EFFECTS OF INFORMATION DELIVERY TYPE ON READING COMPREHENSION AND READING ENJOYMENT LEVEL IN MALE SEVENTH-GRADE DISINTERESTED READERS

By

Douglas R. Damon

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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APPROVED BY:

Ellen Black Ed. D., Committee Chair

Andrew Alexson Ed. D., Committee Member

Christopher Clark, Ed. D., Committee Member

ABSTRACT

In this quantitative study, reading comprehension scores and reading enjoyment level of forty-two seventh-grade males (N = 42) from a Mid-Atlantic private school were examined to determine the effect of information delivery type. In this true-experimental posttest only control group design, forty-two participants self-identified as disinterested readers. The control group (n = 22) received a traditionally printed excerpt from a novel, while the treatment Group (n = 20) received the same excerpt enhanced with embedded digital links through QR (Quick Response) codes. Upon completion of the reading, participants took a reading comprehension test, and completed a reading enjoyment questionnaire. Data was analyzed using a MANOVA and two follow-up ANOVA. Results showed that participants in the enhanced group scored higher in reading comprehension than the traditional print group, and that the enhanced print group also enjoyed the reading experience more than those in the traditional print group.

Keywords: Quick Response Codes (QRC), digital links,

Reading comprehension, reading enjoyment, mobile technology

ACKNOWLEGEMENTS

The calling of God to embrace this process has been clear from the outset and none of it could have been completed if not for the supernatural empowerment of the Holy Spirit every step along the way. I continue to find myself living in a state of being overwhelmed by His goodness and faithfulness each and every day. So my first dedication is to my Lord and my God, Jesus Christ who has sustained me as well as provided me with the ability to make it to the end.

Mindy, you are the greatest gift that God has ever given to me. There is no way that this degree could have ever even become a reality without your encouragement and support. In addition to that, you have fulfilled yet another one of my dreams; being able to go to school with you. What's more is the amazement that I have experienced as I have watched you grow in wisdom and knowledge through this journey. I am so proud of you for never settling for less than God's best in your life and as a result never allowing me to settle either. You inspire me daily and for that I am and will be eternally grateful.

To my "mighty men" also known as my sons; Chad, Seth, Parker, and Jackson; I am so proud of the amount of understanding that you all have displayed as both mama and I have had to commit a lot of time to the pursuit of these degrees. It never could have happened if you all didn't "get it", but you do and that is such a tremendous gift to us. Thank you for being strong and independent so that we could finish strong ourselves. I love each of you more than words can express.

Dr. Black, you have been such an incredible source of encouragement, strength, and determination throughout the course of this journey toward my Ed. D. Your wisdom and insights along the way have provided me with the ability to avoid many of the pitfalls that prevent so many from reaching their final destination and rob so many from living their dreams. I cannot thank you enough for your investment in my life; academically, professionally, spiritually, and personally

Dr. Rockinson-Szapkiw, your phenomenal insight into the statistical world is only dwarfed by the phenomenal person that you are. Thank you so much for your guidance and direction, especially with regards to the statistical information.

Dr. Alexson & Dr. Clark, thank you for taking the time to review this study, over and over again. Your insights and suggestions were the epitome of Proverbs 27:17, “As iron sharpens iron, so one man sharpens another”.. Thank you for investing in me as a brother in Christ!

Table of Contents

List of Tables

List of Figures

CHAPTER ONE: INTRODUCTION

This chapter provides insight into the purpose of this research study. The study explores challenges of the disinterested male seventh-grade readers in terms of reading comprehension and reading enjoyment. Further, this chapter points to the importance of gaining understanding into these challenges.

Over the course of the history of education in the United States, researchers have debated the existence of a gender gap in educational achievement (DiPrete & Legewie, 2012; Heyder & Vessels, 2013; Logan & Johnston, 2010; Robinson & Lubienski, 2010; Whitmire & Bailey, 2010). For years, scholars argued that female students were the victims of the achievement gap in education (Robinson & Lubienski, 2010), but recent studies (Heyder & Vessels, 2013; Logan & Johnston, 2010; Whitmire & Bailey, 2010) indicate just the opposite. These studies show that male students have continued to fall farther behind in regards to academic achievement. Research purports that males tend to lead the way in categories such as school dropouts, special education, and grade level retention (DiPrete & Legewie, 2012). The reason for such a discrepancy in the academic performance between male and female students is a highly debated topic; however, one strong indicator of poor academic achievement is found in deficiency in reading ability (Whitmire & Bailey, 2010).

It has been well established that males lag behind females in reading (Robinson & Lubienski, 2011; Whitmire & Bailey, 2010). Logan and Johnston's (2010) study found that "girls outperform boys on tests of reading comprehension" (Logan & Johnston, 2010, p. 175). After having performed a longitudinal study, Logan and Johnston (2010) found that the percentage of younger students who were underperforming on reading assessments was almost the exact same percentage of students who ultimately dropped

out of school (Logan & Johnston, 2010). Adding to the issue, recent research suggests that the gap in reading ability and reading engagement begins at a very young age, perhaps even as early as between kindergarten and third grade (Husain & Millimet, 2009).

A study conducted in Australia showed an average literacy gap between males and females, of the same demographics, to be between approximately 5%-10% (Berndt, Henry & Lagos, 2012). Research suggests that it is imperative that educators and administrators alike begin to emphasize reading literacy early and often in the life of the student (Herbers, Cutili, Supkoff, Heistad, Chan, Hinz, & Masten, 2012); regardless of gender, socioeconomic status, or ethnicity.

The current study however, will focus upon middle school males, and more specifically, seventh-grade males who classify themselves as disinterested readers. Research suggests (Huang, 2012) that the middle school period is a crucial phase for engaging students, and missed opportunities can**,** in many cases, be seriously detrimental to the overall academic achievement of the student. Further contributing to the issue is the reality that many middle school students consider themselves to be disinterested in reading (Gordon & Lu, 2012). Research indicates that a large number of these disinterested readers are seventh-grade males (Clark & Poulton, 2011). According to Gordon and Lu (2012), the student who begins high school with good reading comprehension skills is likely to excel academically and remain in school. Conversely, the student who begins high school with poor reading comprehension scores faces a greater likelihood of academic struggle and even dropout (Gordon & Lu, 2012). In order to prepare the middle school male for academic success, an intervention to engage the

disinterested reader, before reaching high school, could greatly benefit the learner as well as the educators concerned with improving instructional methods.

This study considers information delivery types; traditional print (TP) and enhanced print (EP) in an effort to examine their effects on reading comprehension and reading enjoyment level. Existing research concerning Experiential Learning Theory, gender learning patterns, and reading instruction are considered.

Background

Middle school administrators and teachers face the challenge of providing and/or creating opportunities for the male students to change their perception of the reading process (Heyder & Kessels, 2013; Whitmire & Bailey, 2010). According to Brumberger (2011), due to the middle school male's attraction to digital media, it is possible that this medium could be used to enhance the reading experience and bring a heightened interest in reading and yield higher levels of reading comprehension. If the experience of reading becomes more meaningful to the student who self identifies as a disinterested reader, it is conceivable, according to Kolb's Experiential Learning Theory (1984), that the concrete experience (the action, or doing that is being read about) which is imagined as the reader digests the print, can become more real (active experimentation) if the reader experiences the story on a deeper level through enhanced media (McClellan & Hyle, 2012), thus, increasing reader engagement. Kolb's Experiential Learning Theory (ELT) (1984) provided the theoretical framework for this study.

Research suggests that females tend to out-perform males in reading comprehension as well as other areas of Language Arts (Coddington & Guthrie, 2009). Typically, the Language Arts have relied heavily on traditional print. The significance of

this fact is critical for several reasons; the most important being that research suggests that males are more inclined to be visual learners (Reid, 1987; Serafini, 2013). A study by Serafini (2013) showed that reading engagement may be enhanced by appealing to the males' visual interest. Serafini's (2013) study was in alignments with Brumberger's (2011) findings that suggested that males are more attracted to digital media than females. These studies indicated that it is possible that reading enjoyment and reading comprehension scores may be improved through the inclusion of media into the reading experience. By embedding digital links through QR codes into traditional print literature, students are afforded the experience of hearing the sounds associated with a particular scene and seeing the factors that contribute to the climax of the plot of the story they are reading. Because of this, the action that is being read about may become more experiential rather than simply observed, thereby bridging the imagined world to the experienced world by supported engagement. Becoming engaged in the text seems to be more natural for females than males (Brumbereger, 2011; Logan & Johnson, 2010). In addition, the current generation of students, those born within the last 15-20 years are the first to be, "born into a digital world" (Johnson & Gooliaff, 2013, p. 29). Therefore, efforts to target the reader's engagement can be supported by a more experiential reading experience. Visual enhancement may promote males to become more interested in reading (Johnson & Gooliaff, 2013).

The need for motivational strategies to engage middle school readers has prompted a widely adopted Accelerated Reader (AR) program throughout the United States as well as other countries (Johnson & Howard, 2003). The AR program requires students to "recreationally" read books that are assigned "AR points". Each student,

typically based off of some sort of pretest, must earn a certain amount of AR points over the course of an academic quarter, semester, or year in order to receive credit or a grade for their reading. The grade is calculated through a reading comprehension test that is designed for each book on the AR list. Students read the book and then take the test. The number of points earned is contingent upon percentage that they received on their reading comprehension test. For example, if a book is worth ten AR points and a student earns 80% on the test then he will have effectively earned eight AR points out of the ten possible for the book of choice. One of the fundamental concepts behind the AR structure is the student's ability to choose the book according to interest. The effectiveness of the AR program, however, is debated among researchers (Johnson & Howard, 2003; Huang, 2012). According to Allred (2008) and Pennington (2010), the United States Department of Education considers the AR program to be marginal.

Learning is defined as "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 38). It is therefore conceivable that a richer experience in the learning process could take the reader into the concrete experience (doing) mode instead of the reflective observation (observation) mode. Such enhancement of print material is available through digital links embedded in traditional print. QR codes serve as technological connectors between print and digital information. According to Lin, Luo, and Chen (2013) the QR code is defined as "a two-dimensional barcode that encodes information" (Lin, Luo, & Chen, 2013, p. 137). Based on Experiential Learning Theory (Kolb, 1984), this digital link could expand the reader's experience with the material and support deeper engagement.

Kolb's (1984) Experiential Learning Theory holds that learning occurs efficiently through concrete experience (doing), reflective learning (observing), abstract conceptualization (thinking), and active experimentation (planning). The premise of the theory as applied to this study is that enhanced print literature solidifies the concepts as the student's reading activity becomes experiential instead of observational only.

Research suggests that "primary participation in physical experiences offers many ways to ignite contemplation and increase the appreciation of life's deeper meaning" (Lehrer, Rikakis, & Kelliher, 2013, p. 47). Tools such as QR codes present the opportunity to create an experiential environment for the middle school male reader through the enhancement of audio and visual reinforcement of the information.

The current study considered differences in reading comprehension scores and reading enjoyment level to examine efficacy of information delivery type based on Kolb's Experiential Learning Theory (ELT). This quantitative study examined differences in reading comprehension scores of forty-two male seventh-grade students at a large private school in the Mid-Atlantic region of the United States. Participants self-identified disinterested readers ($N = 42$) according to a 28-item "Reading and You Attitude Survey" (see Appendix A). In this true-experimental posttest only control group design, the control group ($n = 22$) received reading material in traditional print, and the treatment group ($n = 20$) received the same material enhanced with embedded QR codes. Upon completion of the reading passage, participants took a reading comprehension test based on a fiction novel (see Appendix B). Data was collected through a reading interest survey, a reading comprehension test, and a reading enjoyment questionnaire (see Appendices A-C).

Studies on gender differences in academic performance are nothing new to this millennium. In fact, these types of studies have been conducted throughout the 20th Century dating as far back as the early 1900's (Wheldall & Limbrick, 2010). Much of the research, through the years, has pointed towards a discrepancy in academic achievement between males and females in various subjects. For example, historically speaking, research has pointed toward males as achieving higher scores in math and science and females receiving higher scores in reading-based subjects such as Language Arts (Meece, Glienke, & Burg, 2006). This trend has been the case for many decades.

Research (Metz, 2010; Falch & Naper, 2013; Nisbett, 2011) suggest factors such as learning style, reading motivation, socioeconomic status, ethnicity, teacher bias, and the latest brain-based research as reasons why these achievement gaps exist within education. While the factors are worthy of research; research could prove beneficial in determining if one factor proves statistically more influential than the others. As an example, understanding the role of reading motivation upon the reading comprehension scores of males could greatly improve teaching techniques within the classroom setting (Guthrie & Wigfield, 2000). "Motivation activates behavior" (p. 406), which means that motivation is the driving force behind taking a student from passive to aggressive in regards to a specific subject, according to Guthrie and Wigfield (2000). Research (Coddington & Guthrie, 2009) clearly indicates that males appear to be less independently motivated to read than their female counterparts.

According to Jackson (2008), the opportunity for educational growth has not always been equal between the sexes. Prior to the Revolutionary War, for example, most American schools were created and reserved for the males in society. Any education for

females was primarily oriented towards meeting the needs of their male counterparts and raising high functioning sons who could contribute well to their communities (Jackson, 2008). With this as the case, the assumption cannot be made that females were less interested or as motivated as males with regards to reading and learning. Research (Driessen & Langen, 2013; Sullivan, Joshi, & Leonard, 2010) indicates that females are outperforming males today, specifically in the academic areas related to reading.

Another possible factor contributing to male underachievement in education is the overwhelming unbalance of the male/female teacher ratio that exists in virtually every aspect of elementary and secondary education. In the late 19th century, approximately 39% of all elementary and secondary educators were males (Carter, Gartner, Haines, Olmstead, Strutch, & Gavin, 2006). This statistic has continued to drop dramatically over the course of a century to the point that now, according to a report by the Bureau of Labor Statistics (2009), males constitute only 2.2 % of teachers in the realm of early education, which includes preschool and kindergarten. Today, the National Center for Education Statistics suggests that approximately 25% of all teachers, public and private, are male (www.nced.ed.gov, 2011). Although some research suggests that this has no significant bearing with regards to male academic achievement, other research would disagree (Dee, 2007; Lavy, 2004). Dee (2007) and Lavy (2004) both contend that both males and females perform better academically when taught by someone of the same sex. Perhaps this, along with the unbalanced ratio of male and female teachers, could explain why many believe the United States' education system is facing a gender crisis in academic achievement (Dee, 2007; Lavy, 2004). .

Another potential explanation concerning middle school males' lack of academic achievement can be found in brain-based research, known as functional neuroimaging. Functional neuroimaging is the use of neuroimaging technology, such as a fMRI, in order to "discover blood flow within the brain during specific activities to determine, often with a view to understanding the relationship between activity in certain brain areas and specific mental functions" (U.S. Department of Education, 2000). It is this type of research that has led to the discovery of the fact that the left side of the brain has a tendency to develop more quickly in females than in males. The left side of the brain is the portion of the brain that is known to relate to verbal, written and linguistic ability, which gives the female mind a natural advantage (Gabriel & Schmitz, 2007).

