0. Finally, the average overall percentage was a 51 with a standard

deviation of 12.43 for the pre-assessment and a 53.25 on the post-assessment with a

standard deviation of 7.53. Table 4.6 shows the mean and standard deviations for the pre

and posttests as well as the gains in each subcategory.

Table 4.6

Means and Standard Deviations for Students' Scores on Motivation to Read Profile

	Pre	**Post**	**Gain**
Self-Concept Raw	23.6 (8.73)	24 (6.28)	0.40
Self-Concept %	59.08 (22.17)	60 (15.71)	0.92
Value Raw	17.2 (5.22)	18.6 (4.98)	1.40
Value %	43 (13.04)	47.05 (12.10)	4.05
Full Raw	40.8 (11.12)	42.6 (6.02)	1.80
Full %	51 (13.90)	53.25 (7.53)	2.25

*$p<.05$

A paired sample t-test of the pre and post assessment for the *Metacognitive Awareness of Reading Strategies Inventory* (MARSI) resulted in slight increases in every subcategory including one that was statistically significant. The MARSI is tool used to measure the students' perceived use of reading strategies (Mokhtari& Reichard, 2002, see Appendix D). The measurement divides reading strategies into three categories including global strategies, problem solving strategies and support strategies. On the pre-assessment the global reading mean was a 2.05 with a standard deviation of .7, on the post-assessment, that score went up to 2.3 with a standard deviation of .61. The mean score for perceived use of problem solving strategies was a 2.76 with a standard deviation of 1.24 on the post-assessment, that score went up to a 2.86 with a standard deviation of .89. On the pre-assessment, the mean score for perceived use of support strategies was a 1.44 with a standard deviation of .43, the mean went up to 1.95 with a standard deviation of .68 on the post-assessment. The change in mean on the perceived use of support reading strategies was statistically significant at p< .04. Finally, the overall mean of the participants' perceived use of reading strategies was a 1.98, with a standard deviation of .66. the overall mean increased to a 2.32 average with standard deviation of .65. These averages seem to indicate that, as a group, in each category, the students slightly increased their perception of their use of reading strategies. Table 4.7 shows the mean and standard deviations for the pre and posttests as well as the gains in each subcategory.

Table 4.7

Means and Standard Deviations for Students' Scores on Metacognitive Awareness Reading Strategies Inventory

	Pre Mean	**Post Mean**	**Gain**
Global Reading Strategies	26.40 (8.87)	30.00 (7.95)	3.60*
Global Reading Strategies Mean	2.05 (.70)	2.30 (.61)	0.25*
Problem Solving Strategies	22.00 (9.80)	22.60 (6.71)	0.60*
Problem Solving Strategies Mean	2.76 (1.24)	2.86 (.89)	0.10*
Support Reading Strategies	13.00 (3.79)	17.00 (5.22)	4.00*
Support Reading Strategies Mean	1.44 (.43)	1.95 (.68)	0.51*
Overall Score	59.40 (19.81)	69.60 (19.42)	10.20
Overall Mean	1.98 (.66)	2.32 (0.65)	0.34

*$p<.05$

The final baseline quantitative measure used was the *Motivations for Reading Questionnaire* (MRQ) (Wigfield & Guthrie, 1997, see appendix J). The MRQ uses a four-point scale to measure how to students are motivated to read for efficacy, challenge, curiosity, enjoyment, importance, compliance, grades, recognition, work avoidance, social and competition. Students went up in five categories including reading for efficacy, challenge, enjoyment, work avoidance and competition. An increase in work avoidance is negative and indicates a drop in reading engagement. Students' scores went down in six categories including reading for curiosity, importance, compliance, grades, recognition and reading for social reasons. In a paired sample t-test, the students increase in reading for enjoyment and competition were both considered statistically significant at p<.05 and p<.4 respectively. Table 4.8 shows the mean and standard deviations for the pre and posttests as well as the gains in each subcategory.

Table 4.8

Means and Standard Deviations for Students' Scores on the Motivations to Read Questionnaire

	Pre	**Post**	**Gain**
Efficacy	1.75 (.64)	2.15 (0.76)	0.40
Challenge	1.76 (.57)	1.88 (0.54)	0.12
Curiosity	1.95 (.60)	1.94 (0.81)	-0.01
Enjoyment	1.61 (.55)	2.09 (0.84)	0.48*
Importance	1.90 (1.02)	1.70 (0.57)	-0.20
Compliance	2.16 (.73)	1.96 (0.68)	-0.20
Grades	2.10 (1.01)	1.85 (0.45)	-0.25
Recognition	2.00 (0.76)	1.88 (0.97)	-0.12
Work Avoidance	3.00 (0.35)	3.15 (0.91)	0.15
Social	1.17 (0.38)	1.06 (0.13)	-0.11
Competition	1.70 (0.65)	1.89 (0.55)	0.20*

*p<.05

Summary of Quantitative Results

Participants in the study showed gains on each of the four quantitative

assessments in the post assessment. On the *Adolescent Motivation to Read Profile*

students mean scores went up in both of subcategories. Although neither increase was

considered statistically significant. On the Metacognitive Awareness of Reading

Strategies post-assessment, students also showed gains in each of the three subcategories

with one category, using support strategies, being statistically significant. On *Reading*

Engagement Index participants showed an overall gain in their score, with statistically

significant increases for the subcategories of *reads favorite topics and authors, reads*

independently and *uses reading strategies well*. Finally, on the *Motivations to Read*

Questionnaire participants had overall gains on the assessment because the increases in

most subcategories outnumbered the decreases in other subcategories. The subcategory of

reads for enjoyment showed a statistically significant increase as did the subcategory of

reads for competition.

Final Interviews

Final Illustrations

Before their final interviews, students were asked to illustrate how they felt about

reading a traditional text and how they felt about reading an electronic text. In a side by

side comparison (see Appendix I), students seemed to feel more positively about reading

on the electronic devices. This was explored further in their last interviews.

Claire

At the end of the study, Claire reported that she liked that the Kindle can define words, and that occasionally she liked using the text-to-speech feature to help with new vocabulary words. Although she did not like the voice used for text-to-speech, Claire reported that she felt it was easier to read on a Kindle than in traditional print form. At our last reading conference when I discussed with Claire that she had reported reading six books during her seventh grade year and twelve during her eighth grade year. She did attribute the increase in the number of books she read to using a Kindle. She commented, "Last year our very old teacher gave us old and boring books. This year our young teacher gave us good and interesting books." In her final interview Claire also stated said she would not like to use a Kindle borrowed from a teacher again because she was very scared that she would lose it or break it.

Nick

In the final interview, when Nick shared more about how he felt about using the Kindle in general and what the positives and negatives were, there were changes. Nick added that he liked that, "you can look up the words that you don't understand right then and there when you're reading." He also shared that he still enjoyed listening to the books, but that he disliked that it is not a normal book. He stated, "I like regular books better. I would recommend it to other kids because there are good things about it, but I just don't enjoy it as much as a book." Nick also shared in his interview that, "I like whole class novels better than independent reading. I like when all of us are on the same page and doing the same thing. I also feel like I am not behind as we all move together."

Max

By the end of the study, Max's enthusiasm for using the device increased. In his final interview he stated, "I would use it again. I really liked that it read to me. It's easier to read than a book. The Kindle is a very cool reading device that has a dictionary in it." When I asked if there was anything that bothered him about reading on the Kindle he said there was nothing he disliked, and that "I like that it reads to you. I like that you can change the font size." Max's overall enthusiasm for reading also improved. He stated that he enjoyed reading more in eighth grade than he did in seventh grade and more in the second half of eighth grade than in the first.

Ryan

By the end of the study, Ryan considered himself an engaged reader as did the intervention specialist and I. He stated, "I enjoy reading more this year than I did last year." With regard to the Kindle he reported that he liked that the Kindle was light and fun and he said there was nothing he disliked about the device. He said he would recommend them because "It's a lighter, easier, faster way to read."

Andrew

Andrew's reading engagement increased during the study. In his final interview Andrew stated, "My attitude toward reading got better from last year because I can focus and understand books better now."

Jack

In our final interview when I asked Jack about how he felt about the Kindle he said, "It's better than a book. Somehow it makes reading easier." He also talked again about how he liked that there was no "book feel." He mentioned it could hold many books, and that he really liked that it was less work to turn the pages. When I asked him what he felt the downsides of using an electronic reader were, he said he didn't like that it

could break, and said "I also didn't like that it was still a book." When we discussed his reading engagement in general Jack stated, "My attitude toward reading this year and last year is the same. I don't like reading."

Chapter 5: Discussions

This chapter will review the study and further analyze the results. It will situate the findings of the research within the context of engagement theory and previously published related studies. It will outline the limitations of the study and offer recommendations for future study. Finally, there will be implications for classroom practice.

Purpose of Study

As the use of e-readers becomes commonplace and more affordable, they will make their way into the hands of students. This research provides information about how the devices can be used as a tool to improve adolescent students' reading engagement and also helps to identify the struggles and pitfalls educators may face in implementing classroom use of e-readers.

The purpose of this study was to explore how electronic reading devices impact adolescent engagement with assigned school reading. Participants in this intervention included six reluctant readers. Reluctant readers were defined as readers who fall into one of two categories, either those who can read well but do not enjoy it, or those who find reading challenging and avoid it whenever they can (Gunter & Kenny, 2008). The two research questions this study sought to answer were:

1. How does the use of e-readers for assigned school reading impact adolescent students' reading engagement?

2. What benefits, struggles or pitfalls does a formative experiment identify that educators may experience in implementing classroom use of the devices?

Situating the Study in Theory

This study was situated in engagement theory. According to Guthrie and Alvermann (1999), the multifaceted reading engagement theory focuses on the "knowledge and understanding of 'why' people choose to read" rather than the how (p. 17). Guthrie (2000) describes engaged readers as those who are motivated to learn and achieve, apply reading strategies for comprehension and conceptual knowledge, and who are part of a supportive literate community. Reading engagement includes a dynamic interplay of a reader's cognitive competence, motivation, and social interaction (Guthrie & Davis, 2003).

As part of the reading engagement theory Guthrie (2001) identified what he calls the engagement processes of the reader. The engagement processes include *motivation, strategy use, social interaction* and *conceptual knowledge*. The theory includes an explanation for each of the terms based on the previous empirical and theoretical work of others. *Motivation* includes "goals, intrinsic and extrinsic motivation, self-efficacy and social motivation" (p. 9) and is a process that "propels students to choose to read and to use cognitive strategies to comprehend." *Strategy use* is a process that involves "students use of multiple cognitive processes including comprehending, self-monitoring, and constructing understanding and beliefs during reading" (p.9). The *conceptual knowledge* process refers to the research that demonstrates that reading is knowledge driven. "Finally in this middle layer, the *social interaction* process includes "collaborative practices of learners in a community and the students' social goals in the classroom" (p.9). Reading engagement is dynamic and the four processes *motivation, strategy use, conceptual understanding* and *social interaction* are interrelated (Guthrie and Alvermann,

1999). According to the theory, if students' motivation improves, their use of strategies can improve, their conceptual knowledge can be enhanced as well their textual based social interactions. However, if students have weak strategic skills, it could negatively impact the other processes. My thought was that introducing e-reading devices into the classroom as an intervention had the potential to impact each of the reading engagement processes and possibly enhance the students' overall reading engagement.

Summary of Methodology

This study employed the six phases of a formative experiment (Reinking & Bradley, 2008; Reinking & Watkins, 2000). In addition to beginning with specific research questions and seeking to answer them, formative experiments focus also on documenting and analyzing the process while attempting to achieve the valued pedagogical goal. Formative design experiments are guided by broad questions aimed at revealing how the intervention was implemented to achieve the goal and also allow researchers to make and describe justifiable changes to the intervention in order to achieve the pedagogical goal (Reinking & Bradley, 2008). For this formative experiment, the pedagogical goal was to improve student engagement with independent reading and the intervention was the student use of electronic readers.

