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Attitude Toward Digital and Print-Based Reading: A Survey for Elementary Students

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Attitudes Toward Digital and Print-Based Reading:

A Survey for Elementary Students

by

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ABSTRACT

The purpose of this study was to create a valid and reliable survey to measure third through fifth grade students' attitudes toward reading across three mediums: print, e-reader, and Internet. The theoretical framework pulls from self-determination theory and affective models to guide the development of a survey intended for use with intermediate elementary students. The Attitude Toward Reading Survey (ATRS) was developed and field-tested, revised, and field-tested again. Data analysis included confirmatory and exploratory factor analysis, Cronbach's alpha reliability, and cumulative logit modeling. The results indicate the survey is a reliable and valid tool for teachers to use. The ATRS could be strengthened from future field-testing with a larger sample across a more diverse population of students.

CHAPTER 1

In the words of Professor Chris Dede, "the most dangerous experiment we can conduct with our children is to keep schooling them the same at a time when every other aspect of our society is dramatically changing" (Panel on Technology, 1997, "Section 8.5 Structural and Administrative Considerations," para. 10).

Background

As stated above, society is steadily changing which requires people to adjust in order to live functionally. Educators prepare children to become active members of society, thus, education needs to change as quickly as society in order for today's children to be prepared to become tomorrow's leaders and society members. Literacy is one aspect of education that has an impact on students' achievement (Henk & McKenna, 2004).

Researchers and practitioners in the field of education know there is a "critical link between achievement and affect in literacy" (Henk & McKenna, 2004, p.199) and the direct correlation between reading achievement and amount of time spent reading is widely accepted in the field (Henk & McKenna, 2004; NICHHD, 2000). In fact, when the National Reading Panel formed in 1999 they did not designate a subcommittee to investigate this relationship because "the correlational evidence is overwhelming" (NICHHD, 2000, p.3-21). Research also indicates that there is a correlation between students' attitudes and the amount of time they spend reading independently (Cline & Kretke, 1980; Hester & Ray, 2005; Holt & O'Tuel, 1989; Yoon, 2002). These widely accepted correlations illustrate the importance of reading for students.

I accepted the knowledge that amount of time spent reading and reading achievement are correlated. Research has also indicated students' attitudes toward reading are correlated with the amount of time they spend reading (Cline & Kretke, 1980; Hester & Ray, 2005; Holt & O'Tuel, 1989; Yoon, 2002). I used this information to guide the creation of a survey to measure students' attitudes toward reading. Next I will discuss how the survey results can provide teachers with information about their students' reading attitude in both digital and print texts. This information can help teachers plan activities and lessons that target the areas of reading students have more positive attitudes toward and help to increase their attitudes in other areas as a means of increasing achievement.

My Experiences

In my experiences as an elementary school teacher, primary-grades reading coach, and literacy staff developer, I saw first-hand the impact that reading had for various students. I saw how students who entered my class at the start of the school-year as nonreaders by choice left at the end of the school-year with a renewed sense of enjoyment for spending time reading. I believe this shift in their attitude was due to the emphasis I placed on using my students' interests to build their excitement for reading. In my opinion, this change in their attitude helped them become more capable readers because they spent more time reading than in the past.

It is especially important for elementary school teachers to focus on increasing students' positive attitudes towards reading because attitudes develop early in people's lives (Heathington & Alexander, 1984). From my experience, I have found that knowing how students feel about specific things (e.g., general reading, specific genres of books) provided a foundation from which to build. This is why I believe it is important to have a

way to find out about students' attitudes toward reading. Due to the fast-paced schedule teachers must adhere to, a survey that can be administered to the whole class will provide this information readily and more likely be used by busy teachers than a survey that must be given to students individually.

Purpose

The purpose of this study was to develop a valid and reliable survey instrument to measure 3rd-5th grade students' attitudes toward reading across three dimensions (*print, internet,* and *e-reader texts*). Digital forms of text are gaining popularity while, some believe, the presence of print formats is dwindling (Reinking, 1998), requiring educators to view reading instruction through a new lens. Therefore, it is important to know if there may be a difference in how students feel toward reading print versus digital texts. Digital texts can be accessed in various ways; therefore, the survey will investigate reading digital texts from handheld devices (e-readers) and computers (Internet).

Because the correlation between attitude and achievement is evident (McKenna & Kear, 1990; Walberg & Tsai, 1985), a survey is a beneficial tool for classroom teachers to use as a way to learn more about their students' attitudes. Past surveys (e.g., Estes, 1971; Gable & Roberts, 1983; McKenna & Kear, 1990) were created to measure how the students felt about reading print text formats, such as printed books, magazines, and newspapers. However, these extant surveys do not measure new formats—such as e-books, digital magazines and newspapers, and websites—because those types of texts were not prevalent at the time the surveys were developed. In addition to measuring how students feel about reading print texts (e.g., books, magazines, newspapers), this survey measures how students feel about reading digital texts (e.g., websites, e-books, blogs), which are quickly

becoming more widespread. The Attitude Toward Reading Survey (ATRS) evaluates how students feel about reading in regards to print, e-reader, and Internet texts, which will provide teachers with information about their students' interests and guide the lessons teachers develop to engage students in reading activities.

Research Questions

The research questions examined in this study were:

1. To what extent does evidence from a factor analysis support the Attitude Toward Reading Survey (ATRS) as a valid measure of students' attitudes toward reading?
2. To what extent does evidence from Cronbach's alpha support the Attitude Toward Reading Survey (ATRS) as a reliable measure of students' attitudes toward reading?
3. To what extent does item bias analysis using logistic regression support the Attitude Toward Reading Survey (ATRS) as a valid measure of students' attitudes toward reading?

Significance

The Attitude Toward Reading Survey (ATRS) will contribute to education by building on the Elementary Reading Attitude Survey (ERAS; McKenna & Kear, 1990), a widely accepted survey used by elementary teachers. McKenna and Kear developed the ERAS to measure students' attitudes toward recreational and academic independent reading. They designed the survey with a 4-point pictorial rating scale with Garfield, a cartoon character they deemed to be well-known by elementary students. Each question starts with *How do you feel…* to maintain format consistency. There are twenty total questions, 10 designed to measure attitude in each category: recreational reading and academic reading. Once the survey was developed, it was administered to a large sample of

students across the United States (n=18,138) to determine whether the questions were reliable and valid. The results indicated the questions were reliable (Cronbach's alpha ranged from .74 to .89) and valid (factor analysis indicated the items loaded on the anticipated factors supporting the claim that the subscales do measure two discrete aspects of reading attitude; actual loadings were not provided). This survey appears to be the most reliable and valid instrument currently in use.

The ERAS not only measures what it intends, it is also a convenient tool for teachers to use because it can be administered to the entire class at the same time or to individual students. Teachers can use the method of administration that best meets their needs at the time. An additional benefit is the scoring page that instructs teachers to assign a point value to students' responses. A quantitative composite score provides teachers with a numeric value to signify a student's overall attitude toward reading (the higher the number the more positive the student's attitude) and a score for each subscale: recreational reading and academic reading. Within the literacy education field there is a need for additional quantitative group surveys because the field is "…particularly acute in terms of quantitative group surveys that can function as a natural complement to individually administered qualitative instruments" (Henk & McKenna, 2004, p. 201). The survey I created is intended to benefit the field of literacy education because it will be a reliable and valid quantitative group survey to fill the current gap of such surveys.

While the ERAS (McKenna & Kear, 1990) has proven to be a reliable, valid, and widely used tool to measure students' attitudes toward reading, many other surveys (Estes, 1971; Gable & Roberts, 1983; Heathington, 1979; Hughes-Hassell & Lutz, 2006) are widely used but have not been proven reliable and valid. According to Henk and McKenna (2004)

there is a "striking lack of truly valid and reliable instrumentation" (p. 201). Furthermore, neither the ERAS nor the other popular surveys measure students' attitudes toward digital texts.

The Attitude Toward Reading Survey (ATRS) builds on the ERAS by measuring students' attitudes toward new forms of literacy. Because the ERAS is considered to be an effective survey, I used it as a model to create the ATRS. To maintain consistency, I began each item with the words "How do you feel about…" the same way McKenna and Kear wrote each item on the ERAS. I also maintained a four-point pictorial rating scale because I wanted to eliminate a neutral response and provide an amount of options that children can process without becoming overwhelmed (Anderson & Bourke, 2000; de Vaus, 1990; Gable & Wolf, 1993; Groves et al., 2004; Nunnally, 1967). The ATRS employs a different pictorial representation (see Appendix E) with words to denote what each picture represents (Very Good, Good, Bad, Very Bad). I chose the words for the scale because, based on my experiences, those words are common to most students in third, fourth, and fifth grades. Additionally, the ATRS includes items to measure how students feel about digital texts; this is the most important addition to the survey because past surveys were written prior to the flood of digital texts in society.

Theoretical Framework

Attitude, how people feel about what they do, and motivation, the reason people do things, are often used interchangeably. In order to avoid ambiguity, it is important to establish that they are related but not the same. Motivation and attitude are braided together without becoming one. Both support each other—motivation is a requirement for positive attitudes. Self Determination Theory (SDT) is a supportive theory for the affective

models used to guide this study. Below I will introduce SDT, Mathewson's affective models, and McKenna's affective model. Further expansion and figures will be provided in chapter two.

Motivation: Self Determination Theory

When students are self-determined, they have greater success with complex tasks (Deci, 1992). Self Determination Theory (SDT) focuses on three psychological needs: competence, relatedness, and autonomy, which when fulfilled, raise the likelihood for students to have greater motivation, performance, and development (Deci, Valerand, Pelletier, and Ryan, 1991). In this study, competence relates to how successful a student is at reading. Relatedness is the sense of belonging; being in a class that promotes reading will help students fit in when they make the decision to read. Autonomy is having control over things, such as choice in what to read.

SDT also discusses a continuum of motivation, from amotivation at the far left, a range of extrinsic motivation in the center, and intrinsic motivation at the far right. Amotivation is a non-regulated form of motivation. Students who are amotivated do not have the intention to complete an act, such as reading. At the other end, intrinsically motivated students complete the act of reading for the pure joy they get from it. In the center, there are four levels of extrinsic motivation. External regulation refers to students being motivated by compliance, punishments, and external rewards. Introjected regulation is somewhat external, in that students are regulated by internal rewards, self-control, and punishments. Moving into a somewhat intrinsic regulation is identified regulation. Students motivated this way engage in the act because it is personally important to them. The final level of extrinsic motivation is integrated regulation. Students are motivated internally to

complete a task because it fits into their beliefs and values and because it leads to an outcome they desire.

SDT supports the current study because, as discussed by Deci (1992), teachers strive for their students to attain high achievement, which is fostered when students' sense of autonomy and self-determination grows and leads to higher quality of performance on tasks. When teachers allow students to read self-selected books independently, students' autonomy and self-determination may increase. This is significant to the current survey because teachers can use information about how their students feel towards specific areas of reading to encourage their students to be more autonomous.

Affective Models

In addition to SDT, two affective models related to reading and attitude also guide this study: *Mathewson's Affective Model* (1985, 1994, 2004) and *The McKenna Model* (1994). These models complement each other and contribute to the study in regards to students' attitudes toward reading and the correlation of these factors to the amount of time spent reading, which effects students' reading achievement (Henk & McKenna, 2004). An in depth discussion of these models, including figures, is provided in chapter 2, below is an overview.

Mathewson's (1985, 1994) affective model addresses the motives that contribute to students' decisions to read and how affective variables influence their reading. There are relationships between students' attitudes and motivations to read, the amount of attention they devote to reading, and how well they comprehend what they read (Mathewson, 1994). The decisions to read and what to read contribute to how well students comprehend the material they select. Students' comprehension of the material influences how students feel

about the act of reading, which contributes to the decision of whether or not to read more, a cyclical process.

The McKenna model (1994) used ideas from several past theories and models (e.g., Ajzen, 1988; Ajzen & Fishbein, 1980; Cothern & Collins, 1992; Fishbein & Ajzen, 1975; Mathewson, 1985, 1994; Ruddell & Speaker, 1985) to create a new model that would consider the "the long-term development of reading attitudes" (McKenna, Kear, Ellsworth, 1995, p. 938). Although he gives credit to methods that influenced him, McKenna specifically discussed how Mathewson's work (1985, 1994) contributed to the development of the McKenna model. McKenna's model is guided by three principal factors: 1) the beliefs an individual has about how desirable the outcomes of reading are; 2) the beliefs an individual has about the expectations of others and their motivation to abide by those expectations; and 3) the outcomes of specific incidents of reading (e.g., if the outcome is positive or negative). These three factors develop over time, influence each other, and can change. They affect how students feel about the act of reading and thus can contribute to the amount of time spent reading.

The theory and models guiding this study come together to emphasize the components that lead to effective instruction. Self Determination Theory posits the need for students to have autonomous choices. Mathewson's models (1985, 1994) identify components that affect attitude and decision to read, which can affect the amount of reading students do to build their fluency. McKenna (1994) expands on Mathewson's work to include students' intention to read and their beliefs about the expectations and outcomes of reading. These theories and models work together to influence the development of the ATRS and will be elaborated on in chapter two.