Neuroimaging also reveals that the right side of the brain, the portion responsible for spatial reasoning and mathematic concepts, is larger in males than in females, and could likely explain Bonomo's (2010) findings that suggest the male's higher academic performance in math and science. Since the left side of the brain is more creative and consequently smaller in males, this fact may explain why males have a tendency to be more visually oriented, at least in certain aspects, than females (Putrevu, 2001). Research shows that there is a dramatic difference between the numbers of males who play video games contrasted with the numbers of females (Lachlan, Holmstrom, Lucas, Greenberg, & Sherry, 2008). Educators who modify their instructional design in consideration of the male's interest in technology may use the male's visual propensity to their educational advantage (Bonomo, 2010).

Information Delivery Types

Traditional Print: Information delivered by traditional forms of print literature such as books, magazines, journals, and the like are known as hard copy. Among all readers, there has been a moderate shift away from the use of hard copy with the vastly popular e-readers such as “Kindle” and “Nook” (Rainie, Zickuhr, Purcell, Madden, & Brenner, 2012). Although digital in nature, e-readers still seem to serve the same purpose as traditional print since the words are still on a page, void of any environmental enhancement. If males have had a tendency to lag behind females in the area of reading skills as suggested by research (Robinson & Lubienski, 2011; Whitmire & Bailey, 2010), then, it would seem that simply shifting words from a physical/material page to an electronic page will more than likely not have a significant impact on overall reading skills.

A recent study (Wells, 2012) investigated the impact of e-readers on reading comprehension and reading motivation and concluded, “there was not a statistically significant difference in either comprehension or motivation levels based on book format” (Wells, 2012, p. 92). These findings are aligned with the scientific evidence that suggest that males and females, neurologically speaking, learn differently (Burman, Bitan, & Booth 2008; Phillips, Lowe, Lurito, Dzemidzic, & Mathews, 2001). It seems logical then that taking steps to understand these differences should, at the very least, stimulate change in the way in which education is approached.

Enhanced Print: According to Logan and Johnston (2010) and Carini, Kuh, and Klein (2006), in order for the learner to grow in any facet of knowledge or skill, the learner must be engaged in the learning process. Herein lies the belief behind embedding

traditional print with digital links to audio or visual files that are directly related to the subject matter that is being discussed in the literature (Law & So, 2010). Through the use of items such as Quick Response codes (QR codes) the reader has the opportunity to engage multiple senses, which could further solidify the information by bringing about an experiential reading encounter instead of an observed reading encounter (Chen, Wei, Huang, & Kinshuk, 2013; Ozdemin, 2010). Because of the relative infant stage of such resources, there may be some hesitancy on the part of educators and administrators to use these tools, even though the business world has embraced the benefits of visualization to engage consumers (Brumberger, 2010; Chen et al., 2013; DeSilets, 2012; Ozdemir, 2010).

Although QR codes have been used for quite some time in the business world, only recently has the use of digital links expanded into the world of education (DeSilets, 2012). This transition from a commerce focused tool to that of an educational enhancing tool could prove monumental. These are the types of innovative "lateral leaps outside familiar boxes into areas where existing technologies that work in one industry are creatively applied to another" (MacKinnon & Sanford, 2010, p. 5) and could potentially revolutionize the effectiveness of that industry, which, in this case, is education.

Problem Statement

The problem considered in the current study is the lack of identification and implementation of effective reading strategies that engage the seventh –grade male disinterested reader. Compounding the issue of poor reading comprehension scores among middle school males is the fact that many middle school males consider themselves to be "disinterested readers" (Gordon & Lu, 2012). According to the National

Endowment for the Arts (2007), less than one-third of thirteen-year-olds read on a daily basis, and fifteen- to twenty-four-year-old males spend only seven to ten minutes per day on voluntary reading. This is about 60% less time than the average American (Iyengar, S., Sullivan, S., Nichols, B., Bradshaw, T., Bauerlein, M., & Rogowski, K., 2007). Many middle school students consider themselves to be disinterested in reading (Gordon & Lu, 2012), and research indicates that a large number of these disinterested middle school readers are seventh-grade boys (National Literacy Trust, 2011). According to Gordon and Lu (2012), a student who begins high school with good reading comprehension skills is likely to excel academically and remain in school. Conversely, a student who begins high school with poor reading skills is likely to struggle and even potentially drop out altogether. An intervention to engage the disinterested reader before reaching high school could greatly benefit the learner as well as the educators concerned with instructional methods.

Since digital links are still in their infant stage as compared to printed material, which dates back to the mid-15th century, much research is needed in order to determine the impact on reading comprehension and reader engagement (Law & So, 2010). Researchers and educators alike have begun looking into the benefits of using these tools for the purpose of educational growth. While existing research has explored the impact of incorporating digital links into traditional print material (Brumberger, 2010; Chen et al., 2013; DeSilets, 2012; Ozdemir, 2010) a gap exists in the literature concerning the specific age group upon which this study is focused.

Purpose Statement

The purpose of this quantitative true experimental post-test only control group study was to test Kolb's (1984) Experiential Learning Theory (ELT) that measures reading comprehension (DV) and reading enjoyment (DV) based on information delivery type (IV), traditional print (TP) and enhanced print (EP) controlling for reading comprehension scores and self-report of reading enjoyment in forty-two seventh-grade males at a large private school. The control group (n = 22) received traditional print (TP) delivery type, generally defined as a print version of an excerpt from a fiction novel. The experimental group (n = 20) received enhanced print (EP), that is generally defined as the same passage from the novel, but was expanded to include six QR codes linked to movie clips from a film based on the novel. Both groups took a reading comprehension scantron-test, and then completed a reading enjoyment questionnaire.

The dependent variables in this study were learning outcomes as measured by reading comprehension scores, and reading enjoyment level. The study was grounded in Kolb's (1984) Experiential Learning Theory. This theory was used to study cognitive development. The theory, as applied to this study, indicates that there should be a significant difference in learning outcomes as measured by reading comprehension scores based on information delivery type in male seventh-grade disinterested readers. Based on this theory, the independent variable, information delivery type, should positively affect the dependent variable, reading comprehension scores, through the act of incorporating additional senses into the reading process. Involving the visual and aural senses was accomplished by the use of digital links through embedded QR codes into traditional print literature.

Further, it was expected that there would be a significant difference in reading comprehension scores and reported reading enjoyment levels based on information delivery type in male seventh-grade disinterested readers.

Significance of the Study

This study was conducted in order to bridge the current gap in the literature with regards to two areas. First, although QR codes are not new, their use within the educational context is only now starting to be explored (Shumack, Reilly, & Chamberlain, 2013) in terms of the value of visualization in education. One purpose of this study was to investigate whether embedding QR codes into traditional print literature impacts reading comprehension scores. Second, the target population of this study was seventh-grade males who were self-reported disinterested readers. Specifically, the current study identifies and actively implements strategies for improving the seventh-grade male's reading enjoyment level; thus, further engaging the reader as evidenced in improved reading comprehension scores. David Kolb's Experiential Learning Theory, a relatively new theory in comparison with the primary educational theories of Piaget, Lewin, and Dewey, that have led educational research for so many years, was tested in this study.

A recent study (Ozcelik & Acartuk, 2011) found that by implementing digital links into traditional print literature through the use of mobile technology, learning outcomes were enhanced with college students. Findings from the current study could expand the body of research concerning Experiential Learning Theory, and addresses the gap in the current literature concerning the seventh-grade male disinterested reader as an unstudied population.

Further, Common Core Standards for seventh-grade grade students expect that the student will be able to "analyze how particular elements of a story or drama interact (e.g. how setting shapes the characters or plot)" (CCSSO, 2010, p. 36). The use of visualization has been shown to be effective in the reader's ability to gain clues concerning the tone and setting of literature (Brumberger, 2011). While Reading Standard 3 for 6-12 grades specifically mentions graphic novels as a tool to achieve analysis of setting, characters, and plot, it is clear that the use of visualization is recognized as an enhancement for story understanding (Tomasavich, 2013). Therefore, curriculum and policy makers should be concerned about the use of digital links to enhance reading material to demonstrate reading strategies aimed at meeting the standards.

Research Questions

This study sought to understand the efficacy of information delivery type (traditional print and enhanced print) on reading comprehension as measured by reading comprehension scores, and reading enjoyment level, as measured by a reading enjoyment questionnaire, in an effort to answer the following research questions:

RQ 1: Is there a statistically significant difference in the linear combination of reading comprehension scores and reading enjoyment level based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers?

RQ 2: Is there a statistically significant difference in reading comprehension scores based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers?

RQ 3: Is there a statistically significant difference in reading enjoyment level based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers?

Hypotheses

These are the hypotheses for the study:

H_1: There is a statistically significant difference in the linear combination of reading enjoyment level based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers;

H_2: There is a statistically significant difference in learning outcomes as measured by reading comprehension scores based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers;

H_3: There is a statistically significant difference in reading enjoyment level based on information delivery type in male seventh-grade disinterested readers.

These are the null hypotheses for the study:

H_{01}: There is no statistically significant difference in the linear combination of reading comprehension scores and reading enjoyment level based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers;

H_{02}: There is no statistically significant difference in learning outcomes as measured by reading comprehension scores based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers;

H_{03}: There is no statistically significant difference in reading enjoyment level based on information delivery type in male seventh-grade disinterested readers.

Identification of Variables

The independent variable in this study is information delivery type with two levels: traditional print (TP) and enhanced print (EP). The sample (N = 42) were classified by their reading interest level as assessed through the use of a reading attitude survey, through which the responses of the participant serve to self-identify as "disinterested" in reading. The dependent variables were reading comprehension scores indicating comprehension of the read material and level of reading enjoyment as measured through a Likert-scale (see Appendix D) based off of the reading experience.

Definitions

Experiential Learning Theory (ELT): Theory developed by David Kolb (1984), based off of the works of Lewin, Dewey, and Piaget, suggesting that learning takes place most effectively through concrete experience, observation and reflection, the forming of abstract concepts, and testing in new situations.

Male gender role transitions: events and nonevents in adolescent male development that produce changes in gender role values and self-assumptions (O'Neil, Challenger, Renzulli, Crasper, & Webster, 2013).

Quick Response Codes (QRC): A two-dimensional bar code that is widely used to cause a Web page to download into the user's smartphone when scanned with a mobile tagging application. It is a "two-dimensional barcode that encodes information" (Lin, Luo, & Chen, 2013, p. 137).

Reading Comprehension: "The capacity to perceive and understand the meanings communicated by texts (Scholastic.com).

Reading motivation: the reader's personal goals and values concerning the topics and purposes of reading (Guthrie, Wigfield, Humenick, Perencevich, Taboada, & Barbosa, 2006).

Mobile Technology: For the purposes of this study, this will be defined as any device with the ability to read a QRC or DW such as a mobile phone, iPod, iPad, or tablet.

Research Summary

A quantitative post-test only control group design was used in order to examine score differences and to attribute the difference to the effects of information delivery type on reading comprehension as measured by a reading comprehension test and reading enjoyment levels as measured by a questionnaire. Using a MANOVA and two follow-up ANOVAs, the dependent variables, reading comprehension scores and reading enjoyment levels, will be examined to compare the effects of the independent variables; information delivery type with two levels: traditional print and enhanced print.

CHAPTER TWO: REVIEW OF THE LITERATURE

Introduction

This chapter explores the relevant literature concerning reading interest and reading comprehension of male readers. First, historical and recent studies pertaining to the male's propensity to be disinterested in reading are examined in the background section. Secondly, the theoretical framework section discusses the development of Kolb's (1984) Experiential Learning Theory, and the theory's application to the current study. Related literature concerning digital links and Quick Response (QR) codes is examined, followed by the chapter summary.

There is large amount of research that substantiates the reality regarding male underachievement in overall reading skills (Brumberger, 2011; Burman, Bitan, and Booth 2008; Limbrick, Wheldall, & Madelaine, 2011; Logan & Johnston, 2010; Pagani, Fitzpatrick, & Parent, 2012; Piotrowski, 2010). Limbrick, Wheldall, and Madelaine state that, "throughout the literature it has been repeatedly demonstrated that girls outperform boys on measures of reading and that there are more boys than girls who struggle with reading or have a reading disability" (Limbrick, Wheldall, & Madelaine, 2011, p. 17). In addition to this, there is a significant amount of information attempting to explain why male students are being out-performed in reading achievement (Bouchamma, Poulin, Basque, & Ruel, 2013; Brumberger, 2011; Davilaa & Patrick, 2010; Jenksin, 2009; Moeller, 2011; Shaywitz, 1995; Sokal & Katz, 2008; O'Neil, Challenger, Renzulli, Crasper, & Webster, 2013; Pugh, 1996). From brain-based research and neuro-imagery to the use of e-readers versus traditional print literature, the suggestions for why males tend

to fall short of expectations with regards to general reading skills and, more specifically, reading comprehension are many and varied.

Background

Exploration of the gender gap in education is not a new phenomenon, as Hinshelwood (1917) pioneered the research into the differences in male and female reading abilities, and coined the phrase "word blindness" as applied to males (Whedall & Limbrick, 2010). Hinshelwood studied both male and female readers, and determined that males had much more difficulties in reading and comprehension, as well as in ability in keeping on task during reading sessions. Males were identified by Fisher (1910) as constituting 73% - 85% of those children diagnosed with reading disabilities. In the last ninety years, then, males have been documented as performing lower academically than females, even though education was at one time thought of only as necessary for males (Whedall & Limbrick, 2010). Such progress has been made, however, in terms of measuring learning outcomes, and neuro-imagery for brain-based research, yet according to Whedall and Limbrick (2010), male's reading achievement and lack of creative thinking (Wagner, 2012) is still an issue in the educational system.

Whedall and Limbrick's (2010) study investigated inconsistencies reported in gender research concerning the ratios in which females academically outperformed males, specifically in reading achievement. Whedall and Limbrick (2010) discussed their findings in terms of gender ratios for low-progress readers, severity of selection, and gender ratios and grade, in order to reduce the factors that may have contributed to the high ratios as reported in previous research. Using a large population sample, Whedall

and Limbrick's (2010) spanned over a ten-year period. The research indicated an agreement with earlier research in that males were found to be "low-progress readers' (Whedall & Limbrick, 2010, p. 427), but that once inconsistencies were controlled for, the gender ratios in earlier research were likely not as high as reported in earlier research.

Today's middle school males

Wagner (2012) suggests that the reading underachievement in middle school males contributes to a lack of creative thinking that is much needed in STEM studies and careers. The generation currently in middle school is referred to as the "innovation generation" by Wagner (2012). This generation, according to Wagner, (2012) is not unmotivated, but instead, they are differently motivated. He cites their differences in motivation as compared to their parents with the following characteristics, stating that current middle school students are: more flexible, more inquisitive, and more comfortable with collaboration. Wagner (2012) also holds that the students included in the innovation generation are skeptical of adult authority and institutions that "still reward old school behavior" (Wagner, 2012, p. 19). It is also worthy of note that today's middle school students are being taught by educators known as the Millennial learners, as well as seasoned, traditional educators. In order to engage the minds of disinterested readers, habits must be cultivated that encourage "play" rather than mindless processing of information. According to Wagner (2012), in order for innovation to be applied to learning techniques, there must be a level of expertise, creative thinking, and motivation on behalf of the educator.