Setting

The study took place in central New Jersey with students from a large regionalized middle school that pulls from three local, suburban communities. There is diversity in every aspect of the community population including religion, ethnic background and socio-economic status. Socio-economic status varies widely. There is a large population of residents who work in various levels for the local pharmaceutical,

telecommunications and financial industries and there is also a high, professional

commuting population as well as a large population of residents who work in the retail

and service industries. This regional school includes grades 7 and 8.

This study employed purposeful and convenience sampling (Patton, 1990) to

select the participants. The sample is purposeful because I chose possible participants

who met specific criteria in that the student needed to have a history of being a reluctant

reader, be willing to be observed and interviewed, and be willing to use an electronic

reading device to complete classroom reading assignments. The sample was one of

convenience (Patton, 1990) since all possible samples were students who were a part of a

specific section of my 2011-2012 class of eighth grade students. I selected the class

because the eighth grade literacy intervention specialist worked in the classroom during

instructional time.

Selection of Participants

Twenty-two students comprised the eighth grade classroom at the beginning of

the study, twelve males and ten females. No students were added or dropped from the

course during the study. Twenty of the students were classified as Caucasian and two as

Latino. Four students were on free or reduced lunch. Permission forms were sent home to

all students' parents to follow Institutional Review Board (IRB) instructions. All

students returned the parent permission form. All students in the classroom had access to

e-reading devices at various points in the study.

The study focused on six students because of the large amount of qualitative data

that was collected. I selected six students from a range of reading abilities with the least

interest in reading outside of school and in the classroom. I chose students based on pre-

intervention data including quantitative assessments, input from the intervention specialist and my understanding of the students as the classroom teacher. I purposely selected both students who were and were not part of the district's response to intervention program. While I wanted to get more of a balanced gender representation, only one girl in the entire classroom had a true history of being a reluctant reader, and so she was the only girl included in the study.

Data Collection and Analysis

This study employed both qualitative and quantitative data to help determine if using the e-reading devices improved student reading engagement. I collected both quantitative and qualitative data prior to and after implementation of the e-reader intervention to establish a baseline of the students' reading engagement and to determine any changes. I analyzed quantitative data using paired- samples t-test for the following measures: *Reading Engagement Index* (Guthrie et al., 2007), *Adolescent Motivation to Read Profile* (Pitcher et al., 2007), *Metacognitive Awareness of Reading Strategies Inventory* (Mokhtari& Reichard, 2002) and *The Motivations for Reading Questionnaire* (Wigfield & Guthrie, 1997). Additionally, I collected qualitative data throughout the intervention. I coded qualitative data for recurring themes derived from the following sources: classroom observation and field notes, teacher reflective journal, student and intervention specialist interviews and student written reflections.

Validity

When conducting this formative experiment, I considered both systemic and consequential validity (Reinking & Bradley, 2008). In order for the study to be systemically valid, there needs to be a "close alignment of theory, research and practice" (p. 54). A formative design experiment should be "theoretical, goal oriented intervention

centered, adaptive and iterative, transformative, methodologically inclusive and pragmatic" in order to have consequential validity (p. 54). I designed this study using theory and research to explore the issue of adolescent engagement with text and to determine how the use of electronic devices could potentially serve as an effective intervention. I worked to conduct this study with careful consideration of theory and research at each phase of the design experiment in order to maintain systemic and consequential validity.

Throughout the research stages in Phases 2, 3 and 4, I had participants take part in member checks (Creswell, 2007) to ensure that the qualitative data accurately represented their thoughts and feelings.

In addition, all of the quantitative instruments to be used had formal assessments of their validity and had been determined to be valid measurements. *The Adolescent Motivation to Read Profile* (Pitcher et al., 2007) was derived from the *Motivation to Read Profile* (Gambrell et al., 1996). The original instrument was field tested to enhance both its validity and reliability. During field tests, more than 100 test items were critiqued for their construct validity relating to reading value or self-concept until one hundred percent agreement was reached. Items were placed into categories measuring self-concept and value of reading and the only items included in the final study were those that received one hundred percent teacher agreement. When adapting the *Motivation to Read Profile* (Gambrell et al., 1996) for adolescent use to create the Adolescent Motivation to Read Profile (Pitcher et al., 2007), researchers field tested the profile using eleven researchers at eight sites to administer the reading survey and conversational interview. To ensure reliability and validity, participants included teenage students from public, charter,

alternative, and government-sponsored schools across the geographic areas of the United States including students from the West, Southwest, Northeast, Midatlantic, Southeast and the Caribbean. Researchers administered surveys to 384 adolescents and then completed approximately 100 interviews with the teenage students. For the *Metacognitive Awareness of Reading Strategies Inventory* (Mokhtari& Reichard, 2002) researchers completed a pilot study of using a sample of 443 students in grades six through twelve to test the reliability and validity of their final instrument. The researchers determined that the "psychometric data demonstrate that the instrument is a reliable and valid measure for assessing students' metacognitive awareness and perceived use of reading strategies while reading for academic purposes" (p. 264). The researchers also determined that "the instrument is ready to be used as a tool for assessing students' metacognitive awareness of reading strategies while reading" (p. 265). Researchers Wigfield and Guthrie (1997) conducted a factor analysis to test the validity of their *Motivations to Read Questionnaire*. Their findings demonstrated that there was construct validity evidence for each of the eleven factors for the 53-item revised MRQ in a study of 4th and 5th grade students. The majority of the reading motivation factors also correlated positively from low- to moderately high levels providing evidence of construct validity. In their field test, Wigfield and Guthrie (1997) also found that the factors "Work Avoidance" and "Competition in Reading" aspect correlated negatively with other factor scores (p. 427). The *Reading Engagement Index* (Guthrie et al., 2007) has also been field tested for validity. In testing the validity researchers (Wigfield, et al., 2008) found in their factor analysis construct validity evidence to support one factor. The measure was positively correlated with achievement. The correlation was found with the Gates-

MacGinitie at the individual student level and also on a separate researcher designed assessment of text comprehension. In addition, Guthrie et al. (2007) found that teacher ratings of individual student reading engagement (on the REI) moderately correlated with the student self-reports of motivation in reading (on the MRQ).

Limitations

Although this study adds to the literature on using technology as a tool to improve adolescent students' reading engagement and formative experiments, the limitations of the study must be considered. One limitation is that this study did not use a control class or group, so there will be no direct comparison to another classroom or group with a similar context that did not participate in the intervention. The lack of a control classroom weakens any conclusions that will be drawn from comparing quantitative data gathered in the baseline and post-intervention phases. Another limitation is that the study lasted only a semester, and findings only revealed a potential short term impact on reading engagement rather than any long term effects.

Conclusions and Implications

In conjunction qualitative and quantitative data indicate that using the devices had a positive impact on student reading engagement. According to the quantitative data collected before and after the study, the intervention did lead to slight increases in the participants' reading engagement. However, it is important to note that in formative experiments, statistical analyses of quantitative data is not necessarily conducted with the intent to establish unequivocal causal relationships. Rather, "they are conducted to support or refute inferences about linkages among certain factors or events" (Reinking & Watkins, 2000). T-tests examined pre and post differences on a) *the Adolescent*

Motivation to Read Profile, b) *Metacognitive Awareness of Reading Strategies Inventory* total score, c) the subscale of Global Reading Strategies, d) the subscale of Problem-Solving Strategies, and e) the subscale of Support Reading Strategies, f) *Reading Engagement Index*, g) The subscales of the *Reading Engagement Index*, h) *Motivations to Read Questionnaire*, i) The subscales of the *Motivations to Read Questionnaire*. Given the number of t-tests that were conducted, an alpha level of .01 was employed in addition to .05. This was to assure that any significant findings were not due, by any chance, to the larger number of tests run. These t-tests were used to demonstrate any differences in scores from pre to post measures for the six participants as a whole group.

As presented in chapter 4, participants in the study showed gains on each of the four quantitative assessments in the post assessment. Although neither increase was considered statistically significant, on the *Adolescent Motivation to Read Profile* students mean scores went up in both of subcategories. Additionally, On the *Metacognitive Awareness of Reading Strategies* post-assessment, students also showed gains in each of the three subcategories with one category, using support strategies, being statistically significant. On the *Reading Engagement Index* participants showed an overall gain in their scores, with statistically significant increases for the subcategories of *reads favorite topics and authors, reads independently* and *uses reading strategies well*. Finally, on the *Motivations to Read Questionnaire* participants had overall gains on the assessment because the increases in most subcategories outnumbered the decreases in other subcategories. The subcategory of *reads for enjoyment* showed a statistically significant increase as did the subcategory of *reads for competition*.

Qualitative findings also indicated that using the devices for assigned school reading helped to improve the students reading engagement. The following themes emerged through observations, interviews and document analysis:

- students were initially very interested in reading on the devices,

- felt reading on a Kindle was easier than reading a book,

- the students liked being able to manipulate the font and orient the text in multiple ways,

- the use of the built in dictionary helped with defining words in context,

- the increased access to books motivated students,

- and they enjoyed using the text-to-speech feature.

Initial Appeal of the Devices

When I first introduced the e-reading devices to students in the class before the study began in the fall, the devices appealed to the students. They were enthusiastic about getting their hands on them and wanted to read using them. The devices probably appealed to the students because they were a novel item in the classroom and because the students had many positive experiences using electronic devices such as iPods and cell phones at home. According to some researchers, using hand held electronic devices in the literacy classroom can help to "bridge students' often disparate worlds" between home and school (Chandler-Olcott 2009, p. 83).

Students Felt E-Readers Make Reading Easier

Multiple students expressed during the study that they felt reading was easier on the Kindle. They reported not knowing why, but just feeling like they could read faster and understand more on the Kindle. This may because of the font size. Researchers in previous studies found that students improved their ability to read books at higher readings levels when the books used a larger sized font (Lowe, 2002). Reading errors were significantly reduced when students used a larger font. Miscue errors improved including misreading syllables or words, skipping syllables, words or lines, rereading lines and ignoring punctuation cues. In addition, students increased their reading rates and tracking capabilities when they used a larger font. In the same study, researchers also found readers improved their ability to chunk text into sections, retain it and understand and that the reduction in miscues reduced anxiety over the process of reading (Lowe, 2002). Researchers have found that there is not a significant difference in speed or comprehension when students read from a screen versus when they read from paper. It is the font size, not the medium that matters (McKnight, Dillon, and Richardson, 1990; Muter and Maurutto, 1991).

Font and Orientation Manipulation Made for a More Pleasurable Reading Experience

After initial instruction on how to manipulate the font and orientation of the text, students enjoyed customizing the appearance of the text in order to become comfortable reading in various positions. As presented in chapter 4, during observations, I noted how much more comfortable students seemed to be when using an electronic reader. My observations were confirmed in interviews with the students. Because students could

change the font and orientation of the text, they had more choices for how to hold and read a book than they would with traditional print texts. The intervention specialist and I both observed that the five boys who participated in this study sat still for longer when they were reading on the devices. It seemed with all of the options, it was easier for each of them to find a comfortable position in the classroom. Similarly, Larson (2009) found in a study of elementary school students using electronic readers that the ability to manipulate the text appearance to their preferences helped to enhance the readers' connection to texts.

Frequent Use of Built In Dictionary

Students used the built-in dictionary on the Kindles frequently during the study. When students read traditional print texts, they rarely got out of their seats to look up a word they didn't understand. However, when using a Kindle, the students reported looking up the meaning of words at least once each time they used the device. This helped them to better understand the meaning of what they were reading and to also learn new vocabulary words. Researchers who studied nine year-olds using electronic devices also found that the students were significantly more likely to use a built-in electronic dictionary than a traditional print dictionary to look up the meaning of words (Grimshaw and Dungworth, 2007). Also, during the study, students requested to use the electronic dictionaries on the devices for vocabulary assignments even when they weren't using them for reading assignments.