The questions in the ATRS are designed to elicit responses from students to determine how they feel about specific aspects of reading. The questions will help teachers understand students' feelings about reading for specific purposes and from various mediums. Teachers can use this information to guide conversations that will help them know more about their students' attitudes; the ATRS is one measure that can influence further activities and discussions about reading. The goal is to provide teachers with enough information about their students that they can encourage students to decide to read when faced with the choice.

Study Design

This study was built on pilot research conducted in 2009-2010. During the pilot study I developed the first draft of the ATRS (details are provided in chapter three) and field-tested the survey to determine the reliability and validity of the items. I wrote an initial set of 60 items then held focus groups with professionals in education (i.e., university faculty, advanced graduate students, and classroom teachers) to determine the questions that would be most effective in the survey. I made revisions and developed a draft that was administered to 115 third through fifth-grade students. I entered the students' responses in PASW 18, a statistical software program, to calculate Cronbach's alpha for the composite scores to investigate the reliability of the items and run a factor analysis to explore the validity of the items. I then held five cognitive interviews with children with demographics similar to those of the sample I surveyed to discuss changes for future iterations of the survey. Cognitive interviews consist of individual meetings with volunteers similar to the population studied (Groves, et al., 2004). During the interviews the volunteers answered questions about their thought process as they responded to survey items. The cognitive

interviews provided me with information about the survey items and how children interpret them. Based on the results of this phase of my research (specific data is provided in chapter three), it was evident that revisions would be necessary to make the survey an effective tool for teachers to use with their students.

In this study, I used data from the pilot and feedback from the interview participants to revise the survey, and then administered it to a large sample of third through fifth-grade students (n=454). I used the responses from the students' surveys to determine how reliable and valid the items were at determining students' attitudes toward reading.

To answer research question one, determining the validity of the survey, I used factor analysis because a valid assessment must measure what it is intended to measure. A factor analysis will provide data to show if items are grouped together on the factors as I intended when creating the survey. I first used PASW 18 to run a confirmatory factor analysis constrained to three factors based on the logic of how the survey was created. Items loaded as expected but the factor model accounted for less than 44% of the variance. To explore possible factors that may have contributed to the variance, I ran an exploratory factor analysis with the data unconstrained to find out the number of factors on which survey constructs would load. The EFA resulted in eight factors greater than one, which I deemed significant, and accounted for over 71% of the variance. Each of the factor analysis was run with an oblique rotation because I believe the factors are correlated since they all measure students' attitudes toward reading.

To answer research question two, determining the reliability of the survey, I used PAWS 18 to calculate Cronbach's alpha for the composite score, each factor, and demographic categories (i.e., school, grade level, and gender). Cronbach's alpha is a widely

used and accepted method to determine the internal consistency of items on survey instruments (Anderson & Bourke, 2000; de Vaus, 1990; Gable & Wolf, 1993; Nunnally, 1978).

To answer research question three, determining item validity in regards to gender bias, I analyzed data with cumulative logit modeling. Cumulative logit modeling is a form of logistic regression used with ordinal data to determine if specific variable predict responses. For this survey, I used cumulative logit modeling to examine whether gender predicted responses to survey items.

Limitations

This study will contribute to the literature in the field of education; however, there are limitations to the design of the study. The following section will discuss the factors that might limit and potentially influence my study and provide a discussion of how I intend to address them.

Teacher Effectiveness

The effectiveness of the classroom teachers for the students who will participate in this study is a factor that I will be unable to account for. An effective teacher would likely result in students who are more competent readers and likely to have better attitudes toward reading (Allington, 2002). On the other hand, ineffective teachers may result in students with a less positive attitude toward reading. To account for this limitation I will administer the survey to classes at different schools with different teachers to make sure that there are ample participants to counter for this limitation.

Teacher Influence

Teachers with positive attitudes toward reading are likely to influence their students in a positive manner. Such teachers might share their love of reading with students by talking about the books they are reading at home. Modeling literacy excitement has the potential to influence students to have more positive attitudes toward reading. Conversely, teachers who lack a positive attitude toward reading themselves would be less likely to express the importance of reading and this might negatively affect students' attitudes toward reading. The purpose of this study is to survey students to investigate their attitudes toward reading regardless of the teacher and this study will survey a large enough sample size to mediate this limitation.

Accuracy of Students' Responses

The responses students select on their survey will be used to calculate the reliability and validity of the questions. Yet I am not able to know if the students are responding to the question accurately. For example, the students might select the responses they think are "better" or that they think their teacher would like them to choose. There is also the chance that students will select random responses without regard to how they really feel, or without reading the items. The large sample will address this limitation.

Outside Factors that Influence Students

The mood of students can affect their decision to read and how they describe their feelings about reading (Mathewson, 1985). The events in a student's life on the day of the survey could affect their responses either positively or negatively. This survey will not be able to account for the outside factors that may affect how students respond, but by including a large number of participants, this limitation should not unduly affect results.

Convenience Sample

This study will be limited to the convenience sample of third through fifth grade students from schools in the district(s) that agree to participate in the study. The purpose for working with students in these grade levels is because students have typically learned to read well enough by third grade to start reading for pleasure and this survey will be designed for intermediate grades elementary students, which is why the highest grade level in the sample will be fifth grade. Additionally, the students will all be from within the same geographic area. Therefore results from this study will not be generalizable to populations beyond the sample.

Cognitive Interviews

Cognitive interviews are private, one-on-one interviews that allow the researcher to find out how a participant would read and think about each item on a survey (Willis, 2005). I met individually with two third-grade girls, and three fourth-grade boys to conduct cognitive interviews. The limited number of students I interviewed provided valuable data, however, a more diverse and larger sample would make the interview data stronger.

Delimitations

The following section will provide an overview of the restrictions or boundaries that I will consider and not consider as part of my study. I will also provide an explanation of why each delimitation might affect my study and how I intend to account for these issues.

Interpretation of Terms

Print texts, e-readers, and Internet texts are terms that may be interpreted differently by people and it is important for these terms to be clearly understood with a common meaning for participants because they differentiate the constructs the ATRS

intends to measure. For the purpose of cognitive interviews I will provide a clear definition of how the terms will be used in the survey. To account for this with students who will respond to the survey, I will provide detailed items that explain what is meant by the terms to maintain consistency in interpretation of terms when students consider their attitude in response to each question.

Terminology

Academic Reading

Academic reading is done in or out of school but the purpose of the task is academic. For example, a student reading a book assigned by the teacher or reading to find out information for a class project would be engaging in academic reading (McKenna & Kear, 1990).

Attitude

Attitude refers to the way a person feels toward something particular, for example, a person, place, object, or situation (Good, 1974, as cited by Kush & Watkins, 1996).

Attitude Toward Reading

Student's feelings toward reading based on their beliefs about, outcomes in, and experiences with reading represent their attitude toward reading (McKenna & Kear, 1990).

Cognitive Interview

A cognitive interview consists of the process of asking a sample of volunteers, similar to the population to be studied, to provide information about the survey questions, their interpretation of what is being asked, and how they think through the question. This process helps the researcher revise questions that are ambiguous (Groves et al., 2004).

Connectivity

Connectivity is the increased sense of community and mental and visual connections individuals make when presented with hyperlinks in digital texts (Dresang, 1999).

Cummulative Logit Modeling

Cumulative logit modeling is a form of logistic regression used with ordinal data, such as the rating scale used in the ATRS. The parameter, β, is of interest because it explains the effect of a variable on an item response, after controlling for responses on other items (O'Connell, 2006).

Digital

Digital is a type of media that is easily changed and shared, therefore becoming interactive (Dresang, 1999).

Digital Age

The digital age is the time period since the influx of computers and digital media became easily accessible and widespread (Dresang, 1999).

Digital Text

Digital text can refer to various types of non-print text including: a linear text in a digital format, a nonlinear text with hyperlinks, a text with integrated media, and a text with options for response (Dalton & Proctor, 2008).

Factor Analysis

Factor Analysis analyzes observable behaviors (e.g., if a student likes to read print books from various genres) to determine the unobservable factors (e.g., the student's attitude toward reading print materials) researchers want to investigate (Marsh, 1987). Factor Analysis is conducted by analyzing the pattern of correlations between the observed

measures; it is expected that highly correlated measures will be influenced by the same unobservable factors.

Focus Group

A focus group is a group of volunteers that participate in a discussion about the topic to help the researcher learn about how others perceive the topic. Focus groups are often held at the early stages of survey development to guide the process (Groves et al., 2004).

Hyperlinked Text

Hyperlinked text is an electronic link that takes one to a different section of information within the document or to a new document with one click of the computer's mouse (Merriam-Webster on-line dictionary, 2012).

Independent Reading

Independent reading is the designated time when students read silently, by themselves, from self-selected material (Fountas & Pinnell, 2001).

Information and Communication Technology (ICT)

ICT refers to the integration of various new technologies, for example, the Internet and multimedia with computers (Anderson, 2008). Additionally, ICT includes individuals' use of the Internet, specialized software, handheld, and wireless devices (Quellmalz & Haertel, 2008).

Interactivity

Interactivity is the ability for readers to interact with texts and make choices as they read, for example, whether to select a hyperlink (Dresang, 1999).

Motivation (external)

External motivation refers to behaviors done to gain a reward rather than for personal interest (Deci, Vallerand, Pelletier, & Ryan, 1991). For example, the desire to read in order to gain recognition or some type of award (e.g., sticker, praise, party, etc.) is an example of an external motivation to read (Guthrie & Wigfield, 2000).

Motivation (internal)

Internal motivation refers to behaviors an individual engages in for personal enjoyment regardless of outcomes (Guthrie & Wigfield, 2000).

New Literacies

New literacies encompass new forms of texts plus the skills and strategies students need to employ when reading from them. These new types of texts include, but are not limited to, nonlinear hypertext (e.g. internet links embedded in webpages), multiple-media texts (e.g., print, two-dimensional graphics, photographs, videos, etc.), and interactive texts (e.g., print and electronic texts that require the reader to become involved and navigate different paths to create their own interpretations of the material (Coiro, 2003).

Print-Based Text

Print-based text refers to written linear text that is static and bound (Dalton & Proctor, 2008).

Recreational Reading

Recreational reading can be done in or out of school. The purpose of recreational reading is for enjoyment and there is not a school grade or assignment linked to the task (McKenna & Kear, 1990).

Self-Determination Theory (SDT)

Self Determination Theory (SDT) focuses on three psychological needs: competence, relatedness, and autonomy. When students are in an environment that allows them the chance to fulfill these needs, they are more likely to have greater motivation, performance, and development (Deci, Valerand, Pelletier, and Ryan, 1991).

Traditional Texts

For the purpose of this study, *traditional texts* refer to print forms of text such as books, magazines, and newspapers.

CHAPTER 2

Because there is a direct correlation between the amount of time students spend reading and their achievement in reading (Allington, 2001; Henk & McKenna, 2004; NICHHD, 2000), it makes sense that teachers would encourage students to engage in reading more frequently. However, teacher encouragement may not be enough to motivate students to choose to read more often. Students' attitudes toward reading also play a role in their choice of how to spend time.

The following chapter will provide a review of literature that led to the development of the items on the Attitude Toward Reading Survey (ATRS), discuss reading print and digital texts and the interconnectedness of motivation and attitude toward reading. Additionally, I will discuss how digital literacies are changing the way educators must view and teach reading which illustrates the need for a new survey to measure how students feel about reading both print and digital texts. Finally, I will explain the theoretical frame I used to guide the development of the Attitude Toward Reading Survey (ATRS).

Past educators stressed the importance of time to practice reading as a way to increase reading performance. Current educators continue to stress the importance of reading because when students spend time reading, they are practicing strategies to strengthen their reading comprehension. Practice contributes to better performance in reading as it does in many other things, such as sports, playing an instrument, and practicing medicine (Allington, 2009; Guthrie, 2004; Heibert & Martin, 2009). Tovani (2000) states "*Reading is Thinking*" (p. 18) and goes on to explain that the ability to decode

words and read them is only the first step in the process of reading. Readers must be able to make meaning of the words, a task that requires "thoughtful cognition" (Tovani, 2000, p. 18). Students do not automatically know how to make meaning from the text; they need to learn how to use their experiences and background knowledge to make meaning from the words they read. Skills and strategies to help students make meaning from texts are taught during whole-class reading instruction. Skills are the actions that a reader makes automatically and without thought to decode text and comprehend it as they read and strategies are the intentional acts a reader makes to attempt to decode and comprehend the text they are reading (Afflerbach, Pearson, & Paris, 2008). During independent reading, students have the opportunity to practice transferring these strategies into their own reading experiences. Whether students read at home or in school, the experience can encompass both print and digital texts.

Research to Support ATRS Items

Reading to Learn New Things

Reading can be a task students engage in for sheer enjoyment or to learn about something. Guthrie et al. (2006) propose that pairing an interesting text with a stimulating activity will evoke interest in reading to learn more about the topic, especially if students deem the activity and topic to be interesting. Dreher (2003) reported that boys tend to prefer reading to learn something more than girls. Additionally, children can develop a sense of ownership with their learning when they read for information and this can have a positive impact on their motivation to read more (Corcoran & Mamalakis, 2009). Informational texts are available in many formats but the Internet offers students the ability to read the most current information (Dalton & Proctor, 2008). Because research

has revealed that students read to learn things, an item relating to this concept was included on the ATRS.