Through years of qualitative research, Tony Wagner, in his book "*Creating Innovators*" shares that "reading, valued as an end in itself, is a form of discovery and

play, is not meant to be a means to the end of doing well in school" (Wagner, 2012, p. 217). He found that reading for enjoyment was a lifelong pattern of such innovative learners as Mark Zuckerburg, Bill Gates, Kirk Phelps, and many others who may not have necessarily performed well by academic standards. Wagner states that the education system is "charged with an essentially conserving task, to preserve and transfer current knowledge to the next generation" (Wagner, 2012, p. 141), implying that passing on of tradition can overshadow creative thinking and innovative processes of inquiry. He further suggests that the characteristics of traditional education "transfers information through memorization with few opportunities for students to ask questions or discover things on their own – the essential practices of innovation" (Wagner, 2012, p. 141). If the essential practices of creative thinking are being ignored or minimized in the educational system; and if national survival and success are hinged on a future in STEM fields, then the investigation of male underachievement in reading is timely (Wagner, 2012).

Reasons some males do not like to read

One prominent theory that attempts to shed light on the issue of the lack of male literacy is the fallacy that reading is not a masculine activity (Harrison, 2010). According to Harrison (2010) many males think that reading is not a masculine activity. Falling into the same category as cooking or house cleaning, reading has been deemed appropriate for a female but not a male (Harrison, 2010). But just as other activities are neither more appropriate for a female than they are for a male, reading is something that can be embraced by everyone regardless of their gender.

Literature shows that approximately 75% (NCES, 2011) of all teachers are female which could contribute to the faulty perception that teaching, and therefore learning, is

for females (O'Neil et al., 2013). O'Neil et al (2013) consider gender role transitions to be "the events and nonevents in gender role development that produce profound changes in gender role values and self-assumptions" (O'Neil, et al., 2013, p. 194). O'Neil et al (2013) attribute the adolescent male's perception of masculinity and femininity to be crucial factors that contribute to the male's value system and categorical separation of things considered feminine and masculine.

O'Neil et al (2013) reported on potential interventions to empower middle-school males with a sense of healthy masculinity showed that gender role transitions affect all realms of the middle school male's life, including social, academic, physical, sexual, psychological, and emotional (O'Neal et al., 2013). The report focused on the vulnerability of the male adolescent, largely due to the restrictive nature and prevalence of masculine norms. The study that O'Neil et al (2013) conducted was actually a forum that was open to middle school urban males, mainly constituted by Hispanic and African American males. The study revealed that educational and social programming that meets needs specific to the adolescent males can address the vulnerability and existing gap between male and female learning (O'Neil et al., 2013). Through programs such as O'Neil's et al (2013) forum, supporters believe that as masculinity is portrayed within the literature itself, young men are presented with the tools necessary to develop and embrace such alternative concepts of masculinity (Harrison, 2010). Further, literature suggests that the kinds of literature read weighs heavily upon the interest level of the reader (Logan & Johnston, 2010; Taboada, 2009).

Over the past several decades, the concept of hegemonic masculinity has dominated the conversation of what it means to be a man (Donaldson, 1993). This

concept of masculinity leads one towards the idea that genuine masculinity is manipulative at its core in order for the most dominant male to maintain control (Donaldson, 1993). Donaldson further suggests that, when followed to its logical end, hegemonic masculinity is homophobic and oppressive. An archaic view of true masculinity can easily be linked to the perception that an occupation such as educator, which requires certain measures of compassion and nurturing, both of which are often viewed as feminine attributes, is not something that a “real man” should pursue (Donaldson, 1993). Gender bias in education seems to be birthed from the belief that the entire educational process, as a whole, is geared more towards women and therefore should not be something with which males concern themselves (Dutro, 2003). Dutro states, “Boys' reading - both what they read and how they interpret it - is affected by their understanding of who they are and what is acceptable in a masculine environment” (Dutro, 2003, p. 490).

The concept of acceptable masculinity can dictate what reading, and therefore learning, looks like for both young boys and adult men (Harrison, 2010). Reading achievement and confidence is important because it enables the learner to achieve goals, develop knowledge, and open up potential to allow the reader to take the rightful place in society (Statisique Canada, 2010); all of which can be called into question if the male population does indeed, as research suggests, show a lack of reading interest and lower achievement than females (Bouchamma, Poulin, Basque, & Ruel, 2013; Brumberger, 2011; Davilaa & Patrick, 2010; Jenkins, 2009; Moeller, 2011; Shaywitz, 1995; Sokal & Katz, 2008; O’Neil, Challenger, Renzulli, Crasper, & Webster, 2013; Pugh, 1996).

Although there currently exists the practice among schools to understate the power of social influence in the academic lives of their male students (Lusher, 2011), research findings (Lusher, 2011) demonstrate an important interconnection of social status and academic achievement, and adds to the empirical body of work concerning male reading underachievement. Both Bouchamma et al (2013) and Lusher's (2011) findings support the belief that the female outperformance of males in reading achievement is due to several factors including physiological, psychological, environmental, and social.

According to the Skelton and Francis (2011), however, there is a very real danger of over-generalization of the reading achievement gap by simply trying to explain away the gender gap in literacy as one that exists solely due to the physiological differences between males and females. Making such an assumption can prompt reactive measures and lead to the developmental strategies that are oriented more toward a stereotype than they are toward the reality i.e. *Books for Boys,* 2010 (Skelton & Francis, 2011).

Additionally, other studies (Lingard, Martino, & Mills, 2009) suggest that by reducing the gender gap to nothing more than a physiological phenomenon is actually robbing male students of the opportunity to be stretched and challenged to grow in areas outside of their areas of comfort and/or interests. Topic of interest for male readers is considered a prime indicator of whether or not the student will become engaged with the material (Bouchamma et al, 2013). Bouchamma et al., (2013) hold that males "experience this need for freedom to choose which books to read more than do females, and males feel more motivated to read than when books are imposed on them" (Bouchamma, Poulin, Basque, & Ruel, 2013, p. 485).

Further, studies also support efforts to avoid a masculinized program bent toward males (Sokal, 2010; Sokal, Katz, Chazewski, & Woicik, 2007; Sokal, Thiem, & Crampton, 2007) on grounds that such practices promote a generalization of all boys to having the same learning pace, style, or interest (Sokal, 2010). Sokal's (2010) study collected data from three countries – Canada, Austrailia, and Thailand, in an effort to examine two conceptions about the male views of reading as a feminine activity. The report (Sokal, 2010) opposes the belief that males are disinterested in reading due to the feminine attributes of reading, and the position that feminine success in reading intimidates boys from pursuing reading as an activity of interest (Sokal, 2010). At the heart of Sokal's (2010) research is the observed theme that emerged that basically objects to boys and girls being homogenous within their own gender groups. While some research (Bouchamma, Poulin, Basque, & Ruel, 2013; Brumberger, 2011; Davilaa & Patrick, 2010; Jenkins, 2009; Moeller, 2011; Shaywitz, 1995; Sokal & Katz, 2008; O'Neil, Challenger, Renzulli, Crasper, & Webster, 2013; Pugh, 1996) cite a lack of reading achievement in males due to a generalized masculinity-threat of reading as a feminine preferred activity, other research (Sokal, 2010; Sokal, Katz, Chazewski, & Woicik, 2007; Sokal, Thiem, & Crampton, 2007) conflicts with this view as the study focused on such questions that asked males whether or not reading was viewed as a "girl's activity"; to which 24% said that they did view reading as a feminine activity. The methods employed in previous studies that support programs that as "boy-friendly", according to Sokal (2010), are faulty in that questions asked tend to originate with a presupposed division between the genders, such as the question referenced above. Sokal (2010) poses that questions like these provide only a force-choice for the respondent, and

the question itself may influence the answer choice.

Sokal's (2010) three studies used the Gendered Activities Q-sort (GAQS), which gave the respondents many choices for placement of various activities as being considered masculine or feminine according to which activities are normally done by the selected gender. With Sokal's methodological approach, the respondent could conceivably place an activity in both masculine and feminine categories, thereby eliminating the issues that Sokal (2010) considered to be misleading in previous studies. The Canadian study questioned 173 boys who were considered to be struggling readers by their teachers. Instead of the 24% of respondents one may expect to find based on previous research with forced-choice question design, Sokal's (2010) GAQS study found that only 6% answered that they viewed reading as a feminine activity (Sokal, 2010). The Thai study questioned 84 males that ranged in grade levels from kindergarten to sixth grade. Only 5% of the Thai sample respondent that reading was feminine using the GAQS, even though the Organization for Economic CO-operation and Development identified Thailand as having one of the largest gaps in reading achievement based on gender (Sokal, 2010). Finally, the Australian study considered the responses of 58 boys from kindergarten to seventh grade. 14% of the sample responded that they viewed reading as a feminine activity. Sokal (2010) offered no rationale as to why the Australian response "reading is a feminine activity" was twice and trice greater than the Canadian and Thai studies, respectively.

Topics of interest as a motivational factor

Research (Moeller, 2011; Davila & Patrick, 2010) shows that males are most likely to see the point of reading informative texts when presented as mandated material

if the reading leads to immediate know-how. Moeller (2011) found that males generally enjoyed material pertaining to sports, cars, and video games. However, teachers tend to use fictional reading material that reinforces the foci in the curriculum. According to Moeller (2011), fiction most effectively engages the male reader when the text contains action, and when the characters are presented in a timeline with adventure. This literature informs the current study in terms of the selected passage to be used for the experimental study. Thus, "Left Behind" passages selected for the experiment focuses on action in a sequence that explains an unprovoked attack on Israel by Russia from the vantage point of Buck Williams, the news reporter who witnessed the attack, who was a passenger on a plane from which many people mysteriously disappear, leaving only their clothes on the airplane seats. This selection fits the criteria of an action sequence most likely to stimulate male reader's interest, although it is not the traditional informative text that culminates in an immediate know-how. This passage was chosen as it is narrative reading material with the inclusion of action. This combination is important in light of the fact that most teachers choose narrative reading material (Moeller, 2011), and that boys tend to be engaged when reading about action (Davila & Patrick, 2010).

Other research (DeNaeghel, Van Keer, Vansteenkiste, & Rosseel, 2012) findings, however, indicate that there is no significant relationship between reading motivation and reading comprehension according to reader engagement. DeNaeghel et al (2012), however, found that engagement was an influential factor on reading enjoyment. Several studies (Crone & Ridderinkhof, 2011; Shaywitz, 1995; Taboada, 2009) have examined the male reader's engagement as a factor of discussion concerning the gender gap in

reading, and have offered explanations supported by brain-based research and neuro-imagery.

Brain-based research and neuro-imagery

According to the small body of literature concerning neuroimaging and the gender gap in reading (Crone & Ridderinkhof, 2011; Shaywitz, 1995; Taboada, 2009; Pugh, 1996) another potential explanation, brain-based principles, has been researched in order to give insight to the lack of literacy skills among young males as compared to that of young females via neuro-imagery. Unlike the concept of masculinity, which, although is related to gender, is a more social construct (Moeller, 2011), brain-based research is completely hinged to anatomical and physiological differences discovered between the development and function of the male and female brains (Crone & Ridderinkhof, 2011). Brain-based education is defined as “the engagement of strategies based on principles derived from an understanding of the brain" (Jensen, 2008). Because the brain cannot be separated from learning, or vice versa (Jensen, 2008), greater understanding of how the brain functions provide a reasonable explanation for some potential differences in literacy skill performance. According to Lombardi (2010), teachers who were trained in the skills associated with “neurodevelopmental methodology perform better on the PACT Teaching Event, and that faculty members perceive that trained candidates are better prepared than non-trained candidates to differentiate instruction” (Lombardi, 2010, p. 237). Lombardi’s (2010) findings suggest the benefits of more educators becoming familiar with neurodevelopmental methodologies to better serve both males and females in the classroom.

Findings from studies (Jensen, 2008; Lombardi, 2010) have focused on the relationship between emotions, body, and mind. For centuries, emotions and other human qualities of the kind were thought to be simply instinctual, requiring no true cognitive function in order for them to exist (Damasio, 2005). As technology such as functional Magnetic Resonance Imaging has developed to a greater degree, so has the understanding that emotional reactions and instinctive behaviors are both related to the body and the mind (Damasio, Grabowski, Bechara, Damasio, Ponto, Parvizi, 2000). The goal behind neuroscience is to reveal that there is "interdependency" between the body and brain in every aspect of human existence and therefore within the learning process as well (Immordino-Yang & Damasio, 2007). The implications of these findings are significant because they solidify the theory that learning is not something that occurs in a vacuum rather within the greater context of the total person i.e. body, mind, & emotions (Fischer & Bidell, 2006). According to Immordino-Yang (2011) proof of this reality can be found by looking inward at the decision-making processes. For example, a person who once made a decision that brought about social embarrassment or loss of reputation would be reticent to make the same mistake again because of the strong emotional reaction that was caused by the first mistake (Immordino-Yang, 2011).

Brain-based research contributes to the field of education in terms of motivation for the learner's volunteering to participate in reading aloud. Immordino-Yang (2011) uses the example of a physics problem and a student's motivation for being able to solve the problem. Possible options for solving the problem range anywhere from wanting to please his parents to avoiding punishment, such as a bad grade, from his teacher; from avoiding embarrassment in front of his peers to getting into a prestigious university

(Immordino-Yang, 2011). The process of learning and receiving an education cannot be removed from the context of the person as a whole. Just like decision-making, learning is largely impacted by one's prior experiences and the emotions that come from those experiences. Further, if a student volunteers to read aloud in class but stumbles over a few words, which brings about laughter from his classmates, he may never voluntarily read aloud again. In this scenario, social emotions dictate that the risk is too great and therefore the student misses out on the potential opportunity to develop a specific skill. According to Immordino-Yang (2011) this kind of social embarrassment can be powerful enough to prevent the student from going to read to younger children, or feel confidence to read aloud as an adult.

According to Rueda (2006) each school plays an important role in the community. Rueda (2006) holds that the function of the school operates inside a broader culture, guiding and allowing and the social and emotional experiences that children have as members of a school's culture. Failure to recognize the crucial role of each school could have far reaching implications for the students as well as the entire educational system. A community filled with underachieving males will certainly feel the impact in several ways Rueda, 2006). Supporters of brain-based research hold that many explanations lie in the exploration of the human brain, and specifically in gender differences of the brain (Crone & Ridderinkhof, 2011).

A major opponent of the concept of brain-based education, John Geake, from Oxford Brookes University in the United Kingdom, refers to education based on brain scans as "neuromyths". He suggests that the lighting up of the screen shown on neuro-

imaging is futile, and does not serve educational research in terms of true scientific research (Geake, 2008).