Increased Access to Books

One of the most obvious benefits of using the electronic devices in class was the instant access to books. Using the website Amazon.com, it was possible to have access to millions available for purchase. Students could request a book and have it within minutes rather than having to check our school library or waiting for me to purchase the book at the store or for their parents to take them to the library. Using the devices allowed faster access to books that the students wanted to read. As presented in chapter four, each time I recommended a book to the class, at least one of the participants asked to it and was able to start reading the book immediately. For example, during the course of the study, *Ms. Peregrine's School for Peculiar Children*, *The Fourth Stall, Girls Drums and Dangerous Pie,* The *Hunger Games trilogy and Found* were all requested and started before the end of the school day in which I presented them. Also, during the study the local public librarian and school media specialist both came into the classroom and recommended books. Each time participants in the study as well as other students in the class requested a Kindle, so they could start reading a book the same day. Researchers have found repeatedly that when students have access to more books, they are more likely to want to read more (Baker, 2003; Cole, 2002/2003; Ivey, 1999; McQuillan & Au, 2001; Pflaum & Bishop, 2004). The Kindles seem to improve student access to books.

This also added a layer of complication for me as the classroom teacher. Students in the study chose titles from Amazon that they wanted to read that I wouldn't have introduced to them myself. For example, Jack chose *Why Me?* by Sarah Burleton (2010) which was a very graphic novel about child abuse. I told him I would purchase the book if he discussed it with his parents first, and they were fine with him reading it. Allowing

students to browse through all the books available for an e-reading device could expose students to mature more content than they would find in the classroom library or school library.

Text-to-Speech Feature Seemed to Increase Time on Task

Another theme that emerged in the qualitative data was how often the students used the text-to-speech feature. In observations, the active boys who participated in the study were much more absorbed in their books when they used the text-to-speech feature and were able to concentrate for longer periods of time. Many times they turned on the feature and paced in the back or on the side of the classroom while listening to the story. After a few minutes of pacing, they would go back to their seats and continue reading without the feature. In interviews, the same students confirmed that they enjoyed the text-to-speech feature for short intervals. Researchers have found that active boys benefit from movement during class time and that encouraging movement during instructional time can help to improve boys' literacy motivation and engagement. "Movement has been shown to stimulate boys' brains and helps them to better manage their impulsivity...and therefore enhances boys' ability to learn" (Senn, 2012, p. 213). However, some students did complain about the monotone voice of the software. These findings correlated with previous studies. Researchers in previous studies have found that the boys in their study had a deeper engagement with the talking text than traditional text and that reading electronic books helped give the boys confidence in their word reading skills (Chera, Littleton, Wood, 2006). Additionally, researchers in another study found that student reading enjoyment went up slightly when using the narrating feature of electronic text (Grimshaw and Dungworth, 2007). Also, researchers who studied how the

use of Kindles with middle school readers impacted reading engagement found that the text-to-speech feature was helpful for less skilled readers to hear words pronounced, yet they reported that many readers did not enjoy the monotone, robotic voice the devices employ (Miranda, Jackson & Rossi-Williams, 2012).

It is important to note that some researchers and educators might not equate listening to text with reading. However, in this study, students most often read along as they listened to the story. The only times they didn't read along were during the brief intermissions where they paced in the room and then went back to reading along. They only used the text-to-speech feature for brief intervals because of the monotone voice.

Pitfalls

Although the research indicated that the use of Kindles positively impacted the participants' reading engagement, implementing the devices was not without its challenges. Some of those obstacles might deter teachers from using the devices in the classroom. Most of the challenges included were related to managing the devices including that the devices broke easily, it was time consuming to manage the devices and the content, and a credit card had to be attached to the Amazon account in order to purchase books. There were also challenges related to way the devices functioned including the devices quickly became dated and were not conducive to accessing the internet.

One of the most difficult aspects of implementing the intervention was the ease with which the Kindles were broken. Almost weekly, I had to contact a representative at the company to go through a lengthy trouble-shooting process before being told to send back the device for a replacement. Then we had to wait a few days for the replacement to

arrive, charge the device, register it and download the reading material again for the student. This was a time-consuming process and one that might prevent classroom teachers from wanting to take on the responsibility of the devices. As discussed in chapter 4, participants expressed they were reluctant to take the devices home because they did not want to risk breaking them.

An additional challenge, was determining how to manage the content on the devices. Originally, I wanted complete control of selecting and downloading material for the Kindles. I planned to choose and download books in advance and offer students my selections as choices, which is how another study of using Kindles with reluctant readers conducted (Miranda, Jackson & Rossi-Williams, 2012). However, I decided that the benefit of students having millions of books to choose from was worth the risk of allowing them to peruse Amazon on their own.

A final management challenge that might deter classroom implementation was that in order to purchase books and even download free titles, Amazon required that a credit card be linked to the account. Fortunately, I had very trustworthy students who participated in the study. I am not sure it would be prudent or advisable for teachers to link up entire classrooms to Amazon accounts with credit card access. This is something that would have to be worked out before the use of the devices could become widespread for classroom use.

In addition to management issues there were other complications including that the devices quickly became dated . When I purchased the devices over the summer before the study, the devices were the most advanced technology available, and each device cost over $150.00. However, before I even started to collect data around the holiday season,

new devices were available for the same cost as the originals. These new devices included touch screens, backlighting and full color screens. While students were still interested in using the devices I had purchased for the study, multiple students commented that they would have liked to read with touchscreens, backlighting and color. Even conducting a study within a school year did not prevent our equipment from seeming outdated to the students.

An additional pitfall was the devices were not conducive to accessing the internet. One of the features of the device that I thought would appeal to students was that they could click on a word and link to Wikipedia to get more background information, or use Google to search for information. However, students were not allowed access to the school's wireless network. That meant if I wanted the students to access the internet, I would have to log onto each device using my teacher password, which was against the school technology policy. This prevented me from researching how instant access to background information impacted reading engagement.

Finally, I had planned originally to have the students annotate the texts they were reading on the devices. However, the keyboards were cumbersome for the students to type on, and they preferred to handwrite their notes rather than record them on the Kindles.

Changes to the Learning Environment

Reinking and Bradley (2008) describe formative experiments as transformative, "An intervention that is the object of a formative or design experiment is often one that has the potential to positively transform the environment for teaching and learning" (p. 21). In this case, the formative experiment did alter the learning environment.

A major change to the learning environment was the added conversation with students focused on reading engagement. Explaining the purpose of the study to the class, having them complete written surveys, create illustrations and participate in interviews introduced them to the concept of reading engagement and gave them opportunities to consider and discuss it. Students in the classroom had to consider what reading engagement is and how it impacted them as readers.

Another change to the learning environment was that the quantitative methods I used to collect data for the study gave the students, the intervention specialist, parents and me a concrete way to assess and discuss the students' reading engagement. We were able to create a profile of our entire class on each of the four measurements which was helpful for guiding instruction. In addition, we were able to use the data to conference with students and find out if they agreed with the results. Finally, rather than saying in a parent conference, "we feel your student doesn't like to read," we were able to discuss multiple scores on the assessments and have more focused conversations. To make sure students participating in the study did not feel put upon by completing multiple assessments, all students in the class completed the inventories. It was eye-opening to have a profile outlining what was motivating each student in the class to read. For example, we were surprised to learn that some students that we initially thought were engaged readers, were reading only for grades and out of compliance.

Finally, having students illustrate their feelings about reading helped to encourage conversations during reading conferences with students. Students in this study, just as the student in the pilot study, were very honest in their graphic representations. A couple of times when it was difficult to determine their feelings based on the illustration, having the

student explain the illustration lead to an informative reading conference. Having students draw their feelings about reading at multiple points in the study improved my understanding of all of the students in the class as readers and not just the students who participated in the study. In addition, having the students illustrate their feelings about reading, made it very easy to quickly get a sense of who enjoyed reading, who had ambiguous feelings and who was turned off.

Unanticipated Effects

Reinking and Bradley (2008) also suggest that carrying out a formative design experiment in a classroom context can have on unanticipated effects, "Given the complexity of educational contexts and instructional practice, implementing an instructional intervention will invariably produce unanticipated effects and outcomes" (p. 51). They go on to add that some of the unanticipated results "may be neither directly related to the intervention's pedagogical goal nor anticipated by whatever theory guides the instructional intervention." In this case, there were unanticipated results, but in analyzing the data, the results were in line with the theory that guided the intervention.

The unanticipated effect was that each of the students in the study expressed that they strongly preferred whole class reading to independent reading. At first this seems to contradict the available literature on reading engagement which calls for student choice to improve motivation (Baker, 2003; Cole, 2002/2003; Ivey, 1999; McQuillan & Au, 2001; Pflaum & Bishop, 2004). However, in looking at Guthrie's (2001) model of the engagement processes m*otivation, strategy use, social interaction* and *conceptual knowledge*, and considering *social interaction* and *conceptual knowledge* specifically, it makes sense that a whole class reading experience might appeal to students. When

students read the same books as a whole class, there was much social interaction and group activities involved which students enjoyed. In addition, there was more peer and teacher support to help students to better develop their understanding and conceptual knowledge of the texts. The fact that students were able to choose the medium in which to read an assigned text and possibly choose the font and orientation, might have allowed enough choice that students felt a sense of control even in reading a whole class novel.

Implications for the Classroom

As discussed above in the conclusions, students in this study were initially very interested in reading on the devices, felt reading on a Kindle was easier than reading a book, enjoyed being able to manipulate the font and orient the text in multiple ways, the use of the built in dictionary helped with defining words in context, the increased access to books motivated students, and they enjoyed using the text-to-speech feature. For these reasons, classroom teachers may want to consider allowing students to use the devices for assigned reading.

Implementing the devices was not without pitfalls. Before introducing the devices, teachers may want to consider some of the challenges that arose during this study. Most of the difficulties were related to managing the devices and included that the devices broke easily, it was time consuming to manage the devices and the content, and a credit card had to be attached to the Amazon account in order to purchase books. There were also challenges related to way the devices functioned including the devices quickly became dated and were not conducive to accessing the internet because the schools Wi-Fi capabilities was not extended to students. Even if a teacher is not comfortable taking on

the responsibility of a class set of e-readers, they may want to consider allowing students to bring in their own devices or obtaining even just one for classroom use.

In this study, students did not initially use the features of the device until they had explicit instruction on how to use the technology. Initially, I thought a brief whole class demonstration would be sufficient and that the students would learn how to use the features by exploring. In another study of middle school students use of electronic devices researchers reported that the new technology motivated many of the students to explore the devices first and then use them to read (Miranda, Jackson & Rossi-Williams, 2012). In this study, I found students went right to reading rather exploring the features. I observed early in the study that students were not customizing their reading experience because they did not know how to change the font and orientation of the text, use the text-to-speech feature, or access the online dictionary features. When I realized participants and other students in the class were not utilizing the features, I integrated a brief demonstration with each student about how to use the features into their reading conference. In the conferences I introduced the built in dictionary, text-to-speech, font manipulation and annotations. After conferencing with the students, they experimented with each of the features. I am not sure they would have used the features without explicit instruction.

Also, teachers may need to carefully consider how they will allow students use the text-to-speech feature on the devices for assigned reading. Though I anticipated that students would use the text-to-speech feature in the study to hear unfamiliar words pronounced, I did not anticipate that they would want to use the feature so they could move about the room for a few minutes while still sustaining the story they were reading.

The students in this study only used the feature for brief periods of time as a tool to either hear words pronounced or to allow them to move about while still sustaining the story; however, it is possible that students could over use the feature and listen to an entire text rather than read it. In this study, the students did not find the voice natural to listen to, which may have limited their desire to use it for extended periods. As electronic readers and their text-to-speech feature evolve, this is an area that will need consideration for classroom implementation.