Reading Magazines and News

Magazines are a source of information that students find interesting and exciting (Corcoran & Mamalakis, 2009). On-line magazines are a popular way for consumers to read magazines and students tend to be comfortable and engaged when reading on-line texts (Dalton & Proctor, 2008). Students can use e-readers to access magazines and there are many types of e-readers to chose from (Lamb & Johnson, 2011). Guthrie and Wigfield found that it is intrinsically motivating for students to read about real-world events. Providing students with access and choices to read magazines and newspapers is a way to expose them to experiences in the real world.

Choice and Reading a Variety of Material

Reading material that is written by authors new to the students is a way for students to be exposed to various forms of genres. Reading from various genres requires different strategies (Fountas & Pinnell, 2001) and reading from different mediums of text requires different strategies (Lamb & Johnson, 2011). A question about how students feel reading material by authors new to them is an important part of the ATRS because students like to have choice in what they read (Guthrie & Wigfield, 2000). When educators know how their students feel about this specific choice, the data can help guide instruction and the materials teachers provide in their classroom. Additionally, students who are intrinsically motivated to read tend to read a wide variety of materials and the choice in what to read provides students with a sense of control (Guthrie & Wigfield, 2000). Choice is an important aspect in motivating students.

Talking About and Sharing Books

When children share books with friends and talk about their reading they are more likely to be intrinsically motivated (Guthrie & Wigfield, 2000; Morrow, 1996). It is exciting for children to talk to others about the books they are reading and knowing how individual students feel about this can help teachers plan activities to meet these interests (Gambrell, 1996). Asking students how they feel about talking about books and sharing books with a friend can give educators insight into students' attitudes by asking about the specific behavior that has been linked with positive attitudes toward reading.

Reading and Information and Communication Technologies

Much of what has been studied, in regards to reading, has included traditional print texts such as books and magazines. Although researchers began to investigate the connection between digital technologies and literacy as far back as the 1960s, the surge of easily accessible technologies has increased the need to attend to such questions (Coiro, Knobel, Lankshear, & Leu, 2008). Current trends in information and communication technologies (ICTs), in relation to the field of education, to the professions, and in recreational pastimes, have opened new dimensions of reading that include new forms of literacy such as websites, e-books, video, and other forms of multimedia. For the purpose of this study, I will first provide an overview of ICTs, including the skills and strategies required for users to properly engage with digital texts. Next I will discuss digital texts, which include nontraditional texts such as websites, e-books, and digital readers.

Explanation of Information and Communication Technologies

Warschauer and Ware (2008) refer to information and communication technology (ICT) access and literacy as "the new print literacy of the 21st century… those who cannot

access and effectively use new technologies are hampered in ways similar to those of people who could not read in an earlier era" (p. 228). ICTs include the Internet, digital texts, texting, blogging, and many other technological forms of communication (Leu, et al., 2011). For students to learn to effectively read and comprehend information through ICTs, they will need a new set of skills and strategies.

Literate practices have long been influenced by technological innovation. In the past, new technologies took longer to spread (Coiro et al., 2008). The Internet has affected the rate at which new technologies spread due to their easy access and "immediate dissemination" (Coiro et al., 2008, p.3; Leu, et al., 2011). The rate of growth for individuals and schools that have access to the Internet is also growing rapidly—so rapidly that the numerous forms of literacy available through the Internet require users to be selective about which type, how, and why to use the chosen form of new literacy. Because ICTs are growing across the world at such a high rate, literacy educators and researchers need to be aware of and investigate ICTs, new literacies, and the effects they may have on students (Coiro et al., 2008; Leu, et al., 2011). Literacy programs will need to adapt to prepare students to be active participants in electronic environments (Karchmer-Klein & Shinas, 2012).

According to Coiro (2003), new literacies are the skills and strategies required to read and comprehend texts that include nonlinear hypertext (e.g. internet links embedded in webpages), multiple-media texts (e.g., print, two-dimensional graphics, photographs, videos, etc.), and interactive texts (e.g., print and electronic texts that require the reader to become involved and navigate different paths to create their own interpretations of the material). Lankshear and Knobel (2003) further explain new literacies to include the

demands of cultural and linguistic diversity that new communication technologies place on literacy, "Learners need new operational and cultural 'knowledges' in order to acquire new languages that provide access to new forms of work, civic, and private practices in their everyday lives" (Lankshear & Knobel, 2003, pg. 11). The new literacies students need to acquire are change as ICTs change; teachers are tasked with preparing students to consume technologies that are constantly changing. The deictic nature of ICT means that the literacy strategies required to use them also changes (Leu, et al., 2011).

Because ICTs and new literacies refer to such a vast array of deictic material, I will narrow my discussion to digital texts. Digital texts can be interactive, nonlinear, and multimodal (Dalton & Proctor, 2008). They are not time bound. The authorship and authority may be questionable, and with the Internet, digital texts have no limit to the links that can be embedded and subsequently taken to locate and read more information (Dalton & Proctor, 2008). Digital texts require a different set of skills and strategies for comprehension and will be discussed below. Additionally, I will review research regarding digital texts in relation to motivation and attitude in a later section.

Skills and Strategies Required for Comprehending ICTs

More students are engaged in new literacy reading than in the past due to the wide-spread availability of computers, Internet access, and multimedia resources. These affordances require a different set of skills and strategies (Leu, Kinzer, Coiro, & Cammack, 2004). It is important for students to learn the new strategies that support successful engagement with the technologies. It is also necessary for teachers to have training in these strategies in order to acquire the knowledge to allow them to serve as facilitators as students learn (Leu, Kinzer, Coiro, & Cammack, 2004). With the rapid emergence of new

technologies, it is important for school systems to offer, and for teachers to choose, their professional development wisely. "The most essential areas for schools to consider cluster around the Internet" (Leu, et al., 2004, p. 1570). The amount of information available on the Internet is so great that students must learn effective search strategies, analytic skills, and critical literacies to be able to locate reliable information. Though this is only a first step, it is an especially important need, since anyone can publish to the Internet. Students need to know how to sort through the vast amount of available information and determine what is reliable (Leu et al., 2004).

In addition to being able to distinguish between reliable/nonreliable and useful/nonuseful information, students also need to learn how to decode Internet text. Reading educators traditionally use the term "decode" to refer to using knowledge of phonics, letter and sound relationships, to sound out words. In new literacies, decoding takes on a new meaning; students must learn to navigate Internet sites and decode the "strategic use of color; various clues that indicate hyperlinked texts and graphics; the possible actions of meaning-bearing icons and animations; and pictures, maps, charts, and graphics that are not static, but that can change to address questions that an interactive reader can pose to informational text during the reading act" (Leu, et al., 2004, p.1586). These tasks can be extremely difficult for students who struggle with reading print text because they may lack the "reading speed and critical reading habits that are essential to effective reading on the Internet" (Dalton & Proctor, 2008, p. 298).

Initially, digital texts in the form of e-readers may seem like a representation of traditional texts on a screen; however, e-readers have numerous functions that allow students to interact and manipulate the text which requires a different set of strategies

than reading traditional print texts (Larson, 2012). Four tools available on e-readers are: the ability to adjust font size, the text-to-speech feature, a built-in dictionary, and the ability to take notes. These features are available but students need to be taught how and when to use the tools to enhance their reading experience.

Students who excel at decoding print and digital texts have the ability to share their knowledge with struggling peers in a social environment. Classroom learning is evolving to become more social than in the past (Dalton & Proctor, 2008). This is important with the rapid influx of new technologies because it is not feasible for teachers to be able to learn all technologies as quickly as they emerge; thus, teachers become facilitators of learning and students bring their own knowledge of technologies to the classroom (Leu, et al., 2004). In the past, teachers have known that students had their own personal experiences and could contribute to discussions with a variety of insight, but now the experience of students has become expertise in areas the teacher may have limited knowledge about (e.g., blogging and Internet gaming). Teachers need to share control of the class and allow students to share their knowledge and strategic expertise. Although this idea is not new with ICTs, it is becoming more important for students and teachers to share the role of expert in the classroom because students may arrive with more knowledge than the teacher. Rather than trying to know everything about technology, teachers should maintain "a finger on the pulse of technological advances" and acknowledge and consider the proficiency and perspectives students bring with them (Karchmer-Klein & Shinas, 2012, p.289). New technologies are growing so fast that the need for new literacies requires learning to become more social than ever before and students are collaboratively responsible for sharing literacy knowledge (Grisham & Wolsey, 2006).

Social learning might affect students' attitudes toward reading, which should be further investigated to determine if the aspects of reading digital texts correlate with students' attitudes toward print reading. This information can be useful because teachers can use it to structure lessons and activities to build on students' interests in either print or digital texts as a way to increase students' attitude toward other forms of reading. Additionally, teachers can use the information collected about their students' attitudes toward reading to enhance reading instruction, which is important because "new literacies…impact literacy instruction in the classroom" (Lankshear & Knobel. 2003). This can help teachers develop lessons to engage their students in other subject areas.

Motivation and Reading

Motivation refers to the reason people do something rather than the way they feel about it (Guthrie, 1996). It is important for motivation to be considered when investigating attitude because people must be motivated to do something before they will do it; "motivation is what activates behavior" (Guthrie & Wigfield, 2000, p. 406). Reading motivation can be intrinsic, which means students self-select reading because they enjoy it; or extrinsic, which means they read for an external reward (Guthrie & Wigfield, 2000). "Reading motivation and reading amount are correlated" (Guthrie, Wigfield, Metsala, & Cox, 2004, p. 933) and students with higher motivation to read spend more time reading and thus increase their comprehension of text (Guthrie, et al., 2004). Because of this evidence, Guthrie, et al. call for motivation to "be included in the scientific study of reading" (p.951).

Students' ability to read and comprehend texts strongly influences their development of intrinsic motivation regarding further reading (Deci, et al, 1991). Time to practice reading is vital for building student's ability to comprehend what they read.

Providing time for students to read independently can also improve their motivation to read because of the sense of autonomy that can come from selecting texts to read (Guthrie & Wigfiled, 2008). Choice in what to read during reading time can motivate students because it provides students control over their actions. Because autonomy can lead to increased motivation, which can influence attitude, Guthrie and Wigfield (2008) also express the importance of having a wide range of books available from which students can choose. Additionally, as students get older their motivation and attitude toward reading tends to decline (McKenna, Kear, & Ellsworth, 1995; Wigfield et al., 1997), which illustrates the importance of increasing their motivation to read at an early age.

Although this study will focus on students' attitudes toward reading, it is important for motivation to be discussed in relation to its role of affecting attitude. Mathewson (1994) presents the need for a safe and positive learning environments as a key factor capable of affecting the reading behaviors and attitudes of children. Hawkins (2007) and Pressley (2007) mirror this belief that in order for students to be motivated to read they must feel safe and protected in these environments. For the purpose of this study, I interpret the need for safety and protection to affect motivation and attitude because children have a need to feel accepted and loved (Ryan & Deci, 2000); if reading is viewed as a behavior that will increase these feelings, the motive is working. For example, if a person a child admires values reading, the child might be motivated to also value it to gain acceptance and love by that person. A child's desire to be competent and/or achieve things (e.g., good grades) is also a motivator if the child thinks reading will help them attain these desires.

Motivation and Text Format

The notion of text no longer includes only traditional linear print formats. New forms of texts have surfaced that require us to reconsider our ways of thinking, and expand our concept of texts to include new literacies. Text can be accessed in many places, including school and home, and in many ways, including through the Internet and print sources of books, newspapers, and magazines. Below I will discuss print and digital texts more in depth and explain how students' motivation can be affected by the format of text they read.

Print Text and Motivation to Read

Print texts have been around for millenia. Now that new forms of texts are making their way into society it is important to differentiate between print and digital texts. Print texts are "linear, static, temporarily and physically bounded, often with clear purpose, authorship and authority" (Dalton & Proctor, 2008, p. 297). Until recently, when research has been done to determine students' motivation to read there was no distinction between the formats of material used for the study. Now, with the rise of new literacies, especially digital texts, it is necessary to explicitly state what type of material students are reading. The following studies discuss motivation to read involving print texts.

Because motivation to read and time spent reading are correlated (Guthrie, Wigfield, Metsala, & Cox, 2004), it is important for teachers to take action and investigate motivation in conjunction with reading achievement. It is also important for teachers to take action to ensure their teaching is effective for students when they notice a pattern of low performance or motivation on specific tasks. Baumann, Hooten, and White (1999) saw a pattern in their fifth graders' literacy performance that indicated areas in need of

improvement. They integrated a variety of trade books, books sold to the public through booksellers, to teach comprehension strategies while reading, discussing, and enjoying the literature. To address the specific challenges their students faced, they decided to focus their teaching on "important, high-utility reading comprehension strategies as they could be applied in the trade books students would read" (p. 40). The focus for their research was to investigate the nature of students' comprehension development and their attitudes toward reading as a result of the literature strategies program discussed below.