Geake's primary contention with the concept of brain-based education is that it starts with solid scientific research and then makes jumps to connect facts that lead to conclusions that may not be supported by the data (Howard-Jones, 2007 from Geake, 2008). One example that he uses specifically references the creation of "Brain Gym", which according to its website (www.braingym.org) suggests, "Brain Gym® International is committed to the principle that moving with intention leads to optimal learning, as seen in the following statement, "Through our outstanding instructors and movement-based programs, we empower all ages to reclaim the joy of living" (www.braingym.org). He contends that, although there is copious empirical evidence that supports the benefits of cardiovascular fitness on one's total health, including his mental health and ability to learn, taking the next step to develop a curriculum that has its basis in movement while learning is more like a leap based on hope as opposed to reality that the scientific data is revealing (Geake, 2008). This specific study has been conducted as more of a cautionary instrument for educators and educational institutions in order to prevent them from "throwing caution to the wind" and simply jumping on the latest trend or fad. Geake (2008) contends that no matter how the brain "functions" during one of the scans, those scans cannot accurate paint a full picture of what takes place within a classroom setting. Students who are subjected to many additional stimuli sitting in a classroom as opposed to a laboratory would quite probably have a very different looking scan, according to Geake (2008).

The male disinterested reader

The belief that reading motivation is a common factor among male disinterested readers is documented in several studies (Burke, Hagan-Burke, Kwok, & Parker, 2009; Limbrick, Wheldall, Madelaine, 2011; Logan & Johnston, 2010; Mata, 2011; Morrison, 2009; Orr, 2011). According to Logan and Johnston, lack of motivation and engagement in male readers contribute to "the gap in gender differences in reading motivation and how it is associated with reading comprehension performance" (Logan & Johnston, 2011, p. 183). Another study by Taboada (2009) found that disinterest in reading among males could largely be due to both cognitive and motivational factors. According to Taboada, "this could explain the unique variance in both; reading and comprehension performance, as well as reading comprehension growth" (Taboada, 2009, p. 162). It is also possible that the disinterested middle school male's lack of motivation to read may be "related to differences in attentiveness during reading instruction and literacy lessons, which affects later reading development" (Logan & Johnstson, 2011, p. 179). The foundational reading instruction, according to Logan and Johnston (2011) must be received by the learner at an optimal time to unite not only the process of reading words, but the interest and curiosity of the meaning behind words. Therefore, the male reader must be ready to focus on literacy instruction in order to have a healthy attitude toward the reading experience (Range, Pijanowski, Holt, & Young, 2012).

The lack of attention during reading instruction has been studied extensively in recent research that identify an early school start age for males as the chief indicator for lack of focus and literacy (Burke, Hagan-Burke, Kwok, & Parker, R., 2009; Burnes, Kwoka, Lim, Crone, Haegele, Parker, Petersen, & Scholin, 2010; Doumen, Buyse,

Colpin, & Verschueren, 2011; Duncan, Dowsett, Claessens, Magnuson, Huston, Klebanov, Pagini, Feistein, Engel, Brooks-Gunn, Sexton, Duckworth, & Japel, 2009; Long, Raacke, 2012; Mata, 2011; Pagani, Fitzpatrick, Archambault, & Janosz, 2010; Piotrowski, 2010; Range, Pijanowski, Holt, & Young, 2012; Ryken, 2012; McClellan, & Hyle, 2012; Silinkas, Lerkkanen, Tolvanen, Niemi, Poikkeus, & Nurmi, 201; Uyanikbalat, 2009). The latent development of the male's ability to focus on tasks that are not of personal interest seems to support the large body of literature that points to an early school start age as culprit in reading readiness.

The study most similar to the current study is Yang, Hwang, Hung, & Tseng's (2013) study that examined the use of print and augmented print with QR codes with 92 sixth grade students to determine changes in learning outcomes on a science text as a means of building on prior knowledge. Yang et al. (2013) found that there is benefit to supporting print text with digital link for fact-based/ science texts in an effort to build on previous knowledge. Yang's et al (2013) study differs from the current study in that the current study considers seventh-grade males only, focuses on two groups as either interested or disinterested readers, and the material selected for the study is fictional, and therefore, no scaffolding or building on previous knowledge is highlighted. Further, the current study differs in its testing of Kolb's (1984) Experiential Learning Theory.

Theoretical Framework

The power of engagement: Human emotional response

In an effort to help explain the effects of enhanced print on reading comprehension and reading enjoyment, this study will approach the issue from David Kolb's (1984) Experiential Learning Theory (ELT). Specifically, the role of visualization

and observation afforded by digital links through QR codes immerse the reader into an experience with the material, characters, and settings being read about.

A prime example of the power of visualization and plot enhancement occurs when one watches a movie with a tense and dangerous situation, and the observer, perfectly safe from danger, may experience a rushing heart rate or sweaty hands. These physical manifestations occur in many individuals when total engagement takes place. This also occurs with many middle school students when video games are being played, according to Westland (2011). Westland (2011) investigated technologies that measure human emotional response in an effort to improve the video game experience by making the game more immersive. Electro-dermal response (EDR) measures the physical manifestations such as sweaty hands and rapid heart rate, much like the functional magnetic resonance imaging (fMRI), electroencephalography (EEG), and positron emission tomography (PET). All of these technologies are used for affective data acquisition of human emotional response. Westland (2011) holds that the nervous system's responses to situations that are lifelike are increased as the observer is immersed into the reality even though the observer is not truly a part of that reality.

According to Westland (2011) stress or danger can ignite the secretion of hormones from various parts of the body. When virtual experiences are very realistic, or experienced deeply, Westland holds that "emotional factors such as a sudden shock or a feeling of impending danger can effectively trick the body into reacting as if there is an external rise in temperature that would threaten the temperature of the body" (Westland, 2011, p. 14). When one watches an intense war scene in a movie, or plays a video game

in which the character is experiencing a threatening situation, the response is controlled by the hypothalamus.

Drachen, Nacke, Yannakakis, and Pedersen, 2010 also studied the psychophysiological responses to video player's experiences. Similar to the results of Westland's (2011) study Drachen's et al. (2010) study used EDR to measure heart rate during gaming to make inference about player's engagement and excitability using the following three video games: Prey, Doom 3, and Bioshock. These three games place the gamer in the shooter's position in situations of self-preservation. Drachen's et al (2010) findings show a significant correlation ($p < 0.01$) between heart rate and EDR and self-reported experience, indicating that in all three games, the participants reported feelings that were consistent with the measurements taken.

The emotional engagement and psychophysiological responses such as those studied by Drachen et al (2010), and Westland, (2011) serve as indications that immersion into a virtual situation can indeed, allow the observer to experience and even learn from the experience even though, in reality, the observer did not pull a trigger, nor was personal safety at risk.

Following this logic, the same can be said of a psychophysiological response in the case of an observer or movie-watcher. The movie watcher is not in danger, but identifies with the character to the point that the "doing" by the character is being somewhat experienced, or felt by the observer. This same logic applies as one who watches a live dramatic presentation and witnesses the decisions and consequences of the character. When the audience member pulls for, or is moved emotionally by the story or

character, the audience member is responding to feelings that resonate with having gone through the ordeal themselves (Drachen et al, 2010; Westland, 2011). In this regard, the audience member or movie watcher learns something along the way by witnessing what another person has gone through.

As applied to the current study, the immersion of the reader into the setting, time period, and sounds of the scene being read about should, according to the current literature (Drachen et al, 2010; Westland, 2011), evoke engagement on behalf of the reader. The current study seeks to determine how information delivery type affects reader engagement and reading comprehension in males who are self-diagnosed as disinterested readers. This is supported by Kolb's supposition that feelings or human responses are considered to be experiences (Kolb, Boyatzis, Mainemelis, 1999). As applied to the current study, learning deepens as the reader experiences some of the character's feelings or consequences, thereby making the reading experience more meaningful to the disinterested reader.

Information delivered with enhanced print may make it easier for the reader to understand the context of the passage being read, and may result in better reading comprehension outcomes and higher levels of reading enjoyment. John Sweller's (1970) Cognitive Load Theory holds that, lightening the mental energy to receive new information allows for deeper learning (Sweller, 2010). Applied to the current study, Cognitive Load Theory supports the use of enhanced print because the reader can actually see and hear clues about the passage instead of imagining them. Since the male's creative left brain is typically less dominant than the creative side, the mental load should

be diminished due to the visualization of the scene instead of having to mentally create the scene in order to stay engaged.

Kolb holds that "Experiential Learning Theory (ELT) provides a holistic model of the learning process and a multi-linear model of adult development, both of which are consistent with what we know about how people learn, grow, and develop" (Kolb et al., 1999, p. 2). Kolb developed his ELT in 1984 based off of the influence of three of the pioneers in learning theory; Piaget, Dewey, and Lewin.

Piaget's Model of Learning and Cognitive Development

Piaget's model of learning and cognitive development (see figure 1) is an educational theory that has been a staple of educational community for many decades.

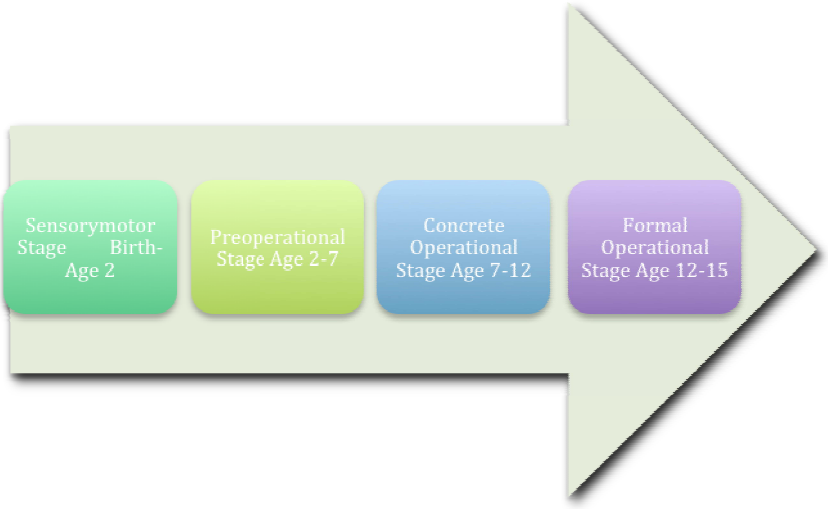

Figure 1.

Piaget's Model for Learning

The first stage of Piaget's Model for Learning is known as the "sensory-motor stage" and it begins at birth and continues through approximately age two (Kolb, 1984, Marchand, 2012; Maynard, 2008). This stage is marked by learning through the process of touching, feeling, and handling various objects. The second stage is known as the "representational stage" (Kolb, 1984). Piaget suggests that this stage runs from approximately two years of age until a child reaches the age of seven (Kolb, 1984). Learning in this stage generally occurs through manipulation of observations and imagery (Kolb, 1984; Marchand, 2012; Maynard, 2008). The third stage is known as the "concrete operations stage" in which a child, ranging in age from seven to eleven, begins to grasp the concept of inductive reasoning, whether they are aware of the process or not (Kolb, 1984). The fourth and final stage is known as the "formal operations stage" and it leads the child into the age of adolescence, approximately twelve years old to fifteen years old (Kolb, 1984). In this stage, the young adult begins to synthesize information and scenarios with which he is presented and then engage the information from a highly deductive approach (Kolb, 1984). Piaget resembled many philosophers of his time, especially Vygotsky (Lourenco, 2012), however, the stages of developmental learning set him apart from others.

Dewey's Model of Learning

John Dewey's model of learning, (see Figure 2) focusing on self-action, interaction, and transaction, is not all that different from that of Lewin. It is easy to see the foundations of Piaget's Learning Theory in both models (see Figures 1.2.3).

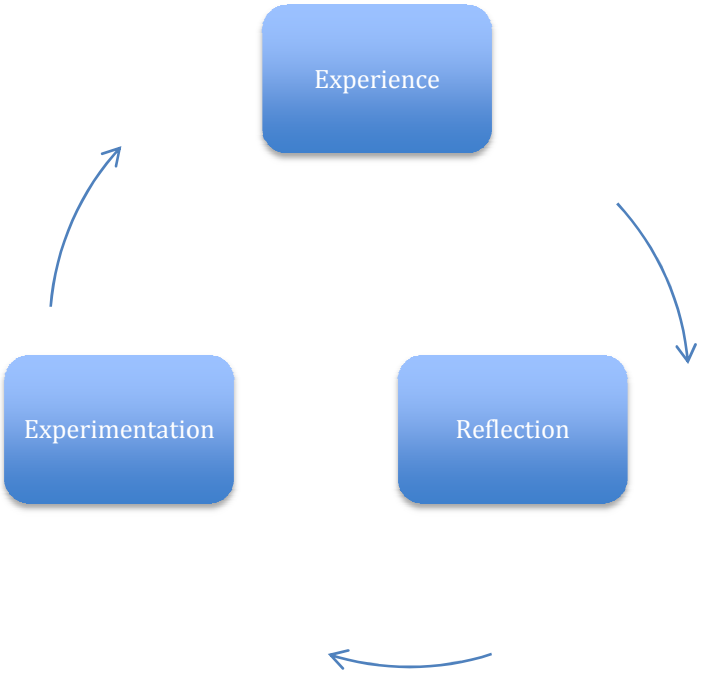

Figure 2

Dewey's Model of Learning

Dewey's theory involves three primary steps in the learning process; "(1) observations of surrounding conditions, (2) knowledge of what has happened in similar situations in the past, (3) judgment, which puts together what is observed and what is recalled to see what they signify" (Kolb, 1984). As in the case of Lewin, Dewey emphasizes the importance of observation and feedback in the learning process.

The Lewinian Model of Action Research and Laboratory Training

Lewin developed this theory after having observed significant individual and organizational ineffectiveness primarily as the result of an insufficient process of feedback (Kolb, 1984). Lewin credits this to, "an imbalance between observation and action—either from tendency for individuals and organizations to emphasize decision and

action at the expense of information gathering, or from a tendency to become bogged down by data collection and analysis" (Kolb, 1984. p. 22). Whatever the case, Lewin's hope was to combine the two methods into an efficient learning theory. Lewin's model (see Figure 3) is has its basis in two primary focal points; concrete experiences and the ability to analyze the feedback (Kolb, 1984).