Additionally, as described above under changes to the classroom environment, the data collection process of this study seemed to stimulate focused conversations and reflection from students about reading engagement. Teachers might consider using and discussing some of the quantitative reading engagement measurements and surveys with students including the *Reading Engagement Index* (Guthrie et al., 2007), *Adolescent Motivation to Read Profile* (Pitcher et al., 2007), *Metacognitive Awareness of Reading Strategies Inventory* (Mokhtari& Reichard, 2002) and *The Motivations for Reading Questionnaire* (Wigfield & Guthrie, 1997).   Teachers might also consider having students illustrate their feelings about reading to help them contemplate what motivates them to read and to help them consider their engagement as readers (Pflaum & Bishop, 2004). Some illustrations that students created to express their feelings about literature spoke for themselves, as in the pilot study. However, illustrations that were difficult to decipher, helped to stimulate conversation. Teachers may find both quantitative assessments and illustrations helpful tools for understanding their students as readers and for generating conversations with students during reading conferences.

Finally, students in this study expressed enjoyment in having some common reading experiences with all of their classmates. Teachers may want to consider integrating some whole class reading assignments for students. I am not suggesting that teachers replace independent reading with whole class reading. Common reading experiences can be accomplished by having all students in a class occasionally read a common novel, or by having all students read shorter pieces such as short stories or articles. Another option might be to allow students to choose books and work in groups with other students who make the same selection. This would allow students to help each other through a text without requiring the entire class to read the same material.

Recommendations for Future Study

After completing this current study, I have multiple suggestions for future study regarding electronic readers as well as adolescent reading engagement. One suggestion is to conduct a formative design experiment, but to focus the study on engaged rather than reluctant readers and explore how the electronic devices impact the students' reading engagement. Another study that could add to the available literature is an experimental study that compares a group that use e-readers in class to a control group in order to draw more cause and effect type conclusions. It may also be beneficial to conduct a similar study with larger groups of students in a variety of classrooms to help isolate the use of the devices from other instructional practices. In addition, another study that would add to the research is a study that captures multiple teacher perspectives on implementing electronic readers in the classroom in order to better understand how to effectively incorporate them into instruction. Another area that could be further explored is how assessing and discussing reading engagement measurements results with students impacts

their reading engagement. Also, exploring how movement impacts independent adolescents' engagement is another area that could be further explored. Finally, newer, updated devices come out each year, it could be beneficial to see how the features of a color screen, touchscreen device where students could interact more efficiently with the Internet could impact students' reading engagement.

A Final Note: One Step At a Time

Integrating e-reading devices into the classroom alone will not likely transform struggling readers into engaged readers. However, the devices can be a tool for enhancing reading instruction that is already focused on engagement. By definition in order for readers to be engaged, they must have motivation, be strategic, knowledgeable of the material, and socially interactive (Guthrie, 2001). While collecting and analyzing data for this study, I did find that using the devices motivated the students in the study and that some of the features of the devices helped students to be strategic readers. With research painting a grim picture for the outlook of adolescent readers (Sternberg, Kaplan, and Borck, 2007, Snow & Biancarosa, 2003), it seems worth the effort to integrate e-reading devices into the classroom.

Shortly after the completion of this study, a parent wrote an e-mail describing the difficulties her son had with reading engagement:

> Michael has never liked to read, no matter how hard I work to engage him
> (I pick stories of interest, I read to him, we alternate, he reads silently and
> I read the book as well in an attempt to discuss the story, etc. etc., but
> getting him to engage in any of this is like pulling teeth. He will report that
> he hates reading, he becomes extremely overwhelmed and shuts down

(often after reading one or two pages)! He also is a very slow reader, and he will tell me when reading silently, it takes him 40 minutes to read four pages. I have been very concerned and worried about how he moves forward from here!

However, one week in your coteaching class and I see a different child! I am reaching out to say "thank-you." I am not a technology person, so I never thought about getting him a Kindle, and I didn't even realize there were Dr. Who books (his favorite show)! I must tell you, since the first day you gave him that Kindle, he expresses that "he loves reading." His only "hope" now is that you won't read core books. But one step at a time! (personal communication, October, 2012)

Again, I am not suggesting that just giving students books on electronic devices will turn them from reluctant to engaged readers. However, I do think that the devices can be a tool to help teachers reach students and to more easily facilitate instruction that emphasizes engaged reading.

Appendices

Appendix A: IRB Approval

RUTGERS UNIVERSITY
Office of Research and Sponsored Programs
ASB III, 3 Rutgers Plaza, Cook Campus
New Brunswick, NJ 08901

February 2, 2012
P.I. Name: Shurina
Protocol #: E12-405

Kristine Shurina
625 Glen Ridge Drive
Bridgewater NJ 08807

Dear Kristine Shurina:

Notice of Exemption from IRB Review

Protocol Title: "E-Readers & Adolescent Reading Engagement: A Formative Design Experiment"

The project identified above has been approved for exemption under one of the six categories noted in 45 CFR 46, and as noted below:

Exemption Date: 1/17/2012   **Exempt Category:**   1

This exemption is based on the following assumptions:
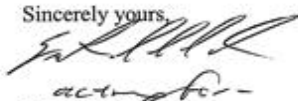
- **This Approval** - The research will be conducted according to the most recent version of the protocol that was submitted.

- **Reporting** – ORSP must be immediately informed of any injuries to subjects that occur and/or problems that arise, in the course of your research;

- **Modifications** – Any proposed changes MUST be submitted to the IRB as an amendment for review and approval prior to implementation;

- **Consent Form (s)** – Each person who signs a consent document will be given a copy of that document, if you are using such documents in your research. The Principal Investigator must retain all signed documents for at least three years after the conclusion of the research;

Additional Notes: None

Failure to comply with these conditions will result in withdrawal of this approval.

The Federalwide Assurance (FWA) number for Rutgers University IRB is FWA00003913; this number may be requested on funding applications or by collaborators.

Sincerely yours,

Sheryl Goldberg
Director of Office of Research and Sponsored Programs
gibel@grants.rutgers.edu

cc: Lesley Mandel Morrow

Appendix B: Adolescent Motivation to Read Survey

<div style="border:1px solid #000; padding:20px;">

F i g u r e   1
A d o l e s c e n t   M o t i v a t i o n   t o   R e a d   P r o f i l e   r e a d i n g   s u r v e y

Name: _____   Date: _____

Sample 1: I am in _____.
  ❑ Sixth grade
  ❑ Seventh grade
  ❑ Eighth grade
  ❑ Ninth grade
  ❑ Tenth grade
  ❑ Eleventh grade
  ❑ Twelfth grade

Sample 2: I am a _____.
  ❑ Female
  ❑ Male

Sample 3: My race/ethnicity is _____.
  ❑ African-American
  ❑ Asian/Asian American
  ❑ Caucasian
  ❑ Hispanic
  ❑ Native American
  ❑ Multi-racial/Multi-ethnic
  ❑ Other: Please specify _____

1. My friends think I am _____.
  ❑ a very good reader
  ❑ a good reader
  ❑ an OK reader
  ❑ a poor reader

2. Reading a book is something I like to do.
  ❑ Never
  ❑ Not very often
  ❑ Sometimes
  ❑ Often

3. I read _____.
  ❑ not as well as my friends
  ❑ about the same as my friends
  ❑ a little better than my friends
  ❑ a lot better than my friends

4. My best friends think reading is _____.
  ❑ really fun
  ❑ fun
  ❑ OK to do
  ❑ no fun at all

5. When I come to a word I don't know, I can _____.
  ❑ almost always figure it out
  ❑ sometimes figure it out
  ❑ almost never figure it out
  ❑ never figure it out

6. I tell my friends about good books I read.
  ❑ I never do this
  ❑ I almost never do this
  ❑ I do this some of the time
  ❑ I do this a lot

7. When I am reading by myself, I understand _____.
  ❑ almost everything I read
  ❑ some of what I read
  ❑ almost none of what I read
  ❑ none of what I read

8. People who read a lot are _____.
  ❑ very interesting
  ❑ interesting
  ❑ not very interesting
  ❑ boring

9. I am _____.
  ❑ a poor reader
  ❑ an OK reader
  ❑ a good reader
  ❑ a very good reader

(continued)

</div>

Figure 1 (continued)
Adolescent Motivation to Read Profile reading survey

Name: _____   Date: _____

10. I think libraries are _____.
   ❏ a great place to spend time
   ❏ an interesting place to spend time
   ❏ an OK place to spend time
   ❏ a boring place to spend time

11. I worry about what other kids think about
    my reading _____.
   ❏ every day
   ❏ almost every day
   ❏ once in a while
   ❏ never

12. Knowing how to read well is _____.
   ❏ not very important
   ❏ sort of important
   ❏ important
   ❏ very important

13. When my teacher asks me a question about
    what I have read, I _____.
   ❏ can never think of an answer
   ❏ have trouble thinking of an answer
   ❏ sometimes think of an answer
   ❏ always think of an answer

14. I think reading is _____.
   ❏ a boring way to spend time
   ❏ an OK way to spend time
   ❏ an interesting way to spend time
   ❏ a great way to spend time

15. Reading is _____.
   ❏ very easy for me
   ❏ kind of easy for me
   ❏ kind of hard for me
   ❏ very hard for me

16. As an adult, I will spend _____.
   ❏ none of my time reading
   ❏ very little time reading
   ❏ some of my time reading
   ❏ a lot of my time reading

17. When I am in a group talking about what we are
    reading, I _____.
   ❏ almost never talk about my ideas
   ❏ sometimes talk about my ideas
   ❏ almost always talk about my ideas
   ❏ always talk about my ideas

18. I would like for my teachers to read out loud in
    my classes _____.
   ❏ every day
   ❏ almost every day
   ❏ once in a while
   ❏ never

19. When I read out loud I am a _____.
   ❏ poor reader
   ❏ OK reader
   ❏ good reader
   ❏ very good reader

20. When someone gives me a book for a present, I
    feel _____.
   ❏ very happy
   ❏ sort of happy
   ❏ sort of unhappy
   ❏ unhappy

Note. Adapted with permission from the Motivation to Read Profile (Gambrell, Palmer, Codling, & Mazzoni, 1996)

Figure 2
Adolescent Motivation to Read Profile
conversational interview

Name _____

A. Emphasis: Narrative text
  Suggested prompt (designed to engage student in a natural conversation): I have been reading a good book. I was talking with...about it last night. I enjoy talking about what I am reading with my friends and family. Today, I would like to hear about what you have been reading and if you share it.

  1. Tell me about the most interesting story or book you have read recently. Take a few minutes to think about it (wait time). Now, tell me about the book.

     Probe: What else can you tell me? Is there anything else?

  2. How did you know or find out about this book?

     (Some possible responses: assigned, chosen, in school, out of school)

  3. Why was this story interesting to you?

B. Emphasis: Informational text
  Suggested prompt (designed to engage student in a natural conversation): Often we read to find out or learn about something that interests us. For example, a student I recently worked with enjoyed reading about his favorite sports teams on the Internet. I am gong to ask you some questions about what you like to read to learn about.

  1. Think about something important that you learned recently, not from your teacher and not from television, but from something you have read. What did you read about? (Wait time.) Tell me about what you learned.

     Probe: What else could you tell me? Is there anything else?

  2. How did you know or find out about reading material on this?

     (Some possible responses: assigned, chosen, in school, out of school)

Figure 2 (continued)
Adolescent Motivation to Read Profile
conversational interview

_____

3. Why was reading this important to you?

C. Emphasis: General reading

  1. Did you read anything at home yesterday? What?

  2. Do you have anything at school (in your desk, locker, or book bag) today that you are reading?

    Tell me about them.

  3. Tell me about your favorite author.

  4. What do you think you have to learn to be a better reader?

  5. Do you know about any books right now that you'd like to read?

    Tell me about them.

  6. How did you find out about these books?

  7. What are some things that get you really excited about reading?

    Tell me about....

(continued)

Figure 2 (continued)
Adolescent Motivation to Read Profile
conversational interview

---

8. Who gets you really interested and excited about reading?

   Tell me more about what they do.

9. Do you have a computer in your home?

   If they answer yes, ask the following questions:

   How much time do you spend on the computer a day?

   What do you usually do?

   What do you like to read when you are on the Internet?

   If they answer no, ask the following questions:

   If you did have a computer in your home, what would you like to do with it?

   Is there anything on the Internet that you would like to be able to read?

D. Emphasis: School reading in comparison to home reading

   1. In what class do you most like to read?

      Why?