Hooten and White both taught fifth grade at a school situated in a lower middle class neighborhood in the southern United States with an average of 23 students in their class. The literature strategies program they planned with co-author Baumann was split into three phases. Each phase included three types of "planned instruction" (pre-planned lessons the teachers taught with the trade books) and "unplanned instruction" (on-the-spot lessons which stemmed from teachable moments). The three types of literature lessons they planned were: elaborated strategy lessons, brief strategy lessons, and impromptu strategy lessons. The elaborated strategy lessons were pre-planned, teacher-directed lessons that taught a comprehension strategy or skills through teacher explanation and modeling followed by guided and independent student practice within meaningful story contexts. The brief strategy lessons were also preplanned, teacher-directed lessons but were designed to review or extend content previously taught. The impromptu strategy lessons were unplanned, on-the-spot lessons, which stemmed from class discussion and reading.

The results of this teacher action research study indicated the students learned the strategies the teachers taught, retained the strategies, and transferred them to other

reading situations (Baumann, Hooten, & White, 1999). In regards to attitudes, the evidence indicated the students valued reading more and reported spending more time reading than at the start of the study. Additionally, students demonstrated an enhanced appreciation for books and literature.

Because this study was not an experimental study, the results cannot be generalized to other populations. The strategy lessons taught throughout this study were not explained in detail; therefore the study could not be replicated with larger groups if other researchers desired more data. Additionally, the researchers used the terms "motivation" and "attitude" toward reading interchangeably. This makes it difficult to understand exactly what aspect was being investigated because, although related, "motivation" and "attitude" are not terms that are synonymous. It is an important study for review because the population is similar to the population I studied and the investigation of students' attitudes/motivation are aligned with my research. Additionally, the use of trade books as a means of teaching reading strategies while also instilling appreciation for reading is important because this is one aspect of attitude, which I will be investigating.

Research has indicated that the older students are, the less interested in reading they become (McKenna, Kear, & Ellsworth, 1995). This finding, combined with a lack of student voice in such research, led Ivey and Broaddus (2001) to investigate what motivated sixth grade students to read. For their study, Ivey and Broaddus developed a survey with open-ended responses, short answer items, and checklists. The survey was administered to 1, 765 sixth graders (49% female, 51% male) from 74 teachers in 109 classrooms from across 23 schools. The researchers entered data from all parts of the survey onto a grid and computed response percentages across classrooms. Results indicated three prevalent

themes: students' values in their reading or language arts classes, students' motivation to read, and how middle school classrooms measured up.

The first theme, students' values in their classrooms, revealed free reading time and teacher read aloud to be among the most valued aspects in the class. Students liked having quiet time to read their own interesting material and enjoyed when the teacher read high-interest books. The second theme, students' motivation, signified the importance of good materials in the classroom and the opportunity for students to have choices in what they read. Overall, good experiences students had in relation to reading involved choice and bad experiences involved assigned reading. The findings from the third theme, how middle school classes measure up, showed where students find the material they want to read. Students identified the public library (61%), bookstore (56%), school library (55%), or home (49%) as the places where they accessed most of their reading materials and only 28% stated they could find a book they would want to read in their classroom. Based on the findings from this research, it is clear that students value an established, regular time to read during the school day and the option to read material interesting to the students on a personal level. Teacher read alouds were also deemed an important part of class time. The reasons students want more time to read independently is to help them "make more sense of the text at hand, since time set aside freed them to concentrate, comprehend, and reflect without being disturbed or distracted by some other task" (Ivey & Broaddus, 2001, p. 367).

Baker and Wigfield (1999) also investigate motivation toward reading with adolescent students. Their study had four main purposes: to assess the dimensions of reading motivation measured by the Motivation to Read Questionnaire (MRQ) with a large sample of students; to discern the possible relationships between time spent reading and

reading achievement; to establish whether gender, grade, ethnicity, or family income correlated with reading motivation; and finally, to examine different groups of students with distinctly different motivations toward reading to identify whether those motivations correlate with reading achievement and reading activity.

Baker and Wigfield (1999) used five measures to collect data from fifth and sixth grade students across six elementary schools in a large mid-Atlantic U.S. city (n=371). Most of the teachers involved with the study used basal and literature-based reading approaches. Two measures investigated students' motivation to read—the Motivation to Read Questionnaire (MRQ) and two questions added to the end of the MRQ to assess students' self-reported reading activity. Three measures assessed reading achievement—the Gates-MacGinitie Reading Test Level 5/6 third edition, a performance assessment, and the Comprehensive Test of Basic Skills (CTBS). The vocabulary and comprehension sections of Gates-MacGinitie form K were given to 5th graders and form L to 6th graders. The performance assessment consisted of two short stories with two types of open-ended questions for each story, an interpretive question and an evaluative question. The total reading score for the CTBS included a sum of the vocabulary and comprehension subtests.

After collecting data over a three-day period, responses were analyzed and discussed in three main sections. First, the responses to the Motivation for Reading Questionnaire (MRQ) were analyzed to test for skewness and kurtosis; results indicated the univariate distribution of the items were satisfactory. Then, the researchers conducted item-total correlations of the item to a total scale score for all 11 scales. Each scale, except Compliance, indicated moderately positive to highly positive correlations with the scale score (all Cronbach's alpha scores were between .47 and .89). Next, all 54 items were

analyzed with a confirmatory factor analysis (CFA) to test whether the structure of the MRQ items fit with the model derived from theory. The results from CFA showed where items loaded and indicated where problems within the model were located. The researchers designed their model with the expectation that each item would load on only one factor. The results from the CFA indicated good internal consistency with all scales except Work Avoidance. Second, the researchers computed internal consistency reliabilities for the scales. Five of the eleven scales had good internal consistency (reliabilities greater than .70) and five were closely approaching .70. Work Avoidance was the only scale with questionable reliability (alpha = .55).

Baker and Wigfield (1999) found a consistent difference in motivation based on gender and grade level but not ethnicity or family income. Fifth grade students were more motivated to read for social reasons and recognition than sixth grade students and girls were more motivated than boys. There was no interaction of family income or ethnicity on students' motivation.

Motivation studies involving print texts have informed educators abut the importance of interesting, high-interest reading materials in the classroom (Ivey & Broaddus, 2001). In order to motivate students to choose to read when given the choice, Baumann, Hooten, and White (1999) restructured their literature program to include high-interest trade books and strategy instruction. The students in their class had higher interest in reading and a deeper appreciation for books and literature. The inclusion of books that catch students' interest along with instruction to promote reading comprehension within said books is an important finding from previous research involving motivation and print texts.

Digital Texts and Motivation to Read

Digital texts encompass an expanded view of texts and, according to Dalton and Proctor (2008), these digital texts can be "nonlinear, multimodal with a heavy visual orientation, interactive, unbound in time and space, with murky conveyance of authorship and authority" (p. 297). On the Internet, characteristics of digital texts become more complicated to understand because there are hyperlinks and paths that the user/reader can follow to search for "information, entertainment, communication, and community" (p. 298). These paths require the reader to have the ability to make choices about which paths to follow. Readers need to be able to read more quickly to be effective on-line readers. More specifically, digital texts can include "a linear text in digital format…a nonlinear text with hyperlinks…a text with integrated media…and a text with response options" (Dalton & Proctor, 2008, p. 300). Teachers need to understand digital texts because students need to learn how to read and comprehend them. Additionally, students need to learn to produce these texts.

Although digital texts have been available the past twenty or so years, they are even more prevalent and accessible now. Yet, the amount of research investigating how students interact with them remains somewhat limited (Larson, 2010). Digital texts in the form of electronic-readers (e-readers), such as the Kindle and Nook, provide text that looks like a print book. However, the available features that allow the reader to manipulate and interact with the text set e-readers apart from print texts because students can interact with the text on a personal level to enhance their comprehension. To study how students interact with e-readers, Larson studied two second-grade girls from a Midwestern US school district that serves about 6,000 Kindergarten through twelfth grade students. Their

classroom teacher promoted technology integration even though she had only one classroom computer and a ceiling-mounted projector to use with her class of 17 second-graders. The two students studied were Amy and Winnie. Amy, a seven-year-old Caucasian girl saw herself as a "good, but not very fast" reader, had strong verbal and written communication skills (Larson, 2010, p.17). Winnie, an eight-year-old Asian girl who spoke Chinese fluently and English as a second language, read independently at a fifth grade level and she considered herself a "very good reader" (p.17).

The qualitative case study sought to determine how wireless digital reading devices supported primary readers in their reading processes as they read and responded to digital texts, and how e-book readership advanced as new tools were added that allowed readers to access and manipulate the text. The data collected included the researcher's field notes; interviews with the two case study students, their teacher, and parents; and the students' digital notes and mark-ups. The findings indicated the use of the wireless digital reading devices promoted the students' use of new literacy skills and strategies. Specifically, the students did not focus on mechanics when using the note-taking function. Instead, they added in spontaneous notes that centered on five themes: understanding the story, making personal meaning, questioning, answering, and response to text features. Amy and Winnie both consistently changed the font size, used the built-in dictionary, and activated the text-to-speech feature. As far as how the use of the e-reader affected their motivation to read, both girls said they liked using the e-reader. Amy even expressed excitement about reading and a newfound confidence in her skills as a reader. Winnie, although a dedicated reader at the start of the study, said she preferred reading from the e-reader because she could take

notes as she read. These findings illustrate the possible impact digital texts can have on students' motivation to read, as well as reading strategy use.

Realizing the impact digital texts can have on students, Gunter (2012) conducted a meta-analysis of findings from studies incorporating digital booktalks to motivate reluctant and struggling readers. Gunter points out that the generation of students presently in school has never experienced life without digital tools to occupy their pastime. These students see little value in learning to read and comprehend print-based texts and in line with the value-expectancy theory (Fishbein & Ajzen, 1974) fail to practice and improve the skills needed to consume such material. Furthermore, the teachers leading the classes these students are in often have less expertise in technology use than their students. This can lead to ineffective integration of technology and failure to motivate reluctant students who have already been unsuccessful.

Looking through past studies, Gunter (2012) discovered that previous research yielded results that did not support technology as a motivator. Reinking, (2005) noted that one cause of this outcome could be teachers' lack of effective technology integration and their strong investment in print-based teaching. Leading Gunter's survey research was the idea that reluctant readers had not been taught to visualize and create a movie in their mind as they read. Because Gunter believed reluctant readers learned best from pattern recognition, she studied middle- and high-school students (N=163) that implemented interventions to help compensate for the reluctant readers' visualization shortcomings.

Gunter's (2012) research consisted of a series of studies with general, gifted, and remedial education classes. The Motivation to Read Profile (Gambrell, Palmer, Codling, & Mazzone, 1996) was used as a pre- and post-survey. Additional open-ended questions were

also included in the surveys. The intervention included teaching students the strategies commonly used by proficient readers, then asking students to practice those strategies in groups. Next, the students were asked to use those strategies to create and record "short, personal narratives (meStories)" (Gunter, 2012, p.141).

Results from analyzing data with consolidated paired t-tests indicated that students had significantly better feelings toward reading after the intervention was implemented (Gunter, 2012). To investigate how the class type (general, gifted, remedial) and school affected results, Gunter conducted a two-way RM MANOVA. Results indicated that there were significant differences across schools for the remedial students ($F(1, 141) = 11.10$, $p < .001$, $\eta^2 = .07$). The results of the quasi-experimental studies are not generalizable to other populations, but the results indicate the intervention was successful for the students involved in the studies and perhaps replication of the studies in broader populations would yield additional information to guide future research in the integration of technology with reading.

Pascopella and Richardson (2009) investigated how integrating technology into their writing lessons can affect students' motivation and self-confidence. The importance of writing to specific audiences was the premise of the study. Although moving to a new pedagogy is difficult for many administrations, technology is growing and changing fervently and educators need to keep up (Pascopella & Richardson, 2009). By looking into practices of teachers that use internet-based writing, such as blogs and websites, Pascopella and Richardson found that students are more enthusiastic about writing when they know others will view their work. Allowing the work to be seen publically provides an opportunity for students to receive feedback from people that do not have a stake in the

work. This can elicit interaction and ongoing conversations. Such interactions shift the way students view writing. And, according to Lunsford (2009), technology is shifting writing instruction into new directions. Integration of technology is not a solution for struggling writers; students who struggle still struggle. But they are more motivated to put forth their best work because they know the public will see it.

Measures of Motivation to Read

There are several measures that have been used to examine students' motivation to read. Below I will discuss the following two measures used in research and by classroom teachers: Reading Interest Checklist and Motivation to Read Profile. I selected these two measures to discuss because McKenna and Kear (1990) discussed them in their development of the Elementary Reading Attitude Survey, which was a starting point for the current Attitude Toward Reading Survey.

Reading Interest Checklist

Adolescent students have a unique set of characteristics that set them apart from students at other ages. Because of this, Heathington (1979) developed the Reading Interest Checklist (RIC) for use with print texts. The instrument had 29 items that ask students about the topics they like to read (e.g., adventures, mysteries, science, sports, etc.) and the formats of text they like to read (e.g., comic books, magazines, novels, textbooks, etc.). Students rate each item with a score of one (very little) to five (very much). This instrument was developed for print texts.