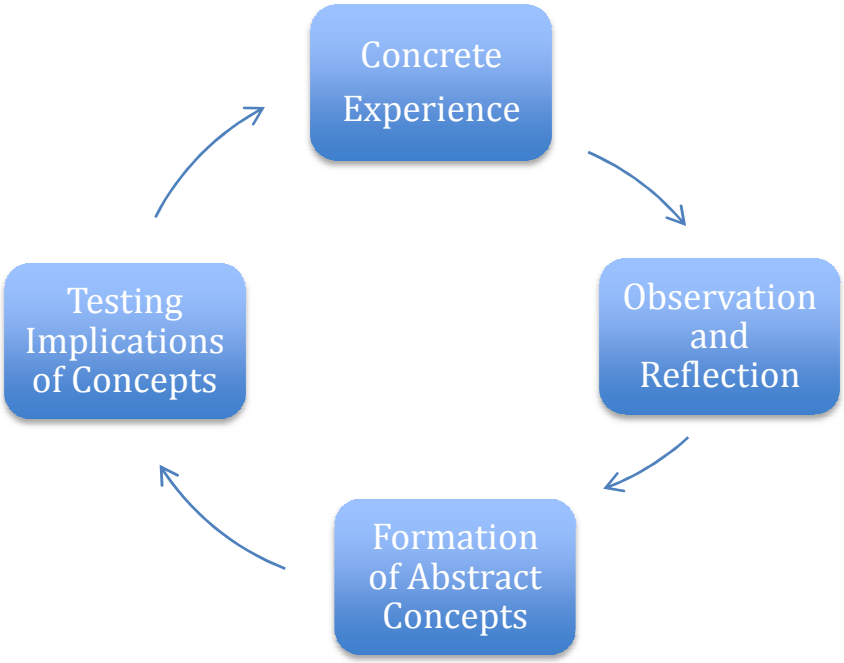

Figure 3

Lewin's Experiential Learning Model

Experiential Learning Theory

Experiential learning theory takes bits and pieces from each of the previously discussed theories and blends them into a functional theory based on learning as something that evolves as the individual grows, develops, and matures (see Figure 4).

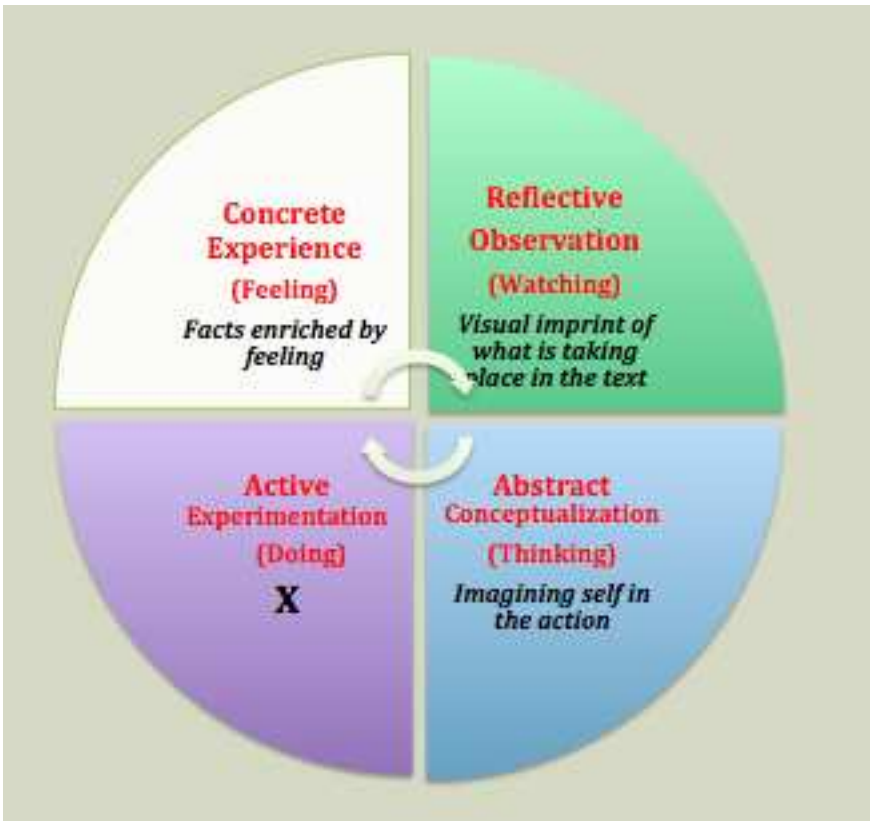

Figure 4

Kolb's Experiential Learning Theory

Contrary to other theorist, who may "define learning in terms of its outcomes, whether these be knowledge in an accumulated storehouse of facts or habits representing behavioral responses to specific stimulus conditions" (Kolb, 1984, p. 26), Kolb argues that, "Ideas are not fixed and immutable elements of thought but are formed and reformed through experience" (Kolb, 1984, p. 26). Kolb goes on to say that, "No two thoughts are ever the same, since experience always intervenes" (Kolb, 1984, p. 26). One of the greatest statements that actually supports Kolb's theory, although it was written some twenty years prior to ELT's development, comes from a gentleman by the name of Jerome Bruner who authored a book entitled *Toward A Theory of Instruction*. Kolb quotes him as saying, "that the purpose of education is to stimulate inquiry and skill in

the process of knowledge getting, not to memorize the body of knowledge; Knowing is a process, not a product" (Kolb, 1984, p. 27). Taking all of this into consideration, Kolb reveals the four steps that comprise his ELT.

Four Steps of Kolb's Experiential Learning Theory

Concrete Experience (Feeling)

The idea of concrete experiences, according to Kolb, means that a student "must be able to involve themselves fully, openly, and without bias in new experiences" (Kolb, 1984, p. 30). That is, all individuals begin the learning process through an incorporation of one or more of their senses. Thus learning begins through tangible circumstances that are then filtered through each individual's past experiences. If left on its own, concrete experience does not fully satisfy the principle of learning as each person's bias will influence the outcome of their thought process. This leads to additional steps that must be incorporated into every aspect of learning in order for the individual to genuinely grow in their knowledge and understanding of all information with which they are presented. This concept relates to the current study by investigating the impact of turning traditional print literature into more of an experience in which the reader is specifically involved.

Reflective Observation (Watching)

Reflective observation is the ability to reflect and observe one's experiences from a multitude of perspectives (Kolb, 1984). Kolb suggests that education must be viewed from a holistic vantage point that allows for learning to occur, not just within a classroom, but in every circumstance in which a person may find himself (Kolb, 1984). To this end, providing students with a more substantive experience through the

embedding of digital links into traditional print literature, the student could encounter a greater potential for reflection and also level of learning.

Abstract Conceptualization (Thinking)

This aspect of learning, according to Kolb, is the "logical analysis" portion of his model (Kolb, 1999). In this area, once the student has experienced something and then observed his experience from several different perspectives he can then begin to critically analyze how he should act on the information with which he has been presented.

Active Experimentation (Doing)

The final step in the Kolbian model is the "doing" portion of the learning process. Each step in the process of ELT moves the learner into a deeper interaction with the material culminating with the final step of actively participating in an exercise in order to reinforce the concepts being taught. This "hands-on" approach, according to Kolb, as a process, has a far greater reach into the mind of the learner thus making what he has learned something that he retains significantly longer than information learned through rote memorization.

Related Literature

A three-year qualitative study by Williams-Rossi (2012) examined 199 middle school students who considered themselves, or were identified by their teachers, as struggling readers. During the study, the students were given 15-25 minutes to read a book, chosen by the student from a selection of 25 e-books. The study used Amazon's Kindle e-reader as the method through which media was used for the reading experiment.

According to Williams Rossi (2012), while female's attitudes about the value of reading declined after the intervention, boy's attitudes improved. Thus, Williams-Rossi's (2012) findings show that technology motivated boys, but not females in terms of attitudes about the value of reading. Findings suggest that technological integration into the reading experience encourages reluctant readers to read, although the results show that males differed from females in their opinions about the value of reading after the experiment. Williams-Rossi's findings are consistent with those of Jenkins (2009), Sokal and Katz (2008). These studies (Jenkins, 2009; Sokal & Katz, 2008) showed that using technology and various forms of communication helps boys to enjoy the process of reading more than with traditional print. Also concurring with the studies mentioned above, Bouchamma et al., (2013) considered the integration of media into the reading experience as a means to promote a positive attitude about reading, even in reluctant readers.

Digital Links

Advancements in technology have significantly impacted virtually every aspect of modern life (Chen et al., 2013). This is especially true within the realm of education. From online textbooks to flipped classrooms, technology is changing the way in which educators approach their craft (Yang et al., 2013). If educators are going to continue to be relevant in their chosen profession then they must be willing and able to embrace technology and the many potential uses within their classrooms (Chen et al., 2011; Jenkins, 2009). One such available technology that expands printed text is the digital link. Digital links can simply connect the reader to a simple website, or to something far more topic-specific such as an audio or video file (Jenkins, 2009). It is in this regard that this study hopes to determine the true impact of digital links in the educational arena.

Quick Response Codes (QR Codes)

According to Logan and Johnston (2010) and Carini, Kuh, & Klein (2006), in order for one to grow in any facet of knowledge or skill, he must be engaged in the learning process. This is the belief behind embedding traditional print with digital links to audio or visual files that are directly related to the subject matter that is being discussed in the literature. Through the use of items such as Quick Response Codes (QR codes) (see Figure 5) the reader has the opportunity to engage multiple senses, which could further solidify the information by bringing about an experiential reading encounter instead of an observed reading encounter (Chen, Wei, Huang, & Kinshuk, 2013; Ozdemin, 2010).

Figure 5

QR code containing a brief movie clip.

Because of the relative infant stage of such resources, there may be some hesitancy on the part of educators and administrators to use these tools, even though the

business world has embraced the benefits of visualization to engage consumers (Brumberger, 2010; Chen et al., 2013; DeSilets, 2012; Ozdemir, 2010; So, 2011).

QR codes have been around since 1995 but have only recently made a slight shift from the business world to the educational world (DeSilets, 2012; MacKinnon & Sanford, 2010). This transition from a commerce focused tool to that of an educational enhancing tool could prove monumental. These are the types of innovative "lateral leaps outside familiar boxes into areas where existing technologies that work in one industry are creatively applied to another" (MacKinnon & Sanford, 2010) and could potentially revolutionize the effectiveness of that industry, which, in this case, is education.

QR codes are "pixelated boxes" (DeSilets, 2012) originally used as a tool for keeping and tracking accurate inventory, shipping, and within the automobile industry, but have since exploded in popularity to the point that they show up everywhere from the grocery store to church to magazines, and beyond.

Another area that QR codes are appearing more and more is in education (DeSilets, 2012). Textbooks, promotions, college applications, homework are just a few educational items that have been linked through the use of QR codes. But, it seems that this is just the beginning of the process. The potential uses of QR codes in the classroom are truly endless. As one writer states, "QR codes will revolutionize the educational process" (DeSilets, 2012, p. 53). Because the technology is common and easy to use with a smartphone or iPad accompanied by ear buds, the convenience of story interaction in the classroom makes the reading experience richer.

Summary

In light of the research indicating the middle school male's propensity to be disinterested in reading and the underperformance in reading comprehension as compared to females, the current study considers literature that examines various factors associated with the males' reading interest, reading comprehension performance, and technology interest. Research (Jenkins, 2009; Sokal & Katz, 2008) suggests that using technology and various forms of communication helps boys to read and enjoy reading more, and that the integration of these sources is a "highly significant factor in sustaining a positive level of interest and motivation" (Bouchamma et al., 2013, p. 485). Jenkins (2009) found that male's access to the internet to access articles or media that elaborate on the prescribed text stimulates interest and shows considerable difference in the understanding of the material. Bouchamma et al's (2013) study found that boys are more likely to engage digital media or watch movies about assigned topics, whereas girls are more likely to read novels or fictional stories from a library. Chen's (2011) and Slavin's (2011) study found that information and communication technologies of white board interaction and software did not conclusively improve reading achievement, while both studies found that integration of these technologies stimulated the student's interest.

Thus, the current study was informed by the literature that suggests that integration of technology and the reading experience may have a positive influence on the males' reading enjoyment, and engagement as reflected by reading comprehension scores. While previous studies (Chen, Wei, Huang, & Kinshuk, 2013; DeSilets, 2012; Ozdemin, 2010; Wells, 2012) focused on reader motivation linked with technology, the current study focuses on the seventh-grade male, self-identified disinterested reader, and

is driven by Kolb's (1984) Experiential Learning Theory. Thus, the current study extends the existing body of literature in terms of theoretical framework, the age-group of participant, and the use of the levels in the independent variable; TP and EP.

The researcher considered previous research that both supports and opposes foundational principles for gender adaptations in educational methods. This is important because "program adoption decisions increasingly are made on the basis of evidence from experiments" (Gall, Gall & Borg, 2010, p. 305). Therefore, this study should be of interest to educators and education policy-makers.

CHAPTER THREE: METHODOLOGY

This chapter identifies the current study's research design, and states the research questions and hypotheses. Participants, setting, instrumentation, and procedures are described, and finally, this chapter concludes an explanation of the data analyses.

Research Design

This quantitative study used a true-experimental posttest only control group design to determine if there is a statistically significant impact on the reading comprehension scores as well as reading enjoyment level of male seventh-grade, self-identified, disinterested readers based on information delivery type; traditional print (TP) and enhanced print (EP) with QR codes. This design is appropriate for the current study due to its use of random assignment the presence of the manipulated variable of information delivery type, and the numerically measured reading comprehension scores and reading enjoyment levels (Gall, Gall, & Borg, 2010). All 62 seventh-grade boys were randomly assigned to either the control or treatment group via a random number system, www.random.org. The study utilized a space for the control group and another for the treatment group, in consideration of diffusion of treatment.

The posttest only control group design addressed many potential threats to internal validity. True-experimental design by its nature protects against internal threats to validity (Campbell & Stanley, 1963). True-experimental design protects against history, maturation, testing response, instrumentation, and selection bias because of random assignment. However, according to Cook & Campbell (1979), experimental mortality is still a threat to internal validity and was therefore addressed by conducting

the experiment over the course of one school day (approximately six hours).

Research Questions

The following questions will guide this study:

RQ 1: Is there a statistically significant difference in the linear combination of reading comprehension scores and reading enjoyment level based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers?

RQ 2: Is there a statistically significant difference in reading comprehension scores based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers?

RQ 3: Is there a statistically significant difference in reading enjoyment level based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers?

Hypotheses

These are the hypotheses for the study:

H_1: There is a statistically significant difference in the linear combination of reading enjoyment level based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers?

H_2: There is a statistically significant difference in learning outcomes as measured by reading comprehension scores based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers.

H_3: There is a statistically significant difference in reading enjoyment level based on information delivery type in male seventh-grade disinterested readers.

These are the null hypotheses for the study:

H_{01}: There is no statistically significant difference in the linear combination of reading comprehension scores and reading enjoyment level based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested readers;

H_{02}: There is no statistically significant difference in learning outcomes as measured by reading comprehension scores based on information delivery type (traditional print and enhanced print) in male seventh-grade disinterested reader;

H_{03}: There is no statistically significant difference in reading enjoyment level based on information delivery type in male seventh-grade disinterested readers.

Participants

Forty-two seventh-grade boys, self-identified as "disinterest readers", from a private school constituted the sample of convenience; the sample was used due to the researcher's access to the students. All participants were male, and ranged in age from 11-13 years of age. 88% of participants were Caucasian, 9.5% four were African-American, 2.3% was Asian.