   2. In what class do you feel the reading is the most difficult?

      Why?

(continued)

Figure 2 (continued)
Adolescent Motivation to Read Profile
conversational interview

3. Have any of your teachers done something with reading that you really enjoyed?

   Could you explain some of what was done?

4. Do you share and discuss books, magazines, or other reading materials with your friends outside of school?

   What?

   How often?

   Where?

5. Do you write letters or email to friends or family?

   How often?

6. Do you share any of the following reading materials with members of your family: newspapers, magazines, religious materials, games?

   With whom?

   How often?

7. Do you belong to any clubs or organizations for which you read and write?

   Could you explain what kind of reading it is?

Note. Adapted with permission from the Motivation to Read Profile (Gambrell, Palmer, Codling, & Mazzoni, 1996)

Figure 6
MRP reading survey scoring sheet

Student name _____

Grade _____ Teacher _____

Administration date _____

Recoding scale
1=4
2=3
3=2
4=1

Self-concept as a reader   Value of reading

*recode   1. _____   2. _____

                 3. _____   *recode   4. _____

*recode   5. _____   6. _____

*recode   7. _____   *recode   8. _____

                 9. _____   *recode   10. _____

                 11. _____   12. _____

                 13. _____   14. _____

*recode   15. _____   16. _____

                 17. _____   *recode   18. _____

                 19. _____   *recode   20. _____

SC raw score: _____/40   V raw score: _____/40

Full survey raw score (Self-concept & Value): _____/80

Percentage scores   Self-concept _____

                           Value   _____

                           Full survey   _____

Comments: _____

_____

_____

_____

_____

Note. Reprinted with permission from the Motivation to Read Profile (Gambrell, Palmer, Codling, & Mazzoni, 1996)

Figure 3
Adolescent Motivation to Read Profile
Teacher directions: Reading survey
──────────────

Distribute copies of the Adolescent Motivation to Read Survey. Ask students to write their names on the space provided.

Directions: Say: I am going to read some sentences to you. I want to know how you feel about your reading. There are no right or wrong answers. I really want to know how you honestly feel about reading. I will read each sentence twice. Do not mark your answer until I tell you to. The first time I read the sentence I want you to think about the best answer for you. The second time I read the sentence I want you to fill in the space beside your best answer. Mark only one answer. If you have any questions during the survey, raise your hand. Are there any questions before we begin? Remember: Do not mark your answer until I tell you to. OK, let's begin.

Read the first sample item: Say:
Sample 1: I am in (pause) sixth grade, (pause) seventh grade, (pause) eighth grade, (pause) ninth grade, (pause) tenth grade, (pause) eleventh grade, (pause) twelfth grade.

Read the first sample again. Say:
This time as I read the sentence, mark the answer that is right for you. I am in (pause) sixth grade, (pause) seventh grade, (pause) eighth grade, (pause) ninth grade, (pause) tenth grade, (pause) eleventh grade, (pause) twelfth grade.

Read the second sample item. Say:
Sample 2: I am a (pause) female, (pause) male.

Say:
Now, get ready to mark your answer.
I am a (pause) female, (pause) male.

Read the remaining items in the same way (e.g., number _____, sentence stem followed by a pause, each option followed by a pause, and then give specific directions for students to mark their answers while you repeat the entire item).

Note. Adapted with permission from the Motivation to Read Profile (Gambrell, Palmer, Codling, & Mazzoni, 1996)

Figure 4
Teacher directions: MRP conversational interview

1. Duplicate the conversational interview so that you have a form for each child.
2. Choose in advance the section(s) or specific questions you want to ask from the conversational interview. Reviewing the information on students' reading surveys may provide information about additional questions that could be added to the interview.
3. Familiarize yourself with the basic questions provided in the interview prior to the interview session in order to establish a more conversational setting.
4. Select a quiet corner of the room and a calm period of the day for the interview.
5. Allow ample time for conducting the conversational interview.
6. Follow up on interesting comments and responses to gain a fuller understanding of students' reading experiences.
7. Record students' responses in as much detail as possible. If time and resources permit you may want to audiotape answers to A1 and B1 to be transcribed after the interview for more in-depth analysis.
8. Enjoy this special time with each student!

Note. Reprinted with permission from the Motivation to Read Profile (Gambrell, Palmer, Codling, & Mazzoni, 1996)

Figure 5
Scoring directions: MRP reading survey

The survey has 20 items based on a 4-point scale. The highest total score possible is 80 points. On some items the response options are ordered least positive to most positive (see item 2 below) with the least positive response option having a value of 1 point and the most positive option having a point value of 4. On other items, however, the response options are reversed (see item 1 below). In those cases it will be necessary to recode the response options. Items where recoding is required are starred on the scoring sheet.

Example: Here is how Maria completed items 1 and 2 on the Reading Survey.

1. My friends think I am _____.
   - ❏ a very good reader
   - ■ a good reader
   - ❏ an OK reader
   - ❏ a poor reader

2. Reading a book is something I like to do.
   - ❏ Never
   - ❏ Not very often
   - ❏ Sometimes
   - ■ Often

To score item 1 it is first necessary to recode the response options so that

a poor reader equals 1 point,
an OK reader equals 2 points,
a good reader equals 3 points, and
a very good reader equals 4 points.

Because Maria answered that she is a good reader the point value for that item, 3, is entered on the first line of the Self-Concept column on the scoring sheet. See below. The response options for item 2 are ordered least positive (1 point) to most positive (4 points), so scoring item 2 is easy. Simply enter the point value associated with Maria's response. Because Maria selected the fourth option, a 4 is entered for item 2 under the Value of reading column on the scoring sheet. See below.

Scoring sheet

Self-concept as a Reader	Value of reading
*recode 1. <u>3</u>	2. <u>4</u>

To calculate the Self-concept raw score and Value raw score add all student responses in the respective column. The full survey raw score is obtained by combining the column raw scores. To convert the raw scores to percentage scores, divide student raw scores by the total possible score (40 for each subscale, 80 for the full survey).

Note. Reprinted with permission from the Motivation to Read Profile (Gambrell, Palmer, Codling, & Mazzoni, 1996)

Appendix C: Consent Forms

Dear Parents and Students:

My name is Kristy Shurina and I have been a teacher in the Bridgewater-Raritan School District since 2002. I am currently in the process of completing a doctoral degree in literacy education in the program of Teaching and Learning at Rutgers University.

I am writing to seek your consent and parent or guarding permission for you to participate in a research study that will investigate adolescent students' use of electronic reading devices to complete academic reading assignments. The purpose of the study is to learn students' thoughts and feelings about how using an e-reader impacts their reading engagement and to determine how the devices can best be used to improve student engagement. This study will take place during Spring Semester of the 2011-2012 school year.

Students, who agree to participate in this study, will have an opportunity to use a Kindle to complete some reading assignments. Participating in this study or refusing to participate in this study will not have an impact on the students' grade in English Language Arts class.

If you have questions, please call me at 973-885-1147, or e-mail me at kshurina@brrds.k12.nj.us. Parent or guardian and student consent forms are attached to this letter. After reading carefully, please sign and return one copy of the consent forms to Mrs. Shurina as soon as possible.

Sincerely,

Mrs. Kristy Shurina

Parent or Guardian Informed Consent Form

PROJECT TITLE: Exploring Adolescent Students Use of E-reading Devices
To Engage Adolescent Readers: A Formative Design Experiment

APPROVAL DATE OF PROJECT: **EXPIRATION DATE OF PROJECT:**

CONTACT NAME AND PHONE AND EMAIL FOR ANY PROBLEMS or QUESTIONS:

Kristy Shurina 973-885-1147   Institutional Review Board (IRB)
kshurina@gmail.com   Office of Research and Sponsored Programs
                                                Rutgers, the State University of New Jersey
                                                ASB III, 3 Rutgers Plaza
                                                New Brunswick, NJ 08901
                                                Phone: (848) 932-0150

PURPOSE OF THE RESEARCH: to learn students' thoughts and feelings about how using an e-reader impacts their reading engagement.

PROCEDURES OR METHODS TO BE USED: Students will read at least some of their reading assignment in digital rather than traditional text using an electronic reading device. The researcher, Kristy Shurina, will collect and analyze data including transcripts of interviews, past reading journals, and student annotations on the electronic reader. The researcher will also take field notes throughout the study, and may use audio and video recording as part of the data collection process.

LENGTH OF STUDY: Spring Semester of the 2011-2012 school year

RISKS OR DISCOMFORTS ANTICIPATED: The student may not enjoy reading on the electronic device and might much prefer to complete reading assignments using a traditional text format. If that is the case, the student can to stop using the digital reader at any point in the study.

BENEFITS ANTICIPATED: The student will have an opportunity to engage in reading using an electronic reading device and to reflect on the experience. Reading the digital text, using the devices features and discussing the experience with the researcher may help motivate the reader to want to read more electronic texts and could help extend the reader's ability to use metacognitive thinking when reading as he or she reflects on the experience.

EXTENT OF CONFIDENTIALITY: All references to names and identifiable locations will be changed or omitted in the final transcripts and in any documents or publications relating to the study.

TERMS OF PARTICIPATION: I understand this project is research, and my child's participation is completely voluntary. I also understand that if I consent to let my child participate, I may withdraw my consent at any time. I may allow my child to stop participating at any time without explanation. My signature below indicates that I have read and understand this consent form, and I agree to allow my child to participate in this study.

Participant's Name (student): _____

Parent/Guardian Name : _____ DATE: _____

Parent/ Guardian Signature: : _____

Researcher Name: Kristine Shurina

Researcher Signature: _____
Participant Informed Consent Form

PROJECT TITLE: Exploring Adolescent Students Use of E-reading Devices
To Engage Adolescent Readers: A Formative Design Experiment

APPROVAL DATE OF PROJECT: **EXPIRATION DATE OF PROJECT:**

CONTACT NAME AND PHONE AND EMAIL FOR ANY PROBLEMS or QUESTIONS:
Kristy Shurina 973-885-1147   Institutional Review Board (IRB)
kshurina@gmail.com   Office of Research and Sponsored Programs
                                               Rutgers, the State University of New Jersey
                                               ASB III, 3 Rutgers Plaza
                                               New Brunswick, NJ 08901
                                               Phone: (848) 932-0150

PURPOSE OF THE RESEARCH: to learn students' thoughts and feelings about how using an e-reader impacts their reading engagement.

PROCEDURES OR METHODS TO BE USED: Students will read complete their reading assignment in digital rather than traditional text using an electronic reading device. The researcher, Kristy Shurina, will collect and analyze data including transcripts of interviews, past reading journals, and student annotations on the electronic reader. The researcher will also take field notes throughout the study, and may use audio and video recording as part of the data collection process.

LENGTH OF STUDY: 2011-2012 school year

RISKS OR DISCOMFORTS ANTICIPATED: The student may not enjoy reading on the electronic device and might much prefer to complete reading using a traditional text format. If that is the case, the student can to stop using the digital reader at any point in the study.

BENEFITS ANTICIPATED: The student will have an opportunity to engage in reading using an electronic reading device and to reflect on the experience. Reading the digital text, using the devices features and discussing the experience with the researcher may help motivate the reader to want to read more electronic texts and could help extend the reader's ability to use metacognitive thinking when reading as he or she reflects on the experience.

EXTENT OF CONFIDENTIALITY: All references to names and identifiable locations will be changed or omitted in the final transcripts and in any documents or publications relating to the study.

TERMS OF PARTICIPATION: I understand this project is research, and my participation is completely voluntary. I also understand that if I consent to participate, I may stop participating at any time without explanation. My signature below indicates that I have read and understand this consent form, and I agree to participate in this study.

Participant's Name: _____

Participant's Signature (Student): _____ DATE: _____

Researcher Name: Kristine Shurina
Researcher Signature: _____

Appendix D: Metacognitive Awareness of Reading Strategies Inventory

Directions: Listed below are statements about what people do when they read *academic or school-related materials* such as textbooks or library books. Five numbers follow each statement (1, 2, 3, 4, 5), and each number means the following:

- **1** means "I **never or almost never** do this."
- **2** means "I do this **only occasionally**."
- **3** means "I **sometimes** do this" (about **50%** of the time).
- **4** means "I **usually** do this."
- **5** means "I **always or almost always** do this."