To develop the RIC, Heathington (1979) had to determine what motivated middle school students (grades 5-8) to read. Heathington questioned a sample of 254 students in fifth through eighth grade (63 fifth graders, 66 sixth graders, 65 seventh graders, 60 eighth

graders). The students varied in their achievement levels, socioeconomic levels, and school settings (urban and rural schools). Several trends were evident when students' responses were analyzed. First, students said they did not have enough time to read and that they would read more if given the time. Second, students were bothered by the numerous interruptions when they were given time to read. Third, there was a lack of interesting reading material available. Fourth, students found reading to be difficult and did not feel as if they were strong readers. The fifth and final trend was the desire for students to select their own reading material.

Heathington used the comments from the 254 middle school students and Mathewson's (1976) five motives for reading (curiosity and exploration, achievement, self-actualization, activity, and anxiety) to develop a strategy for reading in middle school: MIMS: Motivation in Middle Schools. The five step process is to: 1) assess students' interests, 2) group students, 3) assess students' abilities, 4) provide a time for reading, and 5) assess accomplishments. To assess students' interests, Heathington used the comments from the students in the sample (discussed above) to develop an instrument.

Motivation to Read Profile

Gambrell, Palmer, Codling, and Mazzone (1996) developed the Motivation to Read Profile (MRP), which included both a reading survey and conversational interview, to investigate students' self-concept as a reader and the value they place on reading. The survey portion of the MRP consists of 20 items (10 items for each, self concept and value of reading) with a four-point response scale. The interview, designed to be an informal conversation, has three sections: three questions about narrative reading; three questions about informational reading; and eight questions about general motivation.

To develop the MRP, Gambrell et al (1996) reviewed extant surveys, literature, and theory. They created an initial set of 100 items and had three graduate students critique them for their construct validity. Items that received agreement between the three raters (the number of items was not provided by the researchers) were then submitted to four classroom teachers to sort the remaining items into "three categories: measures of self-concept, measures value of reading, not sure or questionable" (p. 525). Again, only items with agreement between the three raters were selected for use in the field testing of the survey (number of items not provided).

The survey was field tested to a group of 330 students in third and fifth grade from 27 classes across four schools in two districts. The items were analyzed using a factor analysis to determine whether the traits measured accurately corresponded to the two subscales intended. Items that loaded cleanly on both traits were included in the final instrument. The researchers used Cronbach's alpha to investigate the internal consistency of the survey and determined both subscales to have moderately high internal consistency (self-concept= .75; value= .82). Additionally, Gambrell et al calculated pre- and posttest reliability coefficients for the subscales (self-concept= .68; value= .70) to confirm the moderately high reliability.

To establish the questions for the conversational interview, 60 open-ended questions were field tests with 48 students (24 third graders and 24 fifth graders) selected randomly based on their reading levels (above level or below level) as identified by their classroom teachers. Two graduate students analyzed the student protocols and selected 14 questions that revealed the most information about students' motivation to read, these were the questions that were used in the final version of the conversational interview.

The Reading Interest Checklist (RIC) and Motivation to Read Profile (MRP) both elicit information about what makes students engage in reading. This information is an important tool that teachers can use to guide their instruction as they strive for providing students with motivation toward the intrinsic side of the motivation continuum.

Attitude Toward Independent Reading

Attitude, a person's prevailing feelings and evaluative beliefs about something (Mathewson, 1994), plays a major role in motivation to participate in specific activities. In relation to education, students' attitudes have a vital role in their motivation or willingness to engage in scholastic activities, such as reading. An important clarification to note is that the terms *attitude* and *motivation* are often used interchangeably but they are not synonymous and this error can affect the reliability of studies (Petscher, 2010). Attitude, as defined above, is how a person feels about something. Motivation, previously discussed, is the reason someone does something (Guthrie, 1996). I will discuss research regarding attitude below.

Because students' attitudes influence their willingness to participate in an activity such as reading and it is well known that students who spend the most time engaged in reading have the highest achievement (NICHHD, 2000), it is vital for teachers to use knowledge about students' attitudes to their advantage. For example, responsive teachers that know their students' attitudes about reading can tailor lessons and assignments to match students' interests, thus maintaining positive and improving negative attitudes (Ivey & Broaddus, 2001).

Attitude can have a great impact on students in numerous areas of academics. Positive attitudes toward reading can lead students to read more often, thus increasing

achievement. This relationship cannot be considered causal because research has also indicated that students who are strong readers tend to read more frequently and have better attitudes because of their strengths (Stanovich, 1986). It makes sense that this lack of achievement gain could negatively affect how students feel about reading because generally individuals tend to have more positive attitudes towards activities in which they excel. However, regardless of the causal relationship between attitude and reading achievement, it is agreed that there is a strong correlation that needs to be addressed (Henk & McKenna, 2004; Wigfield & Asher, 1984).

As stated above, the notion of text has evolved to include new forms of texts. As readers, we must reconsider our way of thinking about texts and as educators, we need to begin to modify how we teach students to consume and produce texts. Below I will discuss the relationship between print and digital texts and students' attitudes toward reading. I will then review measures of students' attitudes toward independent reading.

Attitude and Text Format

Attitude and Print Text

Print texts include reading materials that are not digital, such as paper magazines, newspapers, and novels. In the following section I will provide an overview of how reading print texts can affect students' attitudes toward reading. Students who participate in silent reading have better attitudes toward reading, especially students in lower grades (Cline & Kretke, 1980; Hester & Ray, 2005; Holt & O'Tuel, 1989; Yoon, 2002). In addition to better attitudes toward reading, Moser and Morrison (1998) found that fourth-grade students who engaged in silent reading had a broader interest in reading material, including the authors and genres they read. Broader interests can open students to new material and

help them maintain variety in what they read. Variety can alleviate boredom, which could come from the repetition of engaging in the same types of books over long periods of time; this may help students maintain or increase their desire to read due to the wide array of available material that appeals to their interests.

Hester and Ray (2005) investigated how Sustained Silent Reading (SSR) influenced the reading achievement and attitude for a group of fourth grade students from a predominantly migrant community. The thirty-seven students were split into two groups (20 in the experimental group—Class A—and 17 in the control group—Class B). Each student was administered the Word Recognition and Silent Reading Comprehension subtests of the Diagnostic Assessments of Reading (DAR) and a portion of an attitude survey as the study pretest. Then 15 minutes of SSR was added to Class A—the experimental group—for the 14 week study. Both groups participated in the same reading program, which included 30 minutes of Accelerated Reading (a program that requires students to maintain records of reading and take a test after completing each book). At the end of the study each student was again administered the Word Recognition and Silent Reading Comprehension subtests of the Diagnostic Assessments of Reading (DAR) and a portion of an attitude survey as the study pretest. Both groups did improve in attitude and achievement; however, class A (experimental group) showed a significant increase in attitude and greater growth in achievement than class B (control group), although not enough to be considered significant. Perhaps with a longer study the importance of providing time for students to read for pleasure during the school day would be significantly illustrated .

Time to read during the school day is also important for students beyond the elementary school grades. Holt & O'Tuel (1989) investigated 103 seventh and 108 eighth grade students who were two or more years below level in reading for ten weeks. Students were randomly assigned to either the control (49 seventh graders, 50 eighth graders) or experimental groups (54 seventh graders, 58 eighth graders); both groups used the *Holt Basic Reading Program* for instruction. The experimental group had ten fewer minutes of instruction with the reading program; SSR was added for 20 minutes three days a week and Sustained Silent Writing (SSW) was added for 20 minutes two days a week. The results of ANCOVA for the total sample indicated significant differences in favor of the experimental group for the following measures: vocabulary and comprehension as measured by the Gates MacGinitie; holistic writing as measured by the Sager Writing Scale; and attitude as measured by the Estes Attitude Scale. The Sequential Tests of Educational Progress was a second measure used to measure writing and it showed no significant differences. When analyzed by grade level the seventh grade sample showed significant differences in favor of the experimental group for vocabulary, comprehension, and attitude. The eighth grade sample showed significant differences in favor of the experimental group for vocabulary, and both writing measures. These results support the inclusion of SSR as well as SSW as part of the school day for middle school students reading below grade level.

Cline and Kretke (1980) studied the long-term effects of SSR on junior high students because teachers of these students had concerns when they noticed a decline in students' time spent reading. One possible reason for the decline is the added demands of junior high students' time (e.g., extra-curricular activities, peer groups, increased homework, etc.). For their study, Cline and Kretke investigated the difference in achievement and attitude

among ninth grade students from three different schools in a district whose students consistently score above level on standardized tests. The 111 students in the treatment group attended a school that implemented SSR all three years and the 138 students in the control group attended one of two schools (63 and 75) that did not employ SSR. All participants had the following test scores, which were used to compare their attitude and achievement in this study: SRA Assessment Survey from sixth grade; Lorge-Thorndike Intelligence Tests from seventh grade; Comprehensive Test of Basic Skills from ninth grade; and a locally developed attitude scale from ninth grade. There was no difference in students' achievement between the treatment and control groups; however, there was a difference in attitude in favor of the treatment group. The attitude scale had 113 items that measured general attitude; 12 items pertained specifically to reading and there was a significant different in four of the twelve items between the treatment and control groups. These results support the inclusion of a long-term SSR in junior high grades as a way to prevent the decline of reading that often occurs in students in this age group. This study investigated students in a district with above level students, which means the results cannot be generalized to all populations. It would be beneficial to the field to replicate this study in other populations to determine whether the results are consistent.

The studies discussed above support SSR as a method to increase students' attitudes toward reading and some of the research also supports SSR to increase achievement. Not all research regarding the implementation of SSR resulted in positive attitudes toward reading increasing. Below are some studies that found either no change in feelings or negative changes.

Although the correlation between time spent reading and achievement is widely accepted, Collins (1980) found elementary students in both the control and experimental groups to have an increase in negative attitudes toward reading and Minton (1980) found SSR to have negative effects on ninth grade students' and faculty members' attitudes. A discussion of these studies is below.

The purpose of Collins' (1980) study was to determine whether SSR produced "definitive positive changes in elementary students' attitudes toward reading" (p. 110). Ten classes of second through sixth grade students were randomly assigned to either the SSR group or the control group for the 15-week study midway through the school year. The 220 students were assessed with the following six instruments: (a) Gates-MacGinitie Reading Achievement Test, (b) Iowa Tests of Basic Skills, (c) How I feel about Reading, (d) an Attitude Assessment created by the author, (e) Teacher Individual Pupil Evaluation Forms created by the author, and (f) basal reading book placement levels. There were no significant differences between the control and experimental groups for achievement or attitude, although the SSR group did read more pages in the basal reading text during regular instruction time. In response to the question asked in the purpose of Collins' study, there was a decline in students' attitudes toward reading for both groups—there was no significant difference between the groups. Collins notes the reason for the increase in negative attitudes is beyond the scope of this study but since the results were consistent for both groups it should not be attributed to SSR without additional investigation. But it should also be noted that SSR did not create positive attitudes towards reading either.

Minton's (1980) semester-long study of 550 ninth-grade students in a middle-income suburban community resulted in increased comprehension (four months) and

vocabulary (three months) as measured by the Gates MacGinitie Reading Test. However, teachers and students also had increased negative feelings toward SSR as measured by a teacher created questionnaire. The results of this study prompted the school to discontinue SSR the following year and a review of the study yielded three issues that may have led to the "flop" of SSR for the ninth-grade students. First, the Department of the Chair Person's Council voted to implement SSR in the school; the faculty was not given a choice in the matter. The researcher believed that results might have been different if teachers supported the implementation of SSR. Second, not all staff received training; the principal sent out a memo and announced an optional question and answer session that some teachers attended. Third, SSR was implemented in third period classes, regardless of the classroom setting. For example, industrial arts teachers were expected to implement SSR for 20 minutes each day yet their classrooms did not have ample reading material or comfortable seating for reading to occur. The Parent Teacher Association (PTA) provided some reading material and teachers brought in texts from home but there was not enough variety and high interest material to meet the interests of all readers. According to Minton, if a program is going to be successful, the faculty involved should be part of the decision-making and all faculty members ought to receive training.

Due to the mixed results concerning how SSR affects attitudes, Yoon (2002) conducted a meta-analysis of seven studies from 1970-2000. The seven studies were selected for review because they all compared SSR to a control group, detailed statistical information allowed Yoon to calculate effect size, outcome measures included reading attitude, and they were completed after 1970. The mean of effect size was .12 with a standard error of .04; these results indicate support for SSR affecting students' reading

attitudes. In addition to Yoon's findings, Langford and Allen (1983) explained that some students may not realize how SSR affected their attitude, thus they may not report positive changes when their teacher noticed improvement in students' attitudes. This finding suggests the benefits of including multiple measures when assessing students' attitudes, for example, students' self-report of attitude combined with observations by parents, teachers, and researchers. The ATRS is intended to be used as one measure for students to self-report their attitudes.

Attitude and Digital Text

The research above provides an overview of how reading print texts affects students' attitudes toward reading. There is not ample research regarding how students feel about reading digital texts due to the relative newness of this form of reading. Furthermore, a great deal of research is conducted in higher education or outside of the United States of America. Dalton and Proctor (2010) summarized research in the area of students' comprehension of digital and Internet texts and in their interpretation of the studies they concluded that students "enjoy using the Internet" (p. 317). Additionally, they interpreted that Internet inquiry is related to engagement because the choices that must be continuously made about what and how to learn. Furthermore, Dalton and Proctor draw attention to students as digital natives and their tendency to be comfortable reading and learning from digital texts. These conclusions, however, were not based on systematic inquiry.