To be included in the study, the participants were required to meet four requirements: (a) they must be male, (b) they must be in seventh grade, (c) they have never read the book or watched the movie from which the reading passage was taken, and (d) they must consider themselves to be "disinterested readers". Participants were self-identified as "disinterested" readers through the use of a 112 point Likert-scale, 28-item survey (see Appendix A). 62 seventh-grade males completed the survey and 42 identified themselves as "Disinterested" with a score s equal to or greater than 42 in the questions

specified toward characteristics of disinterested readers. Students who did not meet the criteria still read the reading passage and took the reading comprehension test, although these scores were not calculated or used in the study. These particular students were able to count the reading time toward the weekly assigned reading time.

A letter was sent form the principal to inform parents about the study and a consent form was attached. The students were asked to return the signed student and parent consent form within five days. All students elected to participate with parental consent. The test date was announced in class two weeks, one week, and one day prior to the test date.

Setting

The study took place in two middle school classrooms at a large private school in the Mid-Atlantic region of the United States. The two classrooms were at opposite ends of the hall. On the day of the experiment students came to class according to their regular class period schedule, where they were met at the door by the Research Assistant who directed each student to one of two classrooms according to the student's random assignment of either control or treatment group Lighting and temperature settings were unchanged from daily settings. A trained research assistant administered the test, as to keep the data anonymous to the principle researcher; therefore, the principle researcher was not present in the classroom at the time of testing. An additional assistant was present in the classroom for monitoring purposes whenever the Research Assistant was in the other classroom giving instructions. The assistant did not answer any questions or speak to the participants.

The Likert-scale reading interest survey, the experiment, and the questionnaire

took place in two familiar classrooms to which all participants report each school day. The testing took place in six 50-minute class periods during one school day, within eight hours. Upon completion of the test, students were released from the test classroom at the regular dismissal time.

Instrumentation

Pre-Survey for Identification of "Disinterested" Reading Status

The differentiation between "interested" and "disinterested" reading status was designated according to student response to a 28-item Likert-scale survey (see Appendix A) known as the Mikulecky Behavioral Reading Attitude Measure (MBRAM), originally developed by Mikulecky in 1976 (Mikeulecky, 1976) and revised in 2009 by B. A. Murray from the Reading Education Department at Auburn University (Bozack, 2011). The revised MBRAM, renamed the "Reading and You Attitude Survey", was both pilot and field-tested for construct validity and reliability with other validated reading attitude instruments such as the Dulin-Chester Scale (1976), and the Estes Scale (Estes, 1971). The MBRAM demonstrated a reliability of .9115, when administered to 1, 750 participants ranging in age from twelve to eighteen (Richardson, Morgan, & Fleenor, 2011). This test was found to be a valid and reliable measure of reading attitude in several earlier studies (Schaer, 1988; Hawk, 1984). This self-report questionnaire was used to determine the student's perception of their interest in reading on a four-point scale with scores ranging from 28-112. This instrument, as applied to the current study, measured the participant's self-perception of reading interest and scores were used to categorize the student as either "Disinterested Reader" or "Interested Reader", according to the directions for use. The cut-off point was a score of 42 or greater on the items

oriented toward disinterested readers. The researcher intended for the instrument to be used in this manner.

Reading Material

The six-page reading passage selected for the experiment was a descriptive account of military strategy from the vantage point of a reporter where passengers from an inflight plane suddenly disappear. The publisher of the book granted permission to copy the specific pages needed for all participants (see Appendix K). The independent variable was reading information delivery type with two levels: Tradition Print (TP) and Enhanced Print (EP). Traditional Print was delivered to the control group and consisted of a reading passage. The Enhanced Print was delivered to the control group and consisted of the same printed reading passage embedded with six quick response (QR) codes, lasting 60-seconds each in length. Prior to the experiment, the researcher downloaded QR Reader, a scanner that reads and displays digital links, on twenty-six iPads (see Figure 6).

Figure 6

QR Reader Application for iPhone and iPad

The scanned codes directed the reader to digital links containing movie clips pertinent to the particular paragraphs in the reading passage. The clips selected pertained to the reading passages from print material, but did not give additional storyline information. Permission to use the movie clips was granted from the production studio holding the rights to the film (see Appendix L). The QR Reader application on the iPad was activated by selecting it from the home screen.

During the study, participants in the treatment group were given the iPads and shown how to use the QR reader to access the movie clips. Students were instructed to place the iPad over the QR code as it appeared between paragraphs of the reading material. The iPad scanned the QR code as shown in Figure 2, allowing the reader to access a movie clip that pertained to the previously read paragraph. As the iPad was aimed at the QR code, it scanned the code as shown in Figure 7.

Figure 7

QR code being scanned by an iPad

Testing materials, unique to the enhanced print group, consisted of the traditional print with embedded QR codes, an iPad, a pair of ear buds, and an individually packaged sanitizing wipe to clean the ear buds after use. The participant was able to access the QR codes at his or her personal pace, based on reading speed. As the QR code was accessed, a personal viewing and listening experience was provided (see Figure 8).

Figure 8 (Stock photo)

Personal viewing and listening experience provided by iPad and ear buds

All control group participants received traditional print material (TP). The intervention group received traditional print enhanced with six 60-second digital links accessed by QR codes (EP) (see Figure 1).

The dependent variables were reading comprehension scores and reading enjoyment scores. Reading comprehension scores were measured by a 100-point reading comprehension test based on the reading passage. The reading comprehension test was constructed by the principle researcher and was evaluated by three reading specialists with 42 years of combined educational experience, each holding a doctorate in education. The specialists deemed the test a valid instrument for testing reading comprehension. Reading specialists also reviewed the Reading enjoyment survey, used to measure levels of reading enjoyment. Levels were measured by a one-item, post-reading survey. The

survey score ranged from 1-3. The question asked if the student enjoyed the reading experience “less than”, “as much as”, or “more” than expected.

For both the reading comprehension test and the reading enjoyment survey, reading specialists verified that the items included did measure the intended content and reported internal reliability of the reading comprehension test at Cronbach alpha, .94, and the reading enjoyment survey at .95.

Procedures

The researcher secured written permission from the superintendent of the school that served as the test site and scheduled the date. Institution Review Board (IRB) approval was sought and attained. Sixty-two copies of the testing materials were made including the “Reading and You Attitude Survey”, reading passages with and without QR codes, reading comprehension tests, and reading enjoyment survey. A request to utilize and reserve the school’s iPad collection was made, and QR Reader applications were downloaded. Prior to the day of the experiment, all iPads were charged and 62 sets of ear buds were purchased.

A research assistant was used to administer the test on the day of the experiment. The research assistant was trained by the principle researcher concerning the instruction script to be read at the beginning of the test, disbursement of testing materials, and collection of materials. Further, the research assistant was instructed on scantron grading procedures.

Parents of all seventh-grade males were emailed through the middle school office personnel to provide information about the study in terms of the purpose, and the fact that there was no academic bearing on the experiment (see Appendix G). Informed Consent

(see Appendix I) and Child Assent forms (see Appendix J) were included in the information email. Upon returning the signed consent and the assent form, the student was considered to be a participant. The response rate was 100%, and all 62 of the students participated.

Sixty-two folders were prepared and consisted of pre-labeled testing materials. Upon completion of the reading interest survey, scores were tabulated with scantron grading (see Appendix A). A teacher serving as an assistant was present in one room, while the research assistant presented scripted instructions in the other room. The student's names had been randomly assigned to either control treatment or experimental treatment according to a random number processing service, www.random.org. The students were entered into the system, and were allocated as either treatment or control.

On the experiment day, desks in the testing classrooms were preset with the reading interest survey and a pencil. 62 folders were prepared with testing materials for each of the testing classrooms. Each folder had documents bearing a code, unique to the participant. Each participant's folder contained the following pre-labeled materials: a sharpened No. 2 pencil, a reading comprehension test (see Appendix B), a scantron sheet, and a reading enjoyment questionnaire (see Appendix C). In addition to these materials, participants in the Enhanced Print (treatment) group sat in desks preset with iPads, ear buds, and a sanitizing wipe. There was no information on any of the testing documents that revealed the identity of the participant, but all documents within the participant's folder were linked by a code unique to that particular set of testing materials.

The research assistant welcomed each class of participants according to the scripts (see Appendices D – F) pertaining to the treatment type. Upon completion of the test

period, the research assistant graded all materials in the folder before turning the raw scores over to the principle researcher. These procedures insured that the researcher was not aware of the origin of the participant's group as being the treatment (TP) or intervention (EP) group, or the reading status as "disinterested" or "interested". The principle researcher entered the data into SPSS (version 22) for data analysis.

Data Analysis

A multivariate analysis of variance (MANOVA) was conducted through SPSS software (version 22) to test the first hypothesis. This test was appropriate because the study includes one independent variable (information delivery type) and two related dependent variables (reading comprehension scores and reading enjoyment level). A MANOVA was selected to analyze the data since this test takes into consideration the correlation among the dependent variables (Tabachnick & Fidell, 2006). The sample size needed ranged from a minimum of 20 participants per group to six to ten times the number of dependent variables (Swanson & Holton, 2009). This number of participants per group exceeded the number of dependent variables. The significance level of .05 was selected to decide whether or not the reject the null hypotheses. The effect size was, based on η^2 interpreted by Cohen's conventions (1988). Using the Bonferroni method, each ANOVA was tested at a .025 (.05/2) alpha level. Two follow-up ANOVAs were conducted for research hypotheses two and three, which is appropriate since these questions focused on one independent variable and one dependent variable.

Assumptions

Assumptions that underlie the robust nature of MANOVA were met, as independence of observations was present, meaning, that there was no relationship between the cases in each group or between the groups themselves. After data was collected, Shapiro-Wilks showed that there was a violation of normality for both groups for the enjoyment variable and reading comprehension in traditional print, there was also a violation. No violations were found for the reading comprehension in the enhanced print group. Although normality was not found to be tenable for some groups across some variables, "the MANOVA is reasonable and robust to modest violations of normality when the sample size of at least 20 in each cell" (Tabacknick & Fidell, 2006, p. 251). Upon inspection of boxplots, no extreme univariate outliers were found. Maholanobis Distance provided evidence that there was no violation of multivariate outliers because the critical value of 13.82 was not exceeded.

Assumption of homogeneity of covariance was found tenable based on Box' M Test (M = 5.81, $F(3,42) = 1.83$, $p = .139$). Levine's demonstrated that the assumption of homogeneity of variance was not violated for enjoyment ($F(1,40) = 1.11$, $p = .299$) and comprehension ($F(1,40) = 1.03$, $p = .316$).

Assumptions were tested through a scatterplot to examine assumption of linearity (Gall, Gall, & Borg, 2010). Linearity was revealed from scatter-plot since the data points run along an approximated straight line. Pearson's r demonstrates that there was a significant association between enjoyment and comprehension, $r\ (df) = .461$, $p = .002$. Therefore, multicollinearity and singularity were not a concern.

Descriptive analysis was reported according to reading comprehension scores, information delivery type, and reading enjoyment score. The strength of the relationship between the independent and dependent variables was determined to attribute the intervention with the variance of the dependent variable. The independent variable, information delivery type, had two levels: traditional print (TP) and enhanced print (EP). The dependent variables were reading comprehension score and reading enjoyment level.

CHAPTER FOUR: RESULTS

This chapter discusses the results from the MANOVA and two follow-up ANOVA analyses conducted to test the following null hypotheses:

1. There is no statistically significant difference in the linear combination of reading comprehension scores and reading enjoyment level based on information delivery type in male seventh-grade disinterested readers;
2. There is no statistically significant difference in learning outcomes as measured by reading comprehension scores based on information delivery type (Traditional Print or Enhanced Print) in male seventh-grade disinterested readers;
3. There is no statistically significant difference in reading enjoyment level based on information delivery type in male seventh-grade disinterested readers.

This chapter describes the sample and reports statistics for variables included in the study. The results of the analyses are discussed.

Sample

This study consisted of a convenience sample of 42 male seventh-grade male disinterested readers at a Mid-Atlantic private secondary school. Participants self-identified as “disinterested readers”, according to a “Reading and You Attitude Survey”, and these participants constituted the sample for this study. All forty-two of the participants submitted a parental consent form (see Appendix I), and a child assent form (see Appendix J).

Research question one focused on the impact of information delivery type on the

linear combination of the dependent variables, whereas research questions two and three focused on the effect of information delivery type on each of the dependent variables individually.

Descriptives

Table 1

Dependent Variable Descriptive Statistics Disaggregated by the Independent Variable (N =42)

	Traditional Print (n = 22)		Enhanced Print (n = 20)	
Variable	*M*	*SD*	*M*	*SD*
Reading Comprehension	64.63	18.53	81.20	12.04
Reading Enjoyment	2.00	.75	2.75	.55

Assumption Testing

A MANOVA was conducted to investigate the first null hypothesis: there was no significant difference in the linear combination of reading comprehension scores and reading enjoyment level based on information delivery type in male seventh-grade disinterested readers. Prior to conducting the MANOVA, assumption testing was completed. Shapiro-Wilk showed that assumption of normality was found tenable for comprehension scores, p = .092, and reading comprehension, p = .091. Mahalanobis Distance found no multivariate outliers > 3.29; therefore the critical value of 13.82 was not exceeded and the assumption is tenable. Specifically reading comprehension had a minimum of -2.51, and a maximum of 1.55. Reading enjoyment showed a minimum of -

1.78 and a maximum of .84.

The assumption of homogeneity of variance-covariance was tenable based on the results of the Box's M Test, (M=5.81, F(3,42)=1.83, p = .139). The results of Levene's test of equality of error provided evidence that the assumption of homogeneity of variance across groups is also tenable for reading comprehension and reading enjoyment, F(1, 40) = 1.10, p = .299 and F (1,74) = .359, p =.551, respectively.

The assumptions of linearity are satisfactory per inspection of scatterplots (see Figure 2). The association between the dependent variables is significant, $r\ (df)$ =.461, p = .002. The correlation coefficient was less than .9; thus, multicollinearity is not a concern (Tabacknick & Fidell, 2007). Singularity is not a concern. Scatter-plot revealed linearity because the data points ran across an approximated straight line.

Analysis and Results for Hypothesis One

Results for the MANOVA showed a statistically significant difference between the two groups on the combined dependent variable, Wilks' Lambda= .811, F(2, 39) = 6.63, p < .003, partial η^2= .18, which is a large effect size based on Cohen's conventions (1988). Observed power was .97, indicating that similar results could be expected with a similar study 97% of the time. There was sufficient evidence to reject the null hypothesis, and conclude that there is a statistically significant difference in reading comprehension scores and reading enjoyment level based on information delivery type (traditional print vs. enhanced print) in male seventh-grade disinterested readers.