After reading each statement, **circle the number** (1, 2, 3, 4, or 5) that applies to you using the scale provided. Please note that there are **no right or wrong answers** to the statements in this inventory.

Type	Strategy	Scale
GLOB	1. I have a purpose in mind when I read.	1 2 3 4 5
SUP	2. I take notes while reading to help me understand what I read.	1 2 3 4 5
GLOB	3. I think about what I know to help me understand what I read.	1 2 3 4 5
GLOB	4. I preview the text to see what it's about before reading it.	1 2 3 4 5
SUP	5. When text becomes difficult, I read aloud to help me understand what I read.	1 2 3 4 5
SUP	6. I summarize what I read to reflect on important information in the text.	1 2 3 4 5
GLOB	7. I think about whether the content of the text fits my reading purpose.	1 2 3 4 5
PROB	8. I read slowly but carefully to be sure I understand what I'm reading.	1 2 3 4 5
SUP	9. I discuss what I read with others to check my understanding.	1 2 3 4 5
GLOB	10. I skim the text first by noting characteristics like length and organization.	1 2 3 4 5
PROB	11. I try to get back on track when I lose concentration.	1 2 3 4 5
SUP	12. I underline or circle information in the text to help me remember it.	1 2 3 4 5
PROB	13. I adjust my reading speed according to what I'm reading.	1 2 3 4 5
GLOB	14. I decide what to read closely and what to ignore.	1 2 3 4 5
SUP	15. I use reference materials such as dictionaries to help me understand what I read.	1 2 3 4 5
PROB	16. When text becomes difficult, I pay closer attention to what I'm reading.	1 2 3 4 5
GLOB	17. I use tables, figures, and pictures in text to increase my understanding.	1 2 3 4 5
PROB	18. I stop from time to time and think about what I'm reading.	1 2 3 4 5
GLOB	19. I use context clues to help me better understand what I'm reading.	1 2 3 4 5
SUP	20. I paraphrase (restate ideas in my own words) to better understand what I read.	1 2 3 4 5
PROB	21. I try to picture or visualize information to help remember what I read.	1 2 3 4 5
GLOB	22. I use typographical aids like boldface and italics to identify key information.	1 2 3 4 5
GLOB	23. I critically analyze and evaluate the information presented in the text.	1 2 3 4 5
SUP	24. I go back and forth in the text to find relationships among ideas in it.	1 2 3 4 5
GLOB	25. I check my understanding when I come across conflicting information.	1 2 3 4 5
GLOB	26. I try to guess what the material is about when I read.	1 2 3 4 5
PROB	27. When text becomes difficult, I reread to increase my understanding.	1 2 3 4 5
SUP	28. I ask myself questions I like to have answered in the text.	1 2 3 4 5
GLOB	29. I check to see if my guesses about the text are right or wrong.	1 2 3 4 5
PROB	30. I try to guess the meaning of unknown words or phrases.	1 2 3 4 5

READING STRATEGIES INVENTORY
Scoring Rubric Student

Scoring Rubric

Student name: _____ Age: _____ Date: _____
Grade in school: □ 6th   □ 7th   □ 8th   □ 9th   □ 10th   □ 11th   □ 12th   □ College   □ Other

1. Write your response to each statement (i.e., 1, 2, 3, 4, or 5) in each of the blanks.
2. Add up the scores under each column. Place the result on the line under each column.
3. Divide the subscale score by the number of statements in each column to get the average for each subscale.
4. Calculate the average for the whole inventory by adding up the subscale scores and dividing by 30.
5. Compare your results to those shown below.
6. Discuss your results with your teacher or tutor.

Global Reading Strategies (GLOB subscale)	Problem-Solving Strategies (PROB subscale)	Support Reading Strategies (SUP subscale)	Overall Reading Strategies
1. _____	8. _____	2. _____	GLOB _____
3. _____	11. _____	5. _____	PROB _____
4. _____	13. _____	6. _____	SUP _____
7. _____	16. _____	9. _____	
10. _____	18. _____	12. _____	
14. _____	21. _____	15. _____	
17. _____	27. _____	20. _____	
19. _____	30. _____	24. _____	
22. _____		28. _____	
23. _____			
25. _____			
26. _____			
29. _____			

| ____ GLOB score | ____ PROB score | ____ SUP score | ____ Overall score |
| ____ GLOB mean | ____ PROB mean | ____ SUP mean | ____ Overall mean |

Key to averages: 3.5 or higher = high   2.5–3.4 = medium   2.4 or lower = low

Interpreting your scores: The overall average indicates how often you use reading strategies
when reading academic materials. The average for each subscale of the inventory shows which group of strategies (i.e., global, problem solving, and support strategies) you use most when reading. With this information, you can tell if you score very high or very low in any of these strategy groups. Note, however, that the best possible use of these strategies depends on your reading ability in English, the type of material read, and your purpose for reading it. A low score on any of the subscales or parts of the inventory indicates that there may be some strategies in these parts that you might want to learn about and consider using when reading.

Attachment E: Observation Protocol

Directions: Use this tool to tally students' behaviors while reading independently. Data collection should occur during two or three reading sessions to identify students having difficulty engaging

Name	Out of Seat	Looks Up/Around the Room	Flips Pages/ Not Reading	Talks	Switches Books	Total # of Off Task Behaviors	Notes

Attachment F: Interview Guide for Interviewing Intervention Specialist

1. How do you feel the use of electronic devices is impacting the students' reading engagement in general?

2. Let's talk about the impact on each students reading engagement individually. How do you feel that using a Kindle for reading is impacting….

Student A:

Student B:

Student C:

Student D:

Student E:

3. What, if any, positive results do you see from using the Kindles with students?

4. What, if any, negative results do you see from using the Kindles with students?

5. What, if any, suggestions, do you have for improving the use of the Kindles as an intervention for reading engagement?

Attachment G: Interview Guide for Second and Third Student Interviews

1. What are your thoughts about using the Kindle?

2. If these are not brought up, follow up with "What do you like about using the Kindle" or "What do you dislike about using Kindle"?

3. Let's talk about how you read on the Kindle. I read with the text in the largest size possible in landscape. Can you please show me how you read using your Kindle?

4. Would you recommend using a Kindle to other eighth graders? Why or Why not?

5. Do you do anything on the Kindle besides read? Can you show me?

6. Do you have a preference for using a Kindle or traditional print? Can you elaborate?

Appendix H: Reading Engagement Index

Reading Engagement Index (REI)   Teacher: _____ Date: _____

Directions: This is a questionnaire on students' engagement in reading throughout the day in your classroom. Write each student's name on the spaces provided and fill out the column under each.

	This Student:	Student 1: NOT TRUE / VERY TRUE		NA	Student 2: NOT TRUE / VERY TRUE		NA	Student 3: NOT TRUE / VERY TRUE		NA
1.	Often reads independently.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
2.	Reads favorite topics and authors.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
3.	Easily distracted in self-selected reading.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
4.	Works hard in reading.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
5.	Is a confident reader.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
6.	Uses comprehension strategies well.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
7.	Thinks deeply about the content of texts.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
8.	Enjoys discussing books with peers.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1

	This Student:	Student 4: NOT TRUE / VERY TRUE		NA	Student 5: NOT TRUE / VERY TRUE		NA	Student 6: NOT TRUE / VERY TRUE		NA
1.	Often reads independently.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
2.	Reads favorite topics and authors.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
3.	Easily distracted in self-selected reading.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
4.	Works hard in reading.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
5.	Is a confident reader.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
6.	Uses comprehension strategies well.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
7.	Thinks deeply about the content of texts.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1
8.	Enjoys discussing books with peers.	1 2 3 4 5		1	1 2 3 4 5		1	1 2 3 4 5		1

Note: The REI is usually scaled on a 1-4, so for this dissertation study, the intervention specialist did not use the 5's for the pre or post assessments.

Appendix J: Motivations To Read Questionnaire

.

Name_____   Date_____

Teacher_____

Motivations for Reading Questionnaire

We are interested in your reading.

The sentences tell how some students feel about reading. Listen to each sentence and decide whether it talks about a person who is like you or different from you. There are no right or wrong answers. We only want to know how you feel about reading.

<u>For many of the statements, you should think about the kinds of things you read in your class.</u>

Here are some ones to try before we start on the ones about reading:

I like ice cream.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

If the statement is **very different from you**, circle a 1.

If the statement is **a little different from you**, circle a 2.

If the statement is **a little like you,** circle a 3.

If the statement is **a lot like you**, circle a 4.

I like spinach.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

If the statement is **very different from you**, what should you circle?

If the statement is **a little different from you**, what should you circle?

If the statement is **a little like you,** what should you circle?

If the statement is **a lot like you**, what should you circle?

Okay, we are ready to start on the ones about reading. Remember , when you give your answers you should think about the things you are reading in your class. There are no right or wrong answers, we just are interested in YOUR ideas about reading. To give your answer, circle ONE number on each line. The answer lines are right under each statement.

Let's turn the page and start. Please follow along with me while I read each of the statements, and then circle your answer .

1. I like being the best at reading.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

2. I like it when the questions in books make me think.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

3. I read to improve my grades.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

4. If the teacher discusses something interesting I might read more about it.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

5. I like hard, challenging books.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

6. I enjoy a long, involved story or fiction book.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

7. I know that I will do well in reading next year.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

8. If a book is interesting I don't care how hard it is to read.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

9. I try to get more answers right than my friends.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

10. I have favorite subjects that I like to read about.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

11. I visit the library often with my family.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

12. I make pictures in my mind when I read.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

13. I don't like reading something when the words are too dif ficult.

Very Different From Me 1	A Little Different From Me 2	A Little Like Me 3	A Lot Like Me 4

14. I enjoy reading books about people in dif ferent countries.

Very Different From Me 1	A Little Different From Me 2	A Little Like Me 3	A Lot Like Me 4

15. I am a good reader.

Very Different From Me 1	A Little Different From Me 2	A Little Like Me 3	A Lot Like Me 4

16. I usually learn difficult things by reading.

Very Different From Me 1	A Little Different From Me 2	A Little Like Me 3	A Lot Like Me 4

17. It is very important to me to be a good reader.

Very Different From Me 1	A Little Different From Me 2	A Little Like Me 3	A Lot Like Me 4

18. My parents often tell me what a good job I am doing in reading.

Very Different From Me 1	A Little Different From Me 2	A Little Like Me 3	A Lot Like Me 4

19. I read to learn new information about topics that interest me.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

20. If the project is interesting, I can read difficult material.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

21. I learn more from reading than most students in the class.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

22. I read stories about fantasy and make believe.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

23. I read because I have to.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

24. I don't like vocabulary questions.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

25. I like to read about new things.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

26. I often read to my brother or my sister.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

27. In comparison to other activities I do, it is very important to me to be a goo reader.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

28. I like having the teacher say I read well.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	

29. I read about my hobbies to learn more about them.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

30. I like mysteries.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

31. My friends and I like to trade things to read.

Different	Different	A Little	A Lot
From Me	From Me	Like Me	Like Me
1	2	3	4

38. Grades are a good way to see how well you are doing in reading.

Very	A Little		
Different	Different	A Little	A Lot
From Me	From Me	Like Me	Like Me
1	2	3	4

39. I like to help my friends with their schoolwork in reading.

Very	A Little		
Different	Different	A Little	A Lot
From Me	From Me	Like Me	Like Me
1	2	3	4

40. I don't like it when there are too many people in the story.

Very	A Little		
Different	Different	A Little	A Lot
From Me	From Me	Like Me	Like Me
1	2	3	4

41. I am willing to work hard to read better than my friends.

Very	A Little		
Different	Different	A Little	A Lot
From Me	From Me	Like Me	Like Me
1	2	3	4