Measures of Attitudes Toward Reading

There are several measures that can be used by classroom teachers to determine students' attitudes toward reading. Below I will discuss three of the tools that are well

known to researchers and classroom teachers: the Estes Attitude Scale, Gale-Roberts Attitude Toward School Subjects, and the Elementary Reading Attitude Survey. These were selected because they have been referred to in various reading research.

Estes Attitude Scale

How students feel about reading is just as important as their ability to engage in reading (Estes, 1971). Due to a lack of tools to measure how students feel about reading, Estes developed a scale that classroom teachers could use to learn about their students' attitudes. The development of the scale began with Estes' decision to use a rating scale because of "its ease of use and generally high accuracy" (p. 136). Next, he explained the proposed survey to a group of 27 high school and elementary school teachers and asked them to contribute items to a pool of statements. The "tryout scale" had 28 items. These items were administered to a sample of 283 third through twelfth grade students (two heterogeneous classes at each grade level).

After administering the "tryout scale" to the sample of students, the responses were analyzed in a two-step process. First, the mean, standard deviation, and reliability data were calculated. Next, each item was analyzed individually to determine if it could "separate a group of people on the basis of attitude toward reading" (p. 136). The wide standard deviation suggested that the scale would be sensitive to students with varying types of attitudes. Reliability was computed with the split-half method and results indicated the scale had adequate consistency. The second step in analyzing the data was the item discrimination analysis to determine if items could accurately identify students with positive attitudes toward reading based on their high responses. The items that accurately discriminated students with positive and negative attitudes were retained for the final

scale. The final process in completing the Estes Attitude Scale was the development of directions for administration and scoring.

Gable-Roberts Attitude Toward School Subjects

The Gable-Roberts Attitudes Toward School Subjects (GRASS) was designed for use with most content areas, not specifically reading (Gable & Roberts, 1983). To design the instrument, Gable and Roberts wrote 30 items stems that reflected General Interest and Usefulness, two dimensions of attitude toward school subjects. The item stems were then reviewed by four university faculty members, which resulted in 23 items kept in the instrument. The 23 items used a 5-point response scale (strongly agree to strongly disagree), and eleven of the items were written in a negative direction.

To examine the construct validity and internal consistency, the instrument was administered to 893 eleventh- and twelfth-grade social studies students from two suburban high schools. The researchers ran a principal component analysis and oblique rotation to determine if the responses to the items reflected the a priori item groupings. Three groupings came out of the analysis rather than the anticipated two—General Interest (11 items; alpha= .94) and Usefulness (5 items; alpha= .70), and the third group, named Relevance (3 items; alpha= .59). The items that measured students' attitudes as related to General Interest loaded cleanly and had strong internal consistency. The remaining items were split into two groups; the items that measured attitude related to Usefulness had moderately strong internal consistency but for the remaining category, Relevance, it would have been beneficial to add items to increase the internal reliability.

The GRASS was sampled with older high school students although specific grade levels were not targeted when it was developed. The instrument can be used with various

grade levels to measure students' attitudes toward various subject areas. This instrument does not measure reading specifically and it does not measure attitudes toward any new literacies or digital texts. It was an important measure to investigate to help guide the creation on the proposed Attitude Toward Reading Survey (ATRS) because it was created using similar methods and was designed for use with students at various grade levels. Additionally, the GRASS lacked two important domains (attitudes towards new literacies, items specifically targeted toward reading), which indicate the need for a survey to measure these areas.

Elementary Reading Attitude Survey

The Elementary Reading Attitude Survey (ERAS; McKenna & Kear, 1990) is one of the more current instruments available for teachers and researchers to use in measuring elementary students' attitudes toward reading. McKenna and Kear set several criteria to guide their development of the ERAS including the need for it to be student-friendly, easy and quick to administer, have separate subscales for recreational and academic attitudes toward reading, and to be empirically valid and reliable. The response scale uses a pictorial scale featuring Garfield, a popular comic strip character from the 1980s. The scale included an even number of response choices, four, to require students to make a choice and not have too many choices that could be overwhelming to young students. The authors used past surveys as models and created a pool of 39 items related to either attitude toward recreational reading (24 items) or attitude toward academic reading (15 items). They kept the wording of each item consistent with the beginning "How do you feel…"

This first draft of the instrument was administered to 499 elementary students in a midsize midwestern school district. The responses were analyzed and based on inter-item

correlation ten items were selected for each set (recreational and academic). The revised instrument was administered to over 18,000 students in first through sixth grade and responses were analyzed for validity and reliability. To measure the internal consistency of items, McKenna and Kear (1990) used Cronbach's alpha and results indicated moderately strong reliability (alpha ranged from .74 to .89).

Construct validity was investigated with multiple means. For the recreational subscale, the students were asked "(a) whether a public library was available to them and (b) whether they currently had a library card" (p. 638). The students were grouped based on the availability of a library and those with access were further groped by whether or not they had a library card. The results for recreational scores were compared and students who had a library card had significantly higher ($p < .001$) recreational scores ($M=30.0$) than those without a card ($M=28.9$). Next, the students' responses were analyzed based on whether or not they presently had a book checked out and whose teachers did not require it. Students with a book checked out scored higher ($M=29.2$) than those who did not ($M=27.3$). Another analysis compared students who reported watching more than two hours of television a night with those who reported watching less than an hour. The group that watched less television ($M=31.5$) scored higher than the group that watched more than two hours a night ($M=28.6$).

For the academic subscale the students were grouped based on overall reading ability (low, average, high) as reported by the teacher. The high ability readers had significantly higher scores ($M=27.7$) than the low ability readers ($M=27.0$). The correlation of the two subscales was investigated and the inter-subscale correlation coefficient was .64. Finally, factor analyses were conducted to determine if the traits measured by the survey

were consistent with the subscales. The first analysis identified three factors and the second analysis, with factors constrained to two, resulted in all but one item loading cleanly on the factor associated with the subscale. Number 13 was the only item that had ambiguity and could have been interpreted as either recreational or academic.

The Estes, GRASS, and ERAS are three surveys that influenced the development of the ATRS. The major contribution the ATRS will have in education research and practice is the addition of e-readers and Internet.

Theoretical Frame

Motivation and attitude are intertwined yet vastly different. Motivation is a precursor to positive attitudes and the two support each other. Self Determination Theory (SDT) is a motivational theory, which is a supportive element for the affective models used to guide this study. Below I will explain SDT, Mathewson's affective models, and McKenna's affective model and explain how they interact to inform this study.

Self-Determination Theory

Self Determination Theory (SDT) focuses on three psychological needs: competence, relatedness, and autonomy. Competence refers to a student's need to feel proficient at the task, such as reading. Relatedness is the need for a student to feel as if he or she belongs and fits in. The third need, autonomy, is the student's need for some control over the task and/or the environment. As discussed previously, allowing students the opportunity to self-select their reading material is one way to provide a sense of autonomy to the act of reading.

Teachers can promote feelings of competence in reading by providing positive feedback to students when they engage in self-selected reading. This feedback can lead

students to continue to choose to read without feeling as if it is a required task. A teacher who models appreciation for reading can help students feel a sense of relatedness. Students who feel that closeness to an adult tend to develop more motivation and self-determination (Deci, Valerand, Pelletier, and Ryan, 1991).

When students are in an environment that allows them the chance to fulfill the three psychological needs discussed above, they are more likely to have greater motivation, performance, and development. SDT is important to consider for my study because, as discussed by Deci (1992), teachers strive for their students to attain high achievement. When students are self-determined, they have greater success with complex tasks (Deci, 1992), such as reading.

Additionally, being self-determined leads to greater intrinsic motivation (Ryan & Deci, 2000). In education, one goal is to instill an appreciation for reading to motivate students to want to read for the intrinsic benefits rather than the extrinsic rewards. When a student reads a book for enjoyment he or she is motivated intrinsically. In contrast to being intrinsically motivated, a student who does not have a sense of competence, relatedness, or autonomy may be amotivated. Amotivation is the lack of intention to act and (Deci & Ryan, 2000). Allowing students to have autonomy in their education allows them to regulate their behaviors by choice rather than compliance (Deci, Vallerand, Pelletier, & Ryan, 1991). When students complete a task to be compliant they are regulating their behavior with an external source. Often they do so for an extrinsic reward. When the reward is no longer available the student may discontinue the behavior, such as reading. There are various types of extrinsic motivations that fill the continuum between amotivation and intrinsic motivation.

The four types of external motivations range from external regulation to integrated regulation. At the far end of the continuum, external regulation refers to being motivated by compliance, external rewards, and punishments. This is the least autonomous type of extrinsic motivation. Introjected regulation is a somewhat external motivation that involves performing behaviors with to maintain a sense of self-worth and avoid anxiety. A somewhat internal motivation, identified regulation, is more autonomous and self-determined. The regulation of the behavior is through identification of the goal the action will lead to. The final extrinsic motivation is integrated regulation. This is the closest to intrinsic motivation and involves a person valuing a task that fits with their other values and needs. The difference, however, is that the tasks are completed to attain some separate outcome rather than for only the enjoyment. For example, a student that studies because it will help them attain the degree needed to get their dream job is motivated by integrated regulation.

To connect SDT to reading and to my study, it is important to point out that when students are given time to read self-selected books they have a sense of autonomy which can facilitate higher self-determination and better quality performance on tasks (Deci, 1992). The style used by a teacher can greatly influence the amount of autonomy in a classroom. This idea is significant because when teachers know how their students feel about specific areas of reading they will be able to use that information to guide their behaviors when they teach and encourage students to be more autonomous, provided the teachers have some sense of autonomy themselves.

Mathewson's Models

Mathewson's (1976, 1985, 1994) models address the motives that contribute to a student's intention and decision to read, how affective variables influence reading, and their implications for research. Affect is made up of attitude, motivation, and additional variables including moods, feelings, and emotions. By influencing students' decisions of what to read (if they decide to read at all), attitude directly influences the comprehension of what they read and the amount of attention they devote to it.

Mathewson developed his first affective model (1979) to explain how attitude feeds into the cyclical process of the four reading variables: *attitudes*, *motivation*, *attention*, and *comprehension*. The 1985 model added variables, such as decision to read and physical feelings; the 1994 model built on the previous two models to develop a model "intended to correct [the] shortcomings" of the two earlier models (Mathewson, 1994, p. 1132).

Although not included in the 1976 model, Mathewson added 'decision to read' to the components that shape how the affective variables influence children's reading to the 1985 affective model (figure 1, shown below). The decision to read—influenced by attitude, motivation, and physical feelings—impacts primary and secondary reading processes. Mathewson's affective model is cyclical because once a child begins to read, their ability to comprehend and attend to text, their physical orientation, and activity will contribute to the recall, reflection, and application of the material read. These processes affect the child's attitude, motivation, and physical feeling, which lead back to the decision to read or continue to read.

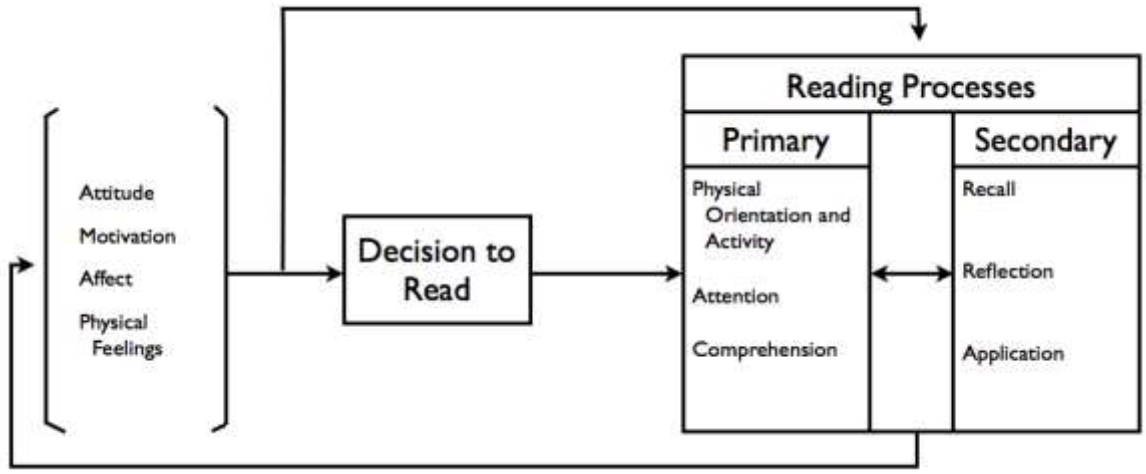

Figure 1. Affective Model of Reading (Mathewson, 1985).

The model of attitude influence upon reading and learning to read (Figure 2, shown below) replaced *decision* to read with *intention* to read because *intention* is a "more inclusive concept than decision" (Mathewson, 1994, p. 1134). Before a person actually starts to read they must develop an intention to read. *Intention* is more inclusive than *decision* because it combines feelings, as emotional desire, with cognition. In the 1994 model, there is not a direct route from attitude to reading because a positive attitude toward reading does not guarantee reading; other factors that influence the intention to read need to be present (e.g., appropriate setting and calm state of mind).