Analysis and Results for Hypotheses Two and Hypothesis Three

Since the MANOVA was significant, the ANOVAs were performed. Using the Bonferroni method, each ANOVA was tested at a .025 (.05/ 2) alpha level. The first

ANOVA was used to test the null hypothesis that there is no significant difference in reading comprehension scores based on information delivery type (Traditional Print and Enhanced Print) in male seventh-grade disinterested readers, and the second ANOVA was used to test the null hypothesis that there is no significant difference in reading enjoyment level based on information delivery type (Traditional Print and Enhanced Print) in male seventh-grade disinterested readers.

ANOVA results demonstrated that there was sufficient evidence to reject the reading comprehension null hypothesis and reading enjoyment null hypotheses, $F(1, 40) = 11.53$, $p = .002$, partial $\eta^2 = .224$, observed power = .92, and $F(1, 40) = 13.28$, $p = .001$, partial $\eta^2 = .249$, observed power = .945, respectively. The effect size was large for both ANOVAs. The strength of relationship between information delivery type and reading comprehension scores was strong, with the type of group accounting for 22.4% of the variance of the dependent variable. The strength of relationship between information delivery type and reading enjoyment score was also strong, with the type of group accounting for 24.9% of the variance of the dependent variable. The observed power of .94, indicated that there was a 94% chance that the results could have come out significant for both analyses. Participants who received enhanced print had significantly higher reading comprehension scores and reading enjoyment scores than participants who received traditional print.

CHAPTER FIVE: DISCUSSION

Introduction

This chapter will provide a summary of the current study, as well as summaries detailing the methodology and findings related to prior research. The chapter discusses findings of each of the three research questions, and summarizes these findings as related to theoretical support. Implications for practice, limitations, and recommendations for future study are discussed. Finally, the chapter concludes with a closing summary.

Summary of Findings

The purpose of this study was to determine if there was a statistically significant difference in reading comprehension scores and level of reading enjoyment based on information delivery type; Traditional Print (TP) and Enhanced Print (EP) using QR Codes embedded in the traditional print literature, in seventh-grade boys who were self-classified as disinterested readers. This study investigated three research questions: (a) Is there a difference in the linear combination of reading comprehension scores and reading enjoyment based on information delivery type (traditional print (TP) vs. enhanced print (EP) in male seventh-grade disinterested readers? (b) Is there a difference in reading comprehension scores and based on information delivery type (traditional print vs. enhanced print) in male seventh-grade disinterested readers? (c) Is there a difference in reading enjoyment level based on information delivery type (traditional print vs. enhanced print) in male seventh-grade disinterested readers?

Research Question One

MANOVA results showed that there was a statistically significant difference in reading comprehension scores and reading enjoyment level according to information

delivery type. The participants in the EP group scored an average of 81.20%, which is 16.57 points higher than disinterested reader's average score of 64.63% in the TP group. It is also worthy of note that the range of scores were a bit larger in range in the TP group (*SD* 18.53), as compared with the EP group (*SD* 12.04), indicating that enhanced print impacted the participants in a similar way.

Research Question Two

ANOVA results showed that there was a statistically significant difference in reading comprehension scores of participants between the TP Group (n = 22) and the EP Group (Enhance Print) (n = 20). The mean of the reading comprehension scores in the enhanced print group was 16.57 points higher than the reading comprehension scores of the traditional print group, indicating that the enhanced print group retained more information about the reading passage as shown on the reading comprehension test scores.

Research Question Three

ANOVA results showed that the EP group reading enjoyment level was .75 higher than that of the TP group. It is important to note that the choices given to participants for this response had a range of 1-3, indicating that the reading experience was "less enjoyable than expected", "as enjoyable as expected", or "more enjoyable than expected". Therefore, the EP group overall found the reading experience to be "more enjoyable" than they had expected, whereas the TP group found the reading experience "as enjoyable" as they expected.

Discussion of the Findings and Prior Research

Disinterested male readers and reading comprehension

The current study's finding that disinterested readers improved more as reflected in reading comprehension scores is in alignment with prior research, which suggests that males tend to be visual learners (Serafini, 2013). The findings of this study also fit within prior research (Brumberger, 2011) that suggests that male students are significantly drawn to digital media. Thus, it makes sense that current middle school males would be greatly impacted by the incorporation of a digital component into the traditional reading experience.

Disinterested male readers and reading enjoyment

The current study's finding that participants in the EP enjoyed the reading experience more than participants in the TP is in alignment with prior research (Brumberger, 2011; McClellen & Hyle, 2012). These findings can be understood in light of the male student's attraction to digital media (Brumberger, 2011). By incorporating not only the iPad, but also the act of scanning a QR code and watching a video clip containing the same information as the book itself, the reader became an active reader instead of a passive reader. Hence, the level of engagement was raised, thereby increasing the overall level of reading enjoyment, and is supported by prior research (Johnson & Gooliaff, 2013) that suggests that males are more engaged in the classroom when manipulates are involved in the learning process, and when the reader has the personal time to move from one passage and QR code to another at his/ her own pace.

These findings are in alignment with prior research (Serefini, 2013), suggesting that adaptive teaching techniques can, in many cases, improve a student's reading comprehension, and accomplishes the purpose of reading. The purpose of reading, according to Serafini (2013), "…is to make sense of or comprehend what is being read" (Serafini, 2013, p. 27). These results are also in alignment with prior research (Johnson & Gooliaff, 2013) that suggests, "boys should be encouraged to use manipulatives, build things, and be active in the classroom" (Johnson & Gooliaff, 2013, p. 28).

These finding are theoretically supported by the literature (Kolb, 1984; McClellan & Hyle, 2012; Brumberger, 2011), which suggests that, by increasing reader engagement, reader interest should rise, and therefore, reading comprehension scores should improve for the disinterested reader. Research supports these findings concerning the interested reader's comprehension scores not varying according to information delivery type because the interested readers are already engaged with the material so reading comprehension scores would not necessarily improve like those of the disinterested reader (Brumberger, 2011).

Without an intervention, then, perhaps the disinterested reader is at a disadvantage. According to Westland (2011) males who are interested readers have a natural advantage in that they are already inclined to be engaged with the reading material thus retention of the information that they read is higher. Improving reading engagement and enjoyment for the disinterested reader becomes paramount to improving their comprehension scores. Westland (2011) suggests that through the incorporation of a virtual experience into the educational setting that learning can occur at a greater rate.

Results concerning the effectiveness of a visual presentation that reinforces the read passage is supported by Brumberger's (2011) research suggests that today's students live in a digital world in which there is constant contact with digital technology, and have therefore, become visually oriented with a high degree of "visual literacy" (Brumberger, 2011, p. 19). Brumberger's concept of visual literacy supports the current study's finding that males enjoyed EP more than TP.

Although research (Brumberger, 2011) demonstrates that males, in general, are attracted to technology, perhaps the male interested reader already enjoys the reading process, so incorporating technology may or may not make the process more enjoyable for him.

These findings are further supported by prior research (Williams-Rossi, 2012; Jenkins, 2009; Sokal & Katz, 2008), which suggests that males, in general, are motivated by the incorporation of technology within the educational realm, specifically in the discipline of reading. The current study's findings concerning the enjoyment of enhanced print over the enjoyment of traditional print is confirmed by what prior research (Williams-Rossi, 2012; Jenkins, 2009; Sokal & Katz, 2008) has suggested, in that whether a male student is a reluctant reader or a voracious reader, the incorporation of technology into the reading process yields an equally enjoyable reading experience by disinterested and interested readers alike.

The participant's self-identification as "disinterested readers" aligns with Gordon and Lu's (2012) prior research that suggests that one of the major factors contributing to the underachievement in literacy among males is the fact that many consider themselves to be disinterested in reading.

Experiential Learning Theory and Reading Comprehension Results

Findings from the current study demonstrate the impact that information delivery type has on reading comprehension and reader enjoyment in males who consider themselves to be disinterested readers. The study is grounded in David Kolb's Experiential Learning Theory (1984), which suggests that feelings or human responses are considered to be experiences (Kolb, Boyatzis & Mainemelis, 1999). This applies to the current study by suggesting that learning deepens as the reader experiences some of the character's feelings or consequences, thereby making the reading experience more meaningful to the disinterested reader. In addition to this, providing the student with enhanced print creates a greater contextual understanding of the material being read, thereby solidifying the concepts within the text.

Concept reinforcement by enhanced print is also supported by a secondary theory used in this study, John Sweller's (1970) Cognitive Load Theory (CLT). CLT, as applied to this study, holds that working memory load is reduced by the provision of visual images and audio clips because the reader must no longer imagine the sights and sounds pertaining to the passage. Instead, the reader is experiencing them, thus, freeing up mental energy to focus on the content itself.

Experiential Learning Theory and Reading Enjoyment Results

The significant difference in the level of reading enjoyment revealed through the current study seems to correspond to previous research (Williams-Rossi, 2012), which suggests that technology engagement is a motivating factor for males. This fact further supports the need for the incorporation of variance through the use of technology when it comes to increasing reading motivation and reading enjoyment for those who consider

themselves to be disinterested in reading (Jenkins, 2009; Sokal & Katz, 2008). Further, Kolb (1984) suggests that reflective observation is the ability to reflect and observe one's experiences from a multitude of perspectives. To this end we can assume that by providing readers with a more substantive experience through enhanced print literature, the reader's reflection of the observation will be greater, thus yielding a greater level of reading enjoyment.

Limitations

Limitations still exist even though a rigorous design was used. The following limitations should be considered when generalizing the results from the current study:

1. The study focused on a very specific age group in a private school, and results are not generalizable to all middle school students.

2. The studied population includes seventh-grade males only, and is not, therefore, representative of other middle school females.

3. The sample is drawn from a private school, and therefore cannot be generalizable to all middle school students. In addition to the aforementioned limitations is the reality that the participant's personal effort cannot be measured, therefore, results do not account for personal effort during the experiment.

4. Due to the immediate nature of the time between reading and testing, comprehension scores could be abnormally high as compared to those of a student who had read the literature, TP or EP, over a longer period of time such as a school marking period or semester.

Implications

The results of this study indicate a potential paradigm shift in the educational landscape concerning male reading interest and reading comprehension performance. One of the most notable observations taken from this study is the fact that of the sixty-two males who volunteered to be a part of the research experiment, forty-two classified themselves as disinterested in reading. This factor alone should cause administrators, educators, and parents, to take thoughtful action in order to facilitate interest among disinterested male readers by considering the application of Experiential Learning Theory to the reading experience. Publishers may be encouraged to utilize content that expands the reading experience.

Further, findings from the current study should influence educators to routinely used digital links to engage disinterested readers. These findings should ease the concerns of curriculum bias for administrators and educators as these findings demonstrate that interested readers as well as disinterested readers benefit from the inclusion of enhanced print. Therefore, implications for the middle classroom may include enhanced print for all students. Further, implications may encourage the use of personal listening devices in the classroom while reading, as such was the case in the current study with the use of ear buds. This would not hinder the accomplished reader, since the personal experience of the enhanced print provided by ear buds allows the reader to read and experience the embedded media at the student's own pace.

Lastly, parents and educators may be able to promote higher levels of reading enjoyment by providing reading experiences that heighten reader engagement.

Recommendations

Due to the relatively narrow nature of this study, further study should be conducted to consider the following:

1. Replicate the current study to include another comprehension test that occurs a week after initial testing to determine retention of information.
2. Conduct a similar study to include females and utilize two different kinds of reading passages (action/ romance) to determine reader engagement according to gender.
3. Investigate reading comprehension and reader enjoyment through delivery method of audio book with print and traditional print.
4. Inclusion of sample from a public school;
5. Inclusion of a greater lapse in time between reading and testing in order to test the impact of EP on long-term comprehension

Conclusion

The purpose of this study was to determine the effect of information delivery type and reader interest classification on reading comprehension scores and reading enjoyment level in seventh-grade male disinterested readers. The results of the study revealed statistically significant differences in both reading comprehension scores as well as reading enjoyment levels of seventh-grade male disinterested readers based on information delivery type (traditional print and enhanced print). Findings concerning

improved comprehension scores and enjoyment level of disinterested males should prompt changes in the approach of educators, publishers, and parents.

The results of this study serve as a clear indication that reading methodologies involving visualization, as used in enhanced print, are useful in engaging the disinterested male reader. Since this study revealed that approximately 68% of male readers in the current study classified themselves as disinterested in reading, discovering ways to raise the level of reading engagement is paramount. By incorporating enhanced print into traditional print literature of all kinds, disinterested male readers are likely to become more interested, and therefore, engaged; thereby improving their overall academic achievement throughout the course of their education. Finally, helping male disinterested readers improve academically could promote a greater matriculation of males into higher education, thus facilitating a greater level of academic achievement throughout the course of the educational experience.

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APPENDIX A – Reading and You Attitude Survey

ID Code: _____ Male/ Female

Directions: Circle the number for each statement to show how much it describes you.

1. You have so many books you want to read that you put a lot of books back without finishing them.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

2. When you're waiting in class before school or when you finish your work, you pick up something to read.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

3. If you're packing for a trip, you don't want to drag along any books.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

4. You can name an author or series for which you've read most or all the books.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

5. You don't mind if you are so busy you don't have time to read.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

6. While you are going on vacation, you look for something good to read to take along.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

7. When you go to look something up, you often catch yourself reading about something else, too.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

8. You've rarely if ever read a whole book.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

9. If people ask you what's worth reading, you can't think of anything to tell them.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

10. When you run across something you don‘t know, it's too much trouble to look it up.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

11. Even when you are very busy, you always find at least a few minutes to read.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

12. When you are with someone younger, it's a good idea to read a story aloud.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

13. You remember times when you go so wrapped up in a story it seemed like you were living in the book world.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

14. The picture on the cover is what makes you want to buy or check out a book.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

15. You would be disappointed if you opened a present and it turned out to be a book.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

16. When shopping or online, you like to visit a bookseller and browse for books.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

17. If you're babysitting, watching TV together makes more sense than reading aloud.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

18. After you finish reading a story, you quickly forget about what happened.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

19. When you don't have to read anything for school, you do something besides reading.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

20. You don't have any good friends who like to read or talk about books.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

21. You have a collection of books at your house that belongs to you.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

22. You‘ve just heard about a good book you don't have in your classroom, but you've got better things to do with your money.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

23. To choose a book, you read something to find out what the book is about.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

24. You don't really need to have your own personal copies of books.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

25. There is always a good book near your bed.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

26. If people ask you what you want for your birthday, you can usually think of a book.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

27. If you have to read a book, you pick a short one so you can finish it.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

28. Sometimes you find yourself so excited about a book that you try to get your friends to read it.

NOT LIKE ME . . . . . JUST LIKE ME

1 2 3 4

APPENDIX B – Reading Comprehension Test

Reading Comprehension Test

1. On the plane, how did Christopher get the passengers to return to their seats?
    a. He asked them to return to their seats.
    b. He turned on the emergency signal.
    c. He threatened them.
    d. He caused the oxygen masks to release.