42. I sometimes read to my parents.

Very	A Little		
Different	Different	A Little	A Lot
From Me	From Me	Like Me	Like Me
1	2	3	4

43. I like to get compliments for my reading.

Very	A Little		
Different	Different	A Little	A Lot

From Me   From Me   Like Me   Like Me
  1   2   3   4

44. It is important for me to see my name on a list of good readers.

Very   A Little
Different   Different   A Little   A Lot
From Me   From Me   Like Me   Like Me
  1   2   3   4

45. I talk to my friends about what I am reading.

Very   A Little
Different   Different   A Little   A Lot
From Me   From Me   Like Me   Like Me
  1   2   3   4

46. I always try to finish my reading on time.

Very   A Little
Different   Different   A Little   A Lot
From Me   From Me   Like Me   Like Me
  1   2   3   4

47. I am happy when someone recognizes my reading.

Very   A Little
Different   Different   A Little   A Lot
From Me   From Me   Like Me   Like Me
  1   2   3   4

48. I like to tell my family about what I am reading.

Very   A Little
Different   Different   A Little   A Lot
From Me   From Me   Like Me   Like Me
  1   2   3   4

49. I like being the only one who knows an answer in something we read.

Very   A Little
Different   Different   A Little   A Lot
From Me   From Me   Like Me   Like Me

| 1 | 2 | 3 | 4 |

50. I look forward to finding out my reading grade.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

51. I always do my reading work exactly as the teacher wants it.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

52. I like to finish my reading before other students.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

53. My parents ask me about my reading grade.

Very Different From Me	A Little Different From Me	A Little Like Me	A Lot Like Me
1	2	3	4

Motivations for Reading Questionnaire (MRQ)
Wigfield & Guthrie, 1997
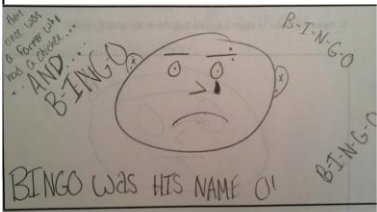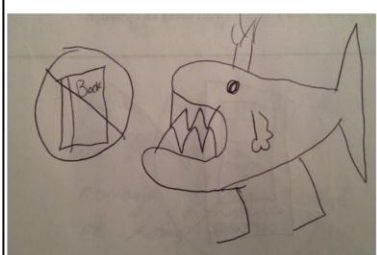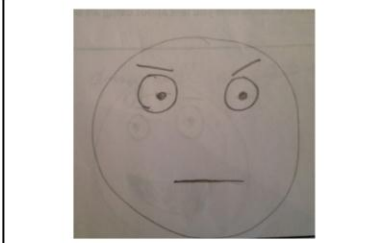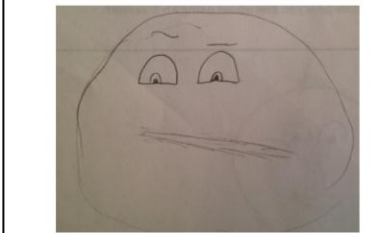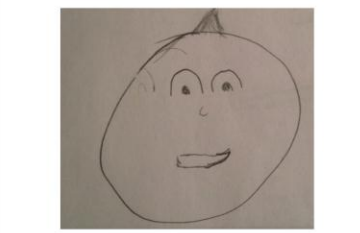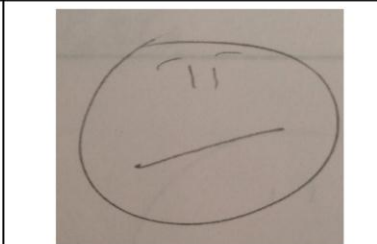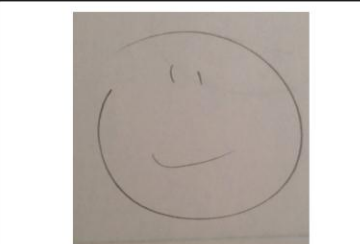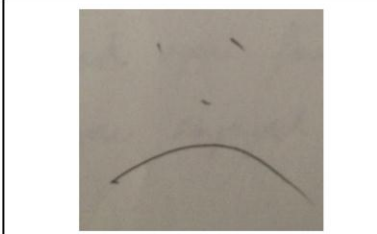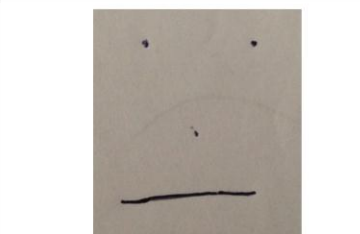
53 items

11 constructs

Reading Efficacy (3 items)
- ☒ I don't know that I will do well in reading next year
- ☒ I am a good reader
- ☒ I learn more from reading than most students in the class

Reading Challenge (5 items)
- ☒ I like hard, challenging books
- ☒ If the project is interesting, I can read difficult material
- ☒ I like it when the questions in books make me think
- ☒ I usually learn difficult things by reading
- ☒ If a book is interesting I don't care how hard it is to read

Reading Curiosity (6 items)
- ☒ If the teacher discusses something interesting I might read more about it
- ☒ I have favorite subjects that I like to read about
- ☒ I read to learn new information about topics that interest me
- ☒ I read about my hobbies to learn more about them
- ☒ I like to read about new things
- ☒ I enjoy reading books about living things

Reading Involvement (6 items)
- ☒ I read stories about fantasy and make believe
- ☒ I like mysteries
- ☒ I make pictures in my mind when I read
- ☒ I feel like I make friends with people in good books
- ☒ I read a lot of adventure stories
- ☒ I enjoy a long, involved story or fiction book

Importance of Reading (2 items)
- ☒ It is very important to me to be a good reader
- ☒ In comparison to other activities I do, it is very important to me to be a good reader

Reading Work Avoidance (4 items)
- ☒ I don't like vocabulary questions
- ☒ Complicated stories are no fun to read
- ☒ I don't like reading something when the words are too difficult
- ☒ I don't like it when there are too many people in the story

Competition in Reading (6 items)

- ☒ I try to get more answers right than my friends
- ☒ I like being the best at reading
- ☒ I like to finish my reading before other students
- ☒ I like being the only one who knows an answer in something we read
- ☒ It is important for me to see my name on a list of good readers
- ☒ I am willing to work hard to read better than my friends

Recognition for Reading (5 items)

- ☒ I like having the teacher say I read well
- ☒ My friends sometimes tell me I am a good reader
- ☒ I like to get compliments for my reading
- ☒ I am happy when someone recognizes my reading
- ☒ My parents often tell me what a good job I am doing in reading

Reading for Grades (4 items)

- ☒ Grades are a good way to see how well you are doing in reading
- ☒ I look forward to finding out my reading grades
- ☒ I read to improve my grades
- ☒ My parents ask me about my reading grade

Social Reasons for Reading (7 items)

- ☒ I visit the library often with my family
- ☒ I often read to my brother or my sister
- ☒ My friends and I like to trade things to read
- ☒ I sometimes read to my parents
- ☒ I talk to my friends about what I am reading
- ☒ I like to help my friends with their schoolwork in reading
- ☒ I like to tell my family about what I am reading

Compliance (5 items)

- ☒ I do as little schoolwork as possible in reading
- ☒ I read because I have to
- ☒ I always do my reading work exactly as the teacher wants it
- ☒ Finishing every reading assignment is very important to me
- ☒ I always try to finish my reading on time

Appendix I: Students Final Illustrations

	Reading Print vs. Digital Illustrations	
	Novel	Kindle
Max		
Jack		
Andrew		
Ryan		
Claire		
Nick		

References:

Anderson-Inman, L., & Horney, M.A. (2007, January/February/March). Supported

 eText: Assistive Technology Through Text Transformations. *Reading Research*

 Quarterly, 42(1), 153–160.

Baker, L. (2003). The role of parents in motivating struggling readers. *Reading and*

 Writing Quarterly, 19, 87-106.

Baumann, J.F., Ware, D., & Edwards, E.C. (2007). "Bumping into spicy, tasty words

 that catch your tongue": A formative experiment on vocabulary instruction. *The*

 Reading Teacher, 61(2), 108–122.

Beach, R. (2007). *Teachingmedialiteracy.com*. New York: Teachers College Press.

Bloodsworth, J. G. (1993). Legibility of print (Report No. CS-011-244). East Lansing,

 MI: *National Center for Research on Teacher Learning*. Retrieved from RYAN.

Brown, A. (1992). Design experiments: Theoretical and methodological challenges

 in creating complex programs in classroom settings. *Journal of the Learning*

 Sciences, 2(2), 141-178.

Brozo, W.G., Shiel, G., & Topping, K. (2007, December). Engagement in Reading:

 Category. *Endgadget*. Available April 17, 2011 from

 http://m.engadget.com/default/article.do?artUrl=http://www.engadget.com/2011/0

 4/15/e-book-sales-triple-year-over-year-paper-books-decline-in-every/&category

Chandler-Olcott, K. (2009). New Literacies in the Secondary Classroom. In S.R.

 Parris, D. Fisher, & K. Headley (Eds.), *Adolescent Literacy, Field Tested* (pp. 82-

 93). Newark, DE: International Reading Association.

Chera, P.; Littleton, K.; Wood, C. (May 4, 2006). Interactions with Talking Books: phonological awareness affects boys' use of talking books. *Journal of Computer Assisted Learning,* 22, pp. 382-390. Retrieved from RYAN.

Cole, J. E. (Dec. 2002/Jan. 2003). What motivates students to read? Four Literacy Personalities. *The Reading Teacher*, 56(4), 326-336.

Creswell, J. W. (2007). Qualitative inquiry and research design: Choosing among five approaches (2rd Ed.). Thousand Oaks, CA: Sage.

Cobb, P., Confrey, J., diSessa, A., Lehrer, R., & Schauble, L. (2003). Design experiments in educational research. *Educational Researcher, 32*(1), 9-13.

Davidson, K. T., Shields, M. A., & Biscos, G. (1997). Network, Screen and Page: The Future of Reading in a Digital Age: INTERQUEST and the University of Virginia.

Duffy, A.M. (2001). Balance, literacy acceleration, and responsive teaching in a summer school literacy program for elementary school struggling readers. *Reading Research and Instruction*, 40, 67–100.

Edyburn, D.L. (2007, January/February/March). Technology-Enhanced Reading Performance: Defining a Research Agenda. *Reading Research Quarterly*, 42(1), 146–152.

Gambrell, L.B., Palmer, B.M., Codling, R.M., & Mazzoni, S.A. (1996). Assessing motivation to read. *The Reading Teacher*, 49(7), 518–533.

Grimshaw, S., Dungworth, N., McKnight, C., & Morris, A. (2007). Electronic books: children's reading and comprehension. *British Journal of Educational Technology,* 38(4), 583-599. Retrieved April 8, 2011 from http://www2.warwick.ac.uk/fac/soc/wie/courses/degrees/docs/who/students/edrga j/research/electronic_books.pdf

Gunter, G., & Kenny, R. (2008). Digital booktalk: Digital media for reluctant readers. Contemporary Issues in Technology and Teacher Education, 8(1). Available November 5, 2011 from http://www.citejournal.org/vol8/iss1 /currentpractice/article1.cfm

Guthrie, J. T., & Alvermann, D. E. (1999). *Engaged reading, processes, practices, and policy implications*. New York: Teachers College Pr.

Guthrie, J.T. (2001, March). Contexts for engagement and motivation in reading. Reading Online, 4(8). Available: http://www.readingonline.org/ articles/art_index.asp?HREF=/articles/handbook/guthrie/index.html

Guthrie, J. T., & Davis, M. H. (2003). Motivating Struggling Readers in Middle School Through an Engagement Model of Classroom Practice. *Reading and Writing Quarterly*, 19, 59-85. Available April 10, 2011 from http://www.cori.umd.edu/research-publications/2003-guthrie-davis.pdf

Guthrie, J.T., Hoa, L.W., Wigfield, A., Tonks, S.M., Humenick, N. & Littles, E. (2007).