The 1994 model focuses on how attitude relates to intrinsic relationships, such as "evaluations of content and purpose, feelings about engaging in a particular kind of reading, and action readiness for initiating or sustaining reading activity," more than external motivators, such as "incentives, purposes, norms, and settings outside of readers that influence their intention to engage in reading activity" (Mathewson, 1994, p.1136). The most recent model includes external motivators because these social influences, not

considered in past models, affect the decision to read. External motivators that impact whether or not someone chooses to read are *incentives* (e.g., rewards for reading such as pizza, stickers, praise, and success); *purposes* (e.g., reading to find out how a character solves a problem); *norms* (e.g., the expectations others have for the reader); and *setting* (e.g., locations that have expected behaviors such as a library or party). Attitude is dynamic; the components of the model affect each other and lead back to attitude.

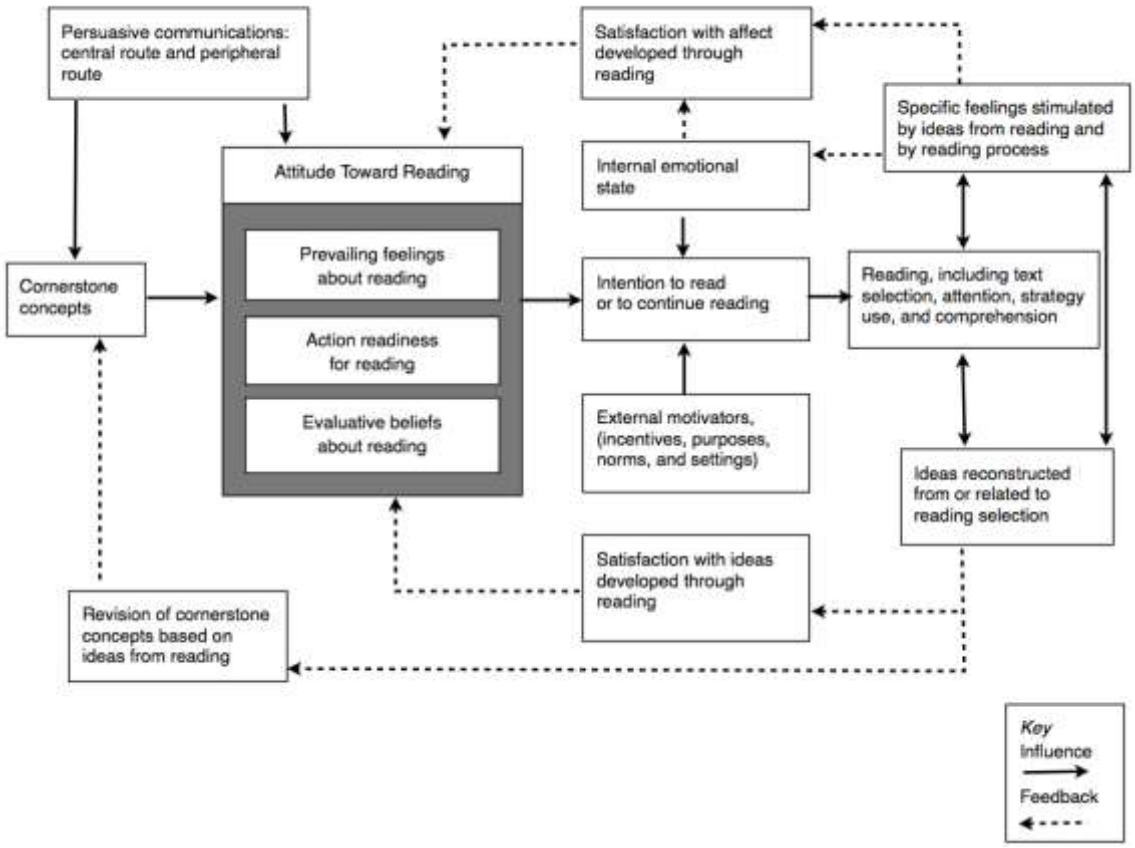

Figure 2. Model of Attitude Influence upon Reading and Learning to Read. (Mathewson, 1994)

The motivating factors, discussed in previous sections above, can lead to positive attitudes about a topic and often to more prior knowledge and comprehension, thus

leading to more time spent reading. The effects may not be direct, but attitude affects the intention to read, and as LaBerge and Samuels (1976) discuss in automaticity theory, practice leads to automatic word decoding and allows more energy to be devoted to processing and comprehending the material.

The significance of the affective model is two-fold. First, attitude toward reading can have an effect on the amount of reading in which a person engages. Secondly, attitude influences the amount of attention, comprehension, recall, reflection, and application paid to the material read and can result in higher achievement across the board.

McKenna Model

The McKenna model of reading attitude acquisition (1994) was designed to examine the long-term development of reading attitudes. McKenna specifically addressed concepts he borrowed from Mathewson's model (1985, 1994). McKenna drew from Mathewson's 1985 view that attitude leads to the decision of whether or not to read. He further explained that the decision to read is influenced by intention, attitude, and subjective norms. Once the decision to read is acted on, the decision of whether to continue to read begins a cyclical process.

With this in mind, McKenna's model (Figure 3, shown below) identified attitude as an affective disposition and established three factors that are key in impacting changes in attitude: (a) the belief of the outcome of reading and judgment of whether the outcome is desired; (b) the belief of what others expect and the motivation to meet those expectations; and (c) results of specific reading experiences. He further proposes that these factors, which influence an individual's attitude toward reading, take time to fully develop.

McKenna's model places social structure and environment as a cause to what a reader believes about the expectations of reading, the outcomes reading can produce, and the intention to read. The beliefs about reading expectations and outcomes influence each other and the attitude toward reading and subjective norms. These then influence the decision to read or keep reading, which affects a reader's metacognitive state. This state leads back to the belief about reading outcomes and attitude toward reading. Metacognitive state also impacts the cognitive state and text representation, which affect a reader's decoding subprocesses. The components of this model influence one another. Drawing from McKenna's model, the proposed Attitude Toward Reading Survey (ATRS) measures the attitudes students have toward reading. These attitudes influence the decision to read, an important aspect of the cyclical model McKenna developed.

Because attitude takes time to develop, there are competing activities that will contend with the decision to read. For example, students are met with choices about how to spend their time, including the option to play outside, play video games, engage in on-line activities, or read. If beliefs about reading are not viewed as positively as other options, the decision of how to spend time may not include reading. This decision is cyclical, and if a student initially decides not to read, it appears less likely he/she will decide to read when given another opportunity to make the choice. This cycle emphasizes the importance of creating positive experiences with reading early in literacy acquisition and continuing to provide numerous opportunities for positive encounters with reading. The ATRS can help teachers meet this goal by providing information about students' attitudes towards reading, which can inform classroom activities and influence students' decision to read.

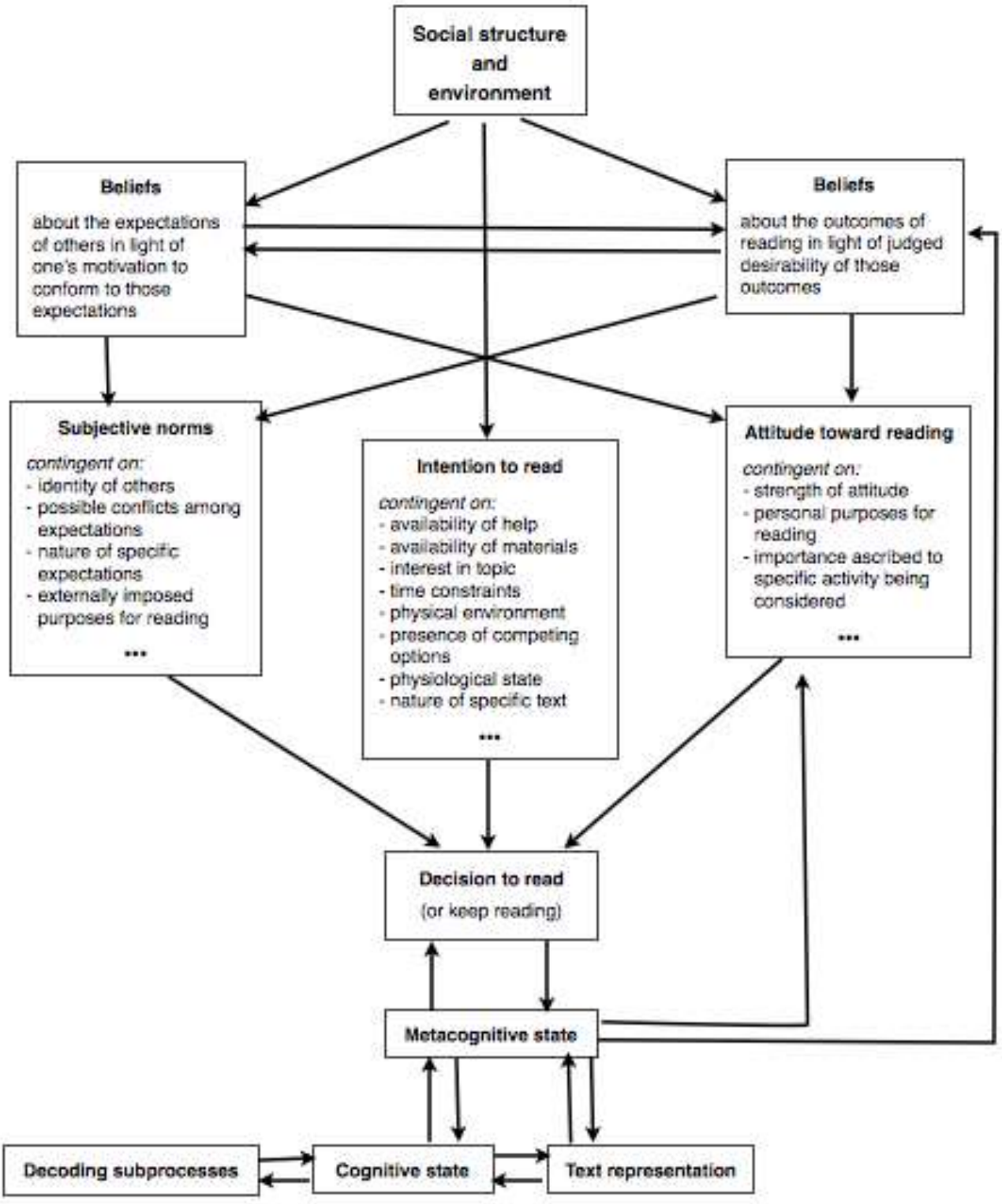

Figure 3. McKenna Model of Reading Attitude Acquisition (McKenna, 1994).

New Measure

Attitude can impact the amount of time students read, and reading practice can lead to an increase in achievement, which can motivate and further shape students' attitudes. The correlation between attitude and reading achievement has been investigated and students with more positive attitudes tend to read more often from a wider variety of texts, which can build greater vocabulary and lead to higher achievement in reading. Regardless of where students read, in or out of school, the key is to increase the amount of time students read.

The importance of time spent reading is not a new idea in education. Since the mid 1900s there has been an influx of educators promoting the need for students to have more time to read (Duffy, 1967; Hunt, 1970; McKracken, 1971; Oliver, 1970). In the past two decades there has been increased research into the effects of providing more time for students to read with an emphasis on how achievement may be increased. Educators have also placed their focus on how to balance the recreational aspect of independent reading with student accountability Kelley & Clausen-Grace, 2006, 2007, 2008, 2009; Serravallo & Goldberg, 2007; Taberski, 1998).

With the influx of technology, teachers must account for new digital literacies, as well as existing traditional print literacies, as a part of their reading instruction. The skills and strategies students need in order to comprehend the new literacies require teachers to carefully balance their role as coach and facilitator of the new way of learning and interacting (Grisham & Wolsey, 2006). Although digital texts are on the rise, teachers also must continue to include print texts in their reading instruction, a task that I believe will call for new ways of integrating skills and strategies into various lessons. Additionally, due

to the increase in youth engaging in such nonlinear conversations and reading, they have begun to interact with traditional texts differently (Bull & Bell, 1999). The Attitude Toward Reading Survey (ATRS) will ask students about their attitude toward reading print and digital texts and the results will provide information about the formats of reading students prefer. The ATRS is one tool that can help teachers know about their students' attitudes toward reading print and digital texts and such information is intended to help guide teachers' lesson planning.

The influence of Mathewson (1985, 1994) and McKenna (1994) shaped the framework of the ATRS because I followed the structure of the ERAS (McKenna& Kear, 1990) as a starting point for creating the survey. Additionally, current research in the field of reading attitudes and motivation informed the survey design. The ATRS is a tool that can provide teachers with information to guide their instruction to match students' attitudes in reading both print and digital texts. Additionally, it is a tool for researchers to use in future studies investigating students' attitudes towards reading print and digital texts. The following chapter provides an overview of the creation of the ATRS and the methods I used to increase the validity of the survey items with focus groups and cognitive interviews. I also discuss the methods used to determine the extent of the survey's reliability and validity after it was administered to a large group of students (n=454).