2. What award had Rosenzweig been given?
    a. Innovator Prize
    b. Nobel Prize
    c. STEM Prize
    d. Chemistry Prize

3. Which statement is true about Buck and Rosenzweig's formula?
    a. Buck secretly took Rosenzweig's formula.
    b. Rosenzweig offered Buck the formula for safe keeping until the attack was over.
    c. Buck did not ask Rosenzweig for the formula.
    d. Rosenzweig secretly placed the formula in Buck's backpack in case Rosenzweig was captured.

4. Why was “the formula” a desired thing?

a. The formula was the cure for cancer.

b. The formula mixed with water to fertilize the land.

c. The formula mixed with water to create instant nutrition.

d. The formula was a weapon of mass destruction.

5. What was the biggest proof that the formula worked?

a. It yielded health.

b. It yielded flowers.

c. It yielded fresh water.

d. It yielded national defense.

6. Why was Israel quickly becoming one of the richest nations on Earth?

a. It exported beef.

b. It exported flowers and grains.

c. It exported life-saving medicine.

d. It exported weapons.

7. Which country had zero unemployment?

a. Russia

b. Iraq

c. United States

d. Israel

8. Why was it important that Rosenzweig be kept safe?

a. If captured, Rosenzweig could be forced to tell the ingredients of the formula.

b. If killed, Rosenzweig's code to the national treasury could not be retrieved.

c. If captured, Rosenzweig could be forced to tell enemies about the employment crisis.

d. If killed, there was no one to take Rosenzweig's place in government.

9. At the time of the attacks, which country was NOT using the yen as national currency?

a. Israel

b. Russia

c. United States

d. Iraq

10. Why was the attack on Israel called "the Russian Pearl Harbor"?

a. It happened on December 7th, the same date as Pearl Harbor.

b. The battleship that destroyed most of the troops was named "Russian Pearl Harbor".

c. The attack was in retaliation to the "Israel Pearl Harbor" attacks.

d. The attack was unprovoked, with no warning.

11. What was Buck Williams doing when the attacks started?

a. He was conducting an experiment.

b. He was on a plane.

c. He was taking a test.

d. He was conducting an interview.

12. What was the strangest part about the Russian attacks on Israel?

a. The Russian ships were disappearing into the Black Sea before they could attack.

b. The Russian planes were blowing up mysteriously.

c. The Russian bullets were all blank.

d. The Russian troops withdrew for no apparent reason.

13. In the middle of the attack, what did Buck do when he was inside the military compound?

a. He prayed.

b. He called home.

c. He protected the president.

d. He ran back out into the crossfire.

14. How long did the thunderous roaring continue before the balls of fire stopped flying?

a. 10 minutes

b. 2 hours

c. 2 days

d. 4 days

15. How many Israeli people died in the attack?

a. 0

b. 100

c. 1000

d. 10,000

16. What was Buck’s occupation?

a. Pilot

b. Soldier

c. Secret Agent

d. Reporter

17. Which statement is true about the plane's co-captain?

a. There was no co-captain.

b. The co-captain was a terrorist who took over the plane.

c. The co-captain disappeared.

d. The co-captain was the last to know about the passenger's disappearances.

18. Which statement is true about the senior flight attendant?

a. She was not surprised by the mysterious things that happened.

b. She helped plan the attacks.

c. She asked the captain to let her stay in the back until the panic stopped.

d. She tried to remain calm even though she was terrified.

19. What was the most obvious sign that there was something wrong on the plane?

a. The emergency lights were going off by themselves.

b. Seats were empty and passenger’s clothes were left in seats.

c. The plane began to fly itself and was turning around.

d. Passengers could not understand each other’s speech.

20. Who was left in charge of the passengers?

a. The terrorists

b. The co-captain

c. The U. S. Air Marshall

d. The senior flight attendant

21. Who was the last person on the plane to know what had happened?

a. The captain

b. The co-captain

c. The senior flight attendant

d. The passengers in first-class

22. Which word best describes the tone on the plane once Rayford went to the passenger cabin?

a. Confusion

b. Relief

c. Repentance

d. Celebration

23. Which statement is true about the news reports on the day of the attacks?

a. They were accurate

b. They intentionally were meant to scare everyone into fleeing the country

c. They were pre-recorded

d. They were all happening live

24. How did Rayford get to his house?

a. He and Buck took a hired car after the plane landed

b. He took a taxi by himself

c. He and Buck walked from the airport

d. His wife picked him up near the airport

25. What did Rayford find when he returned to his house?

a. His wife and children were worried about Rayford and were waiting for him.

b. His wife was hysterical because the children were missing.

c. His children and wife were not home.

d. His wife and children were hiding in the house.

APPENDIX C – Reading Enjoyment Questionnaire

ID Code: _____ Male/ Female

Directions**:** Please check the answer that best reflects your feelings on today's reading experience.

In terms of enjoyment with this reading experience, I enjoyed it:

_____Less than I thought I would

_____As much as I thought I would

_____More than I thought I would

APPENDIX D - Introduction Script for Intervention Group

Research Assistant:

Good morning. I will administer the test for Mr. Damon's research study on reading comprehension and reading enjoyment. First, please see that your desk has been pre-set with a sharpened pencil, a survey, a reading passage, an iPad, and ear buds.

Please do not touch any of these materials at this time.

In a moment you will be asked to complete the "Reading and You Attitude Survey". You will be given 10 minutes to complete this survey.

Please follow these directions:

Read each item on the survey and circle the response that **you** think sounds most like you. When you finish the survey, please proceed to read the passage that is on your desk. Raise your hand when you are finished reading the passage.

You may begin now.

APPENDIX E – Introduction Script and Welcome for TP Group

Research Assistant:

Good morning. I will administer the test for Mr. Damon's research study on reading comprehension and reading enjoyment. First, please see that your desk has been pre-set with a sharpened pencil, a survey, and a reading passage.

Please do not touch any of these materials at this time.

In a moment you will be asked to complete the "Reading and You Attitude Survey". You will be given ten minutes to complete this survey.

Please follow these directions:

Read each item on the survey and circle the response that **you** think sounds most like you. When you finish the survey, please proceed to read the passage that is on your desk. Raise your hand when you are finished reading the passage.

You may begin now.

APPENDIX F - Script for Intervention Group/ iPad Scanner and QR Codes

(To be read once the "Reading and You Attitude Survey" is Completed)

Now please look at your reading passage. Your reading passage contains QR codes embedded with digital links that pertain to the reading passage above it.

The iPad on your desk is charged and is turned on. A QR code scanner has been downloaded onto your iPad. You will only be allowed to use the iPad and ear buds when you see a QR code in your reading passage that looks like this (Research Assistant holds up a graphic of the QR code):

When you see this QR code (show graphic) you will place the iPad over the code and press the home button at the bottom center of your iPad.

We are going to try using this scanner, but do not touch the iPad yet. First watch me scan a QR code with my iPad (demonstrates).

In a moment you will put your ear buds in and scan the practice code located at the top of your reading passage. You will know that your scanner and ear buds are working correctly when you see and hear me giving you a welcome message. You may try this now (waits for students to try the scanner).

Please take out your ear buds.

Please follow these directions: read the passage carefully, only scan the QR code after the passage above it has been read. After you scan and watch the link, resume reading the next paragraph. When you are finished, raise your hand and I will give you the reading comprehension test and scantron.

You may begin now.

APPENDIX G – Letter of Information

Dear Parent,

As a requirement for the completion of my Ed. D. at Liberty University's School of Education, I am conducting research on the effects of information delivery types on the seventh-grade reader. I am asking you to consider allowing your student to participate in this study.

This research study insures the following:

- No outside class time is required
- Student responses are anonymous
- There is no academic bearing (comprehension "test" is not taken for a grade)
- Content of the reading passage introduces the class to our next unit of study

If your student participates, he or she will:

- Report to Bible class as usual on April 30, 2014
- Take a survey on reading interest
- Read a passage from a novel
- Take a reading comprehension test
- Answer a question about the read experience
- Be dismissed at regular class dismissal time

Students who wish not to participate will cover the same material in a different room with me, while my Research Assistant administers the test in the regular Bible classroom.

Please sign the attached inform consent, and have your student sign the attached assent form and return these to the middle school office by April 25, 2014.

Thank you for your consideration.

Doug Damon, Ed. S.

Bible Teacher

Liberty Christian Academy

APPENDIX H – Letter of Permission from Site Principal

LIBERTY CHRISTIAN ACADEMY

Home of the Bulldogs

LCA

March 28, 2014

To Whom It May Concern,

I am writing this letter to inform you that Doug Damon has been given permission to perform his doctoral research study with the seventh grade students at Liberty Christian Academy. I have met with Mr. Damon and am fully aware of the purpose of the study, the procedures that will incorporated, and the time that will be necessary to complete his research.

I look forward to hearing the results of his study as it relates to student reading comprehension. If you have any questions, or would like to speak with me further, I can be reached at (434)832-2034, or via e-mail at jfcapps@liberty.edu.

Respectfully,

XXXXXXXXXXXXXXXX

Jeffrey F. Capps
LCA Middle School Principal

APPENDIX I – Consent Form

Consent Form

Information Delivery Type:

Effects on Reading Comprehension and Reading Enjoyment

Douglas R. Damon

Liberty University

School of Education

Your seventh-grade student is invited to be in a research study of reading comprehension and reading enjoyment. Your child is a potential participant because he/ she is in the seventh grade. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Doug Damon in the School of Education at Liberty University.

Background Information:

The purpose of this study is to explore reading comprehension and reading enjoyment based on information delivery type.

Procedures:

If you agree to allow your student to be in this study, your student will be asked to do the following things: Report to Bible class at the normal time, complete a survey about reading interests, read a short passage from a novel and take a reading comprehension test, and complete a brief survey about reading enjoyment. The entire testing process will be completed in class during the regularly scheduled period. The material covered in the passage is linked to an upcoming unit in the class.

Risks and Benefits of being in the Study:

The study has minimal risks that are no more than you would encounter in everyday life.

There are no direct benefits to participation in the study. The education community will benefit from the study in terms of gained knowledge about efficacy of information

delivery types and reading comprehension. Findings could alter the way information is delivered for K-12 education.

Compensation:

There is no compensation for participation in this study.

Confidentiality:

The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely and only the researcher will have access to the records. Student names will not be linked to the test sample. Instead a numeric code will serve as the link to the data.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty Christian Academy, and has no academic bearing in any classes. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is Doug Damon. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact Mr. Damon at drdamon2@liberty.edu. You may also contact Mr. Damon's advisor, Dr. Ellen Black at elblack@liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

IRB Code Numbers: [Risk] 1853.042514

IRB Expiration Date: [Risk]

Statement of Consent:

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

Parent Signature Date

IRB Code Numbers: 1853.042514

IRB Expiration Date:

APPRENDIX J – Assent of Child to Participate in a Research Study

What is the name of the study and who is doing the study?

The name of this study is "Efficacy of Information Delivery types on Reading Comprehension and Reading Enjoyment". Mr. Damon is conducting this study as a part of his doctoral studies in Education at Liberty University.

Why are we doing this study?

I am interested in studying how information delivery types might influence reading comprehension and reading enjoyment.

Why are we asking you to be in this study?

You are being asked to be in this research study because you are in the seventh grade, and this is the age group I would like to study.

If you agree, what will happen?

If you are in this study you will come to class as usual. You will take a brief survey about your reading interests/ disinterests, read a passage from a novel and take a reading comprehension test, and then answer a question about your reading enjoyment of the passage. There are no academic grades given, and Mr. Damon will not be aware of which student took which test, since all of the materials will be coded, with no names.

Do you have to be in this study?

No, you do not have to be in this study. If you want to be in this study, then tell the researcher. If you don't want to, it's OK to say no. The researcher will not be angry. You can say yes now and change your mind later. It's up to you.

Do you have any questions?

You can ask questions any time. You can ask now. You can ask later. You can talk to the researcher. If you do not understand something, please ask the researcher to explain it to you again.

Signing your name below means that you want to be in the study.

_____

Signature of Child Date

Researcher: Douglas R. Damon drdamon2@liberty.edu

Advisor: Dr. Ellen Black elblack@liberty.edu

Liberty University Institutional Review Board, 1971 University Blvd, Suite 1837, Lynchburg, VA 24515 or email at irb@liberty.edu

APPENDIX K - Letter of Permission from Publishers to Photocopy

Doug,

I am writing this courtesy follow-up email to inform you that we are in receipt of your money order for $25 in payment for the use of pages 9-19 of *LEFT BEHIND* in your seventh grade experiment on reading. Please consider this permission to proceed with this project.

Best of luck to you and have a wonderful day!

Sincerely,

Cheryl L. Sukut

Permissions Coordinator

Tyndale House Publishers, Inc.

351 Executive Drive

Carol Stream, IL 60188

permission@tyndale.com

APPENDIX L – Permission to Use Film Material

To Whom It May Concern:

As discussed:

Doug Damon has permission to use four (4) 90-minute clips of the film "Left Behind" (2000) to use as enhancement as content for QR codes for a dissertation research study on reading comprehension.

I am authorized to grant permission for use on behalf of Cloud Ten Pictures. If you have any questions about this permission please feel free to contact me using the contact information below.

Thank you,
Courtney Kaminski
Public Relations & Client Services
Cloud Ten Pictures
P: 888-684-5561
www.cloudtenpictures.com

APPENDIX M – IRB Approval Letter

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

April 25, 2014

Douglas Robert Damon
IRB Approval 1853.042514: Effects of Information Delivery Type on Reading Comprehension in Male, Seventh-Grade, Disinterested Readers

Dear Doug,

We are pleased to inform you that your above study has been approved by the Liberty IRB. This approval is extended to you for one year. If data collection proceeds past one year, or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Please retain this letter for your records. Also, if you are conducting research as part of the requirements for a master's thesis or doctoral dissertation, this approval letter should be included as an appendix to your completed thesis or dissertation.

Thank you for your cooperation with the IRB, and we wish you well with your research project.

Sincerely,

XXXXXXXX

Fernando Garzon, Psy.D.
Professor, IRB Chair
Counseling

(434) 592-4054

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AUBURN
UNIVERSITY

COLLEGE OF EDUCATION

CURRICULUM AND TEACHING

12-4-14

To Whom It May Concern;

I am writing to grant formal permission for Mr. Douglas R. Damon to use my reading interest instrument known as the "Reading and You Attitude Survey" in his doctoral study entitled "Effects of Information Delivery Type on Reading Comprehension and Reading Enjoyment in Male Seventh-Grade Disinterested Readers". I further grant Mr. Damon permission to publish the survey as a part of his doctoral dissertation.

Bruce A. Murray, Ph.D.
5040 Haley Center
Auburn University, AL 36849
Internet: murraba@auburn.edu
http://www.auburn.edu/rdggenie

Associate Professor, Coord Reading Education
Department of Curriculum and Teaching
College of Education, Auburn University
Dept: 334-844-4434 Office: 334-844-6934
Fax: 334-844-6789 Cell: 334-524-2476

5040 HALEY CENTER
AUBURN, AL 36849-5212

TELEPHONE:
334-844-4434

FAX:
334-844-6789

www.auburn.edu