    Reading motivation and reading comprehension growth in the later elementary

    years. *Contemporary Educational Psychology*, 32, 282-313. Available July 11,

    2012 from

    http://www.appstate.edu/~koppenhaverd/rcoe/5710/read/uppergraderdgcomp/guth

    rieetal06.pdf

Guthrie, J., & Wigfield, A. (2000). Engagement and Motivation in Reading. In M.L.

    Kamil, P.B. Mosenthal, P.D. Pearson, & R. Barr (Eds.), *Handbook of Reading*

    Research (Vol. 3, pp. 403–422). Mahwah, NJ: Erlbaum. Retrieved from EBSCO

    Host.

Hall, J. (2009). Struggling Reader, Struggling Teacher: An Examination of Student-

    Teacher Transactions with Reading Instruction and Text in Social Studies.

    Research in the Teaching of English. National Council of Teachers of English:

    43(3) 287-308.

Hasselbring, T. S., & Goin, L. (2004). Literacy Instruction for Older Struggling

    Readers: What is the Role of Technology? *Reading and Writing Quarterly*, 20,

    123-144.

Improving adolescent literacy: Effective classroom and intervention practices: A

    Practice Guide (NCEE #2008-4027). Washington, DC: National Center for

    Education Evaluation and Regional Assistance, Institute of Education Sciences,

    U.S. Department of Education. Retrieved April 10, 2011from

    http://ies.ed.gov/ncee/wwc.

Ivey, G. (April, May-June, 1999). A Multi-Case Study in the Middle School: Complexities Among Young Adolescent Readers. *Reading Research Quarterly*, 34(2), 172-192.

Ivey, G. & Broaddus, K. (2001)."Just Plain Reading": A survey of what makes a student want to read in middle school classrooms. *Reading Researcher Quarterly*, 36, 350-377

Ivey, G., & Broaddus, K. (2007, October/November/December). A Formative Experiment Investigating Literacy Engagement Among Adolescent Latina/o Students Just Beginning to Read, Write, and Speak English. *Reading Research Quarterly*, 42(4), 512–545.

Ivey, G. (2010). Making Up for Lost Time: Connecting Inexperienced Teenage Readers With Books. In K. Dunsmore, & D. Fisher (Eds.), *Bringing Literacy Home* (pp. 245-261). Newark, DE: International Reading Association.

Jeffs, T. (2006). Assistive Technology and Literacy Learning: Reflections of Parents and Children. *Journal of Special Education Technology*, 21(1), 37-44. Retrieved from EBSCOhost.

Jiménez, R.T. (1997). The strategic reading abilities and potential of five low-literacy

    Latina/o readers in middle school. *Reading Research Quarterly*, 32, 224–243

    Kamil, M. L., Borman, G. D., Dole, J., Kral, C. C., Salinger, T., and Torgesen, J.

    (2008). In Korat, O. and Shamir, A. (October 25, 2006) Electronic Books versus

    adult readers: Effects on children's emergent literacy as a function of social class.

    Journal of Computer Assisted Learning (2007), 23, pp. 248-259. Available April

    11, 2011 from http://electronicbooks./Electronic%2Bbooks%

    2Bversus%2Badult%2Breaders%2B(wiki%2Barticle).pdf

Kelley, M.J., & Clausen-Grace, N. (2009, December). Facilitating Engagement by

    Differentiating Independent Reading. The Reading Teacher, 63(4), 313–318.

Larson, L.C. (2009, November). E-Reading and e-Responding: New Tools for the

    Next Generation of Readers. *Journal of Adolescent & Adult Literacy*, 53(3), 255–

    258.

Larson, L.C. (2010, September). Digital Readers: The Next Chapter in E-Book

    Reading and Response. *The Reading Teacher*, 64(1), 15–22.

Lessons Learned From Three PISA Countries. *Journal of Adolescent & Adult Literacy*,

    51(4), 304–315.

Levy, S. (2000, January 1). It's time to turn the last page. *Newsweek,* 96-98.

Lowe, E. (2003, May). Large print books: The missing link for speed and fluency for

    all students — Struggling, proficient, in between. Paper presented at the meeting

    of The International Reading Association, Orlando, FL. Available April 14, 2011

    from http://www.ldonline.org/.

Marmarelli, T & Ringle, M. (2009). The Reed College Kindle Study. Reed College.

> Available April 15, 2009 from http://www.reed.edu/cis/about/kindle_pilot
>
> /Reed_Kindle_report.pdf

McKenna, M.C., & Walpole, S. (2007, January/February/March). Assistive

> Technology in the Reading Clinic: Its Emerging Potential. *Reading Research*
>
> *Quarterly*, 42(1), 140–145

McKnight, C., Dillon, A., & Richardson, J. (1990). A Comparison of Linear and

> Hypertext Formats in Information Retrieval. In R. McAleese & C. Green (Eds.),
>
> *Hypertext: State of the Art* (pp. 10-19). Oxford: Intellect. Available April 15, 2011
>
> from http://www.ischool.utexas.edu/~adillon/BookChapters
>
> /Formats%20in%20IR.htm

McQuillan, J. & Au, J. (2001). The Effect of Print Access on Reading Frequency.

> *Reading Psychology*, 22(3), 225-248.

Merriam, S.B. (1998). *Qualitative Research and Case Study Applications in Education*.

> San Francisco: Jossey-Bass.

Miranda, M., Jackson, K., & Rossi-Williams, D. (2012). E-readers: Powering up for

> engagement. *Educational Leadership*, 69, Retrieved from
>
> http://www.ascd.org/publications/educational_leadership/jun12/vol69/num09/E-
>
> Readers@_Powering_Up_for_Engagement.aspx

Mokhtari, K., & Reichard, C. A. (2002). Assessing students' metacognitive awareness

> of reading strategies. *Journal of Educational Psychology*, 94(2), 249-259.
>
> Retrieved from http://doi.apa.org/getdoi.cfm?doi=10.1037/0022-0663.94.2.249

Muter, P., & Maurutto, P. (1991). Reading and skimming from computer screens and

books: The paperless office revisited? *Behaviour and Information Technology*,

10(4), 257-266. EBSCO.

Nunberg, G. (1993). The places of books in the age of electronic reproduction.

Representations, 0(42), 13-37. JSTOR.

Oakley, G. (2003, March). Improving oral reading fluency (and comprehension)

through the creation of talking books. *Reading Online*, 6(7). Available August 12,

2011: from http://www.readingonline.org/articles/

art_index.asp?HREF=oakley/index.html

Patton, M.Q. (1990). *Qualitative Evaluation and Research Methods* (3rd d.Thousand

Oaks, CA: Sage.

Pflaum, S. W., & Bishop, P. A. (Nov. 2004). Student perceptions of reading

engagement: Learning from the learners. *Journal of Adolescent and Adult

Literacy*, 48(3), 202- 213.

Pitcher, S. M., Albright, L. K., DeLaney, C. J., Walker, N. T., Seunarinesingh, K.,Mogge,

S., Headley, K. N., Ridgeway, V. G., Peck, S., Hunt, R., & Dunston, P. J. (Feb.

2007). Assessing adolescents' motivation to read. *Journal of Adolescent and

Adult Literacy*, 50(5), 378-396.

2Reinking, D., & Watkins, J. (2000). A Formative Experiment Investigating the Use of

Multimedia Book Reviews to Increase Elementary Students' Independent

Reading. *Reading Research Quarterly*, 35(3), 384–419.

Reinking, D., & Bradley, B. A. (2004). Connecting research and practice using formative and design experiments. In N. K. Duke & M. H. Mallette (Eds.), Literacy research methodologies (pp. 114-148). New York, NY: The Guilford Press.

Reinking, D., & Bradley, B. (2008). *On formative and design experiments: Approaches to language and literacy research*. New York: Teachers College Press.

Reinking, D., Malloy, J., Rogers, A., & Robbins, K. (December, 2007). *What a Formative Experiment Reveals About Internet Reciprocal Teaching*. Unpublished paper presented at The National Reading Conference, Austin, TX. Retrieved from http://www.newliteracies.uconn.edu/iesproject/documents /FormativeExperiment.doc

Senn, N. (2012). Effective Approaches to Motivate and Engage Reluctant Boys in Literacy. *The Reading Teacher*, 66(3), 211–220. doi:

Snow, C.,& Biancarosa, G. (2003). *Adolescent Literacy and the Achievement Gap: What Do We Know and Where Do We Go From Here?* New York: Carnegie Corporation.

Songer, N.B., Lee, H., & Kam, R. (2002). Technology-rich inquiry science in urban classrooms: What are the barriers to inquiry pedagogy? *Journal of Research in Science Teaching*, 39, 128–150.

Sternberg, B.J., Kaplan, K. A., and Borck, J.E. (2007). Enhancing Adolescent Literacy Achievement Through Integration of Technology in the Classroom. *Reading Research Quarterly,* 42(3) pp. 416-420.

The E-reader pilot at Princeton (2010). The Trustees of Princeton University.

Available April 15, 2011 from www.princeton.edu/ereaderpilot

Tobin, J., Steinkuehler, C.A., Black, R.W., Clinton, K.A., Hinchman, K.A., & Dillon,

D.R. (2005, January/February/March). Contemporary Qualitative Research

Methodologies and Issues in Literacy Education. *Reading Research Quarterly*,

40(1), 90–90.

Wallmon, D. (2011). E-Book Sales Year-Over-Year; Paperback Sales Fall in Every

Weber, C & Cavanaugh, T. (2006). Using eBooks With Gifted and Advanced Readers.

Gifted Child Today. (29) 4. Retrieved from RYAN.

Weinstein, T., & Walberg, H. J. (1993). Practical literacy of young adults: Educational

antecedents and influences. *Journal of Research in Reading*, 16, 3719.

West-Christy, J. Helping remedial and reluctant readers. (2003, September).

Available November 20, 2010 from http://www.glencoe.com/s

ec/teachingtoday/educationupclose.phtml/print29.

Wigfield, A., Guthrie, J.T., Perencevich, K. C., Taboada, A., Klauda, S.L., McRae, A., &

Barbosa, P. (2008). Role of reading engagement in mediating the effects of

reading comprehension instruction on reading outcomes. *Psychology in the

Schools*, 45, 432-445. Available July 11, 2012 from http://corilearning.com

/research-publications/2008_wigfield_guthrie_etal.pdf

Wigfield, A. & Guthrie, J.T. (1997). Relations of Children's Motivation for Reading to

the Amount and Breadth of Their Reading. *Journal of Educational Psychology,

89, 420-432.

[Untitled image of Kindle]. (n.d.) [Digital image]. Retrieved from Amazon.com

Van den Akker, J., Gravemeijer, K., McKenney, S., & Nieveen, N. (2006). Introducing educational design research. In J. Van den akker, K. Gravemeijer, S. McKenney, & N. Nieveen (Eds.), *Educational design research* (pp. 3-7). New York: Routledge.

Yin, R. (2009). *Case study Research : Design and Methods*. Los Angeles, Calif: Sage Publications.

Zucker, T.A., Moody, A.K., McKenna, M.C. (2009). The Effects of Electronic Books on Pre-Kindergarten-to-Grade 5 Students' Literacy and Language Outcomes: A Research Synthesis. J. *Educational Computing Research*, Vol. 40(1) 47-87 .

Literature Cited

Collins, S. (2008). *The Hunger Games*. New York: Scholastic Press.

Lubar, D. (2007). *Sleep Freshman Never Lie*. New York: Perfection Learning.

Pelzer, D. (1995). *A Child Called It*. New York: HCI.

Pelzer, D. (1995). *A Man Named Dave.*. New York: HCI.

Pelzer, D. (1995). *The Lost Boy*. New York: HCI.

Riggs, R. (2011). *Miss Peregrine's Home for Peculiar Children*. Philadelphia: Quirk Books.

Rylander, C. (2011). *The Fourth Stall*. New York: Walden Pond Press.

Sonnenblick, J. (2005).*Drums, Girls & Dangerous Pie*. New York: Scholastic.

Wiesel, E. *Night*. New York: Penguin.