Conclusion

Reading practice is an essential part of reading instruction and can be done with traditional print texts or digital texts, which are on the rise. The need for students to practice reading has been discussed in the literature for the past several decades and continues to be a topic of discussion. Much of the research that has been done relating to

reading is based on print texts. Now that technology is easily accessible to average people there is a need for investigations into how digital texts influence literacy, especially in regards to motivation and attitudes toward reading. As I said, research investigating digital texts' influence on literacy instruction is limited, but in regards to motivation and attitude there is a substantial lack of needed research. The Attitude Toward Reading Survey will be a tool that teachers can use in their classroom and researchers can use to investigate various aspects of students' attitudes toward reading print and digital texts.

Chapter 3

In this chapter, I will present the purpose of the study, the research questions, and an overview of the pilot that guided this research. Finally I will discuss the procedures for developing the Attitude Toward Reading Survey (ATRS), data collection, and analysis.

The purpose of this study was to develop and validate a reliable survey to measure elementary students' attitudes toward reading print and digital texts. The design of this study was modeled after the Elementary Reading Attitude Survey (ERAS) developed by McKenna and Kear (1990) and supported with information from survey methodology textbooks (Anderson & Bourke, 2000; de Vaus, 1990; Gable & Wolf, 1993; Groves et al., 2004). This study was intended to add to pilot research I conducted in 2009-2010, which included the creation of the first draft of the survey, focus groups, and administration of the survey to 115 students in grades 3-5. I analyzed the results with exploratory factor analysis to determine construct validity and Cronbach's alpha to examine score reliability,and then conducted cognitive interviews (Willis, 2005) with students to discuss changes I would make to the survey. The present study consisted of revising and administering the survey to a large sample of students in grades 3-5 (n=454) then analyzing the results for reliability and validity, in the fall of 2012.

The research questions examined in this study are:

1. To what extent does evidence from a factor analysis support the Attitude Toward Reading Survey (ATRS) as a valid measure of students' attitudes toward reading?

2. To what extent does evidence from Cronbach's alpha support the Attitude Toward Reading Survey (ATRS) as a reliable measure of students' attitudes toward reading?
3. To what extent does item bias analysis using logistic regression support the Attitude Toward Reading Survey (ATRS) as a valid measure of students' attitudes toward reading?

Research Design

The pilot study that guided this research was conducted in 2009-2010. Based on the results from the pilot study, I became interested in taking the survey further to create a reliable and valid tool for teachers to measure their students' attitudes toward reading both print and digital texts. The following sections will describe the study in two phases. Phase one will discuss the pilot completed in 2009-2010. Those results contributed to the development of phase two, the dissertation research in this study.

Development of the Survey

Phase 1

The first phase of the study was the pilot research conducted in 2009-2010. I will discuss the process I took to create the survey and the data I collected to guide this study.

Item development. The Elementary Reading Attitude Survey (ERAS) developed by McKenna and Kear (1990) has been used by many educators and has several effective features, four of which were the starting point for this Attitude Toward Reading Survey (ATRS). The first important feature of the ERAS is the question format. Each question on the ERAS begins with "How do you feel…" to maintain consistency for the reader completing the survey. The second feature of the ERAS is the flexibility to be administered to the whole class at the same time or to an individual or small group of students. This

feature is important because class time is limited and being able to administer a survey to all students at once allows the teacher to use class time for other tasks. Additionally, if a new student enrolls in the class, the teacher can have the student complete the survey individually. This feature helps teachers get to know how new students feel about reading, which can help the teacher place the student in an appropriate group. The third effective feature of the ERAS is the quantitative results. The teacher assigns a point value (1-4) to each response to develop a numeric composite score (20-80); higher scores represent more positive attitudes toward reading. The fourth valuable feature is the inclusion of percentile ranks to allow teachers to compare their students' scores with the scores from the large-scale study conducted by McKenna and Kear (1990). I will adopt these features in the ATRS with the intent of replicating the success of the ERAS.

To create the ATRS, I replicated the format of the ERAS questions in the initial set of items. The first step, as set by Fowler, Jr. and Cosenza (2008), was to determined what construct I wanted to measure, attitude. I then wrote items (an arbitrary number of 60 items) that all began with "How do you feel…". Two questions from the ERAS were used verbatim in the new survey (i.e., How do you feel about going to a bookstore? and How do you feel about starting a new book?) because they are worded to elicit the information that I deemed important based on research about attitude and motivation (Anderson, Wilson, & Fielding, 1988; Coiro, Knobel, Lankshear, & Leu, 2008; Corcoran & Mamalakis, 2009; Dalton & Proctor, 2008; Gambrell, 1996; Guthrie, Hoa, Wigfield, Tonks, Humenick, & Littles, 2007; Guthrie & Wigfield, 2000; Guthrie, Wigfield, Humenick, Perencevich, Tabaoda, & Barbosa, 2006; Thomas, 2008). The table in Appendix A illustrates how I used additional questions from the ERAS and several other surveys to create the original item bank for the ATRS (e.g.,

Estes, 1971; Gable & Roberts, 1983; Heathington, 1979; Hughes-Hassell & Lutz, 2006). I selected these surveys as a starting point for creating the ATRS because these particular surveys have been used in past research to investigate motivation and attitudes toward reading (Baker & Wigfield, 1999; Gambrell, Palmer, Codling, & Mazzone, 1996; Hooten & White, 1999; Ivey & Broaddus, 2001). To reword items from existing surveys, I used feedback and questions pre-service teachers and elementary students asked when they used the ERAS as part of a case study assignment I assigned in a reading assessment course I taught as a graduate assistant. For example, one question asked on the ERAS is "How do you feel when you read a book on a rainy Saturday?" and several elementary students asked, "What if it's not raining?" or "What if it's a rainy day but not a Saturday?" Using questions such as these, I wrote the ATRS questions to be more specific in order to alleviate such ambiguity. For example, from the one question discussed above, I created two questions: "How do you feel about reading on the weekend?" and "How do you feel about reading on a rainy day?" The rewording of these questions allowed students to consider their feeling about reading on a rainy day regardless of the day of the week and how they feel about reading over the weekend without consideration of the weather.

After creating the set of 60 total items (Appendix A), I grouped the questions into three intended constructs (academic, recreational, and technological), modeled after the two constructs used in the ERAS (academic and recreational) and adding technological because this survey will include new technological forms of literacy. I kept the academic and recreational constructs because they are the two main categories in which reading can be placed for intermediate students. Academic reading includes any reading done because it was assigned by a teacher or because it provided information required to complete an

assigned task. For the purpose of my survey, I defined academic reading as assigned reading from a fiction or non-fiction book selected by the student or teacher. I defined recreational reading as any type of reading the student engages in by choice, not assigned by the teacher. The key to differentiating between the two types of reading is the purpose of the task. If a student chooses to read an informational book to gain information about a topic of interest it is recreational reading. If the reading is assigned, even if it is an enjoyable chapter book, it is academic. I added the third construct, technological, because reading has evolved beyond the traditional sense to include reading new forms of media such as e-books, blogs, websites, etc. It is important to have questions in the survey to find out how students feel about new literacies because they are becoming more prevalent and are changing the way teachers instruct (Coiro, Knobel, Lankshear, & Leu, 2008; Dalton & Proctor, 2008; Thomas, 2008).

I scheduled four focus group sessions (outlined in Appendix D) with a combination of university faculty and advanced graduate students in the fields of Literacy, Elementary Education, Early Childhood Education, and Measurement in addition to elementary classroom teachers. I used a web-based scheduling system to determine the availability of participants and was able to set up four sessions in order to accommodate the availability of the majority of invited focus group candidates. The first session was held on Wednesday, March 17, 2010 from 12:00-1:00 PM. The participants included one tenure-earning assistant professor, one full professor, one associate professor, and one instructor; all group members were from the Department of Childhood Education and Literacy Studies at the University of South Florida. The second session was Thursday, March 18, 2010 from 10:00-11:00 AM. The two participants were from the Department of Educational

Measurement and Research at the University of South Florida; one full professor and one advanced graduate student. The third session was also on Thursday the 18 from 4:00-5:00. The five participants included one public school classroom teacher with experience teaching fifth and first grade, three advanced graduate students, and one tenure-earning assistant professor; all from the Department of Childhood Education and Literacy Studies at the University of South Florida, except the classroom teacher. The fourth and final focus group was Friday, March 19, 2010, from 12:00-1:00. The two members were both from the Department of Childhood Education and Literacy Studies at the University of South Florida; one advanced graduate student and one full professor.

The purpose of the sessions was to have groups review the bank of questions to determine if items should be used, revised, or withdrawn. Additionally, the members of each focus group were asked to review the questions for clarity of wording, to determine what construct each item seemed to fit into, and appropriateness of vocabulary for elementary students.

Each focus group session lasted approximately one hour in an informal setting. I provided food for participants and the group-members talked freely with each other during the session. The relaxed environment allowed everyone to engage in conversation. Because all participants were well acquainted, this format worked well. I recorded each session so that I had a record of the discussion; participants were also asked to write notes on their copy of the bank of items so I could collect them at the end of the session for my records. Their notes included notations about what construct each item would best fit into, revisions to the items, and which items should be removed from the survey. I did not

transcribe the sessions but I kept them on my computer and referred to them as I revised the survey.

After meeting with each group, I wrote notes about the discussion, and after all groups had met, I used a compilation of feedback to create a revised survey. The ATRS was limited to 20 questions to match the ERAS and to follow focus group members' feedback. During the focus group, members decided 20 questions was a suitable number for third-fifth grade students; this survey would be brief enough to prevent student fatigue but have enough items to provide adequate information. As previously discussed, the ERAS questions are hypothetical but do not provide adequate detail causing students to ask clarifying questions. To prevent these types of "What if…" questions from students, I created the ATRS with four detailed scenarios for students to read followed by five questions related to each situation (Appendix G). By applying these changes, the ATRS will alleviate the students' clarifying questions and maintain more consistent administration.

An additional outcome from the focus groups was the change from three constructs (academic, recreational, technological) to four because participant discussion led to the insight that technological reading could be either recreational or academic. I revised the constructs to represent traditional reading and technological reading as illustrated in the table below.

Table 1. Revised Constructs.

	Traditional	Technological
Academic	Traditional/Academic	Technological/Academic
Recreational	Traditional/Recreational	Technological/Recreational

Response scale. McKenna and Kear (1990) created a response scale with an even number of choices to avoid the option to select a neutral response. This is important because it forces the survey-taker to make a decision that is not neutral (Nunnally, 1967). McKenna and Kear used only four options because research has demonstrated that children are not able to discriminate responses when faced with more than "5 discrete bits of information simultaneously" (McKenna & Kear, 1990, p. 628). I maintained the 4-point rating scale format that was used in the ERAS because four choices would allow students a range of choice without being too many to keep track of and it did not allow students to select a neutral response (Chi & Klahr, 1975). It is important to require students make a decision about their feelings toward reading and the availability of a neutral response tends to attract students who do not want to make a decision for whatever reason (Groves, et. al., 2004; Nunnally, 1967).

McKenna and Kear (1990) used a response scale with pictures to appeal to all elementary grade students. The ATRS is intended for use by students in third through fifth grade and includes both pictures and words for the response scale. I made this decision to allow low-level readers to have a pictorial representation to help them with the response scale; the words are to provide a sense of a more mature response scale than what a picture-only scale might offer. The response scale used in the ERAS uses the copyrighted character Garfield, drawn by Jim Davis. I wanted to create an original character that was not tied to a cartoon because I did not want a pictorial representation that would be unrecognizable by students in a future generation. I met with a local artist to discuss my ideas for a character to use in the response scale for the ATRS. The artist used the information I provided and created three different characters—a frog, a boy, and a

kangaroo—that had the same body position, had varying degrees of a smile or frown, and had either one or two thumbs up or down, depending on the response (Appendix C). However, the focus group provided feedback that the images were distracting. The suggestions from the participants included having a character that was non-gender specific without distracting details such as clothes and accessories. I met with a graphic designer to create a computerized character. The character would have either one thumb up or down or two thumbs either up or down, depending on the response. The words Very Bad, Bad, Good, Very Good are printed beneath the corresponding picture (Appendix E). I chose these words because they seem to emulate the language that students in the target grades (third through fifth) use and the vocabulary used in surveys is a key component in creating a successful measure (Fowler, Jr. & Cosenza, 2008). This is different from the ERAS because that pictorial scale did not have words to describe the picture. I chose to add words to provide more detail about the representation of the pictures. The pictures and words together create a visually appealing survey for elementary students, and according to Dillman (2008), it is important for paper surveys to look attractive.

Participant recruitment. Phase 1 was completed as a class project, which meant I did not need to have approval from the Institutional Review Board at my university to conduct the research. I contacted a colleague with whom I taught several years ago and she agreed to be the liaison between the teachers at the school where she taught and me. She recruited teachers at her school to administer the survey to their third through fifth grade students. The teachers were provided with all the survey materials (e.g., copies of the survey, manila envelopes. sticky notes, directions for administration) and a time frame for completion (one week). The window of time was suggested by the liaison because it was a

short enough turn around time for teachers to be able to complete the survey right away rather than putting it aside for later and risking the chance of forgetting about it or misplacing the materials.

Directions for administration. My directions asked the teacher to read the directions from the administration script, which included the consent process for students (Appendix F). The directions explained to students that their teacher would not see their responses so they should feel comfortable answering the questions honestly. There was also an option for students to leave the survey blank if they did not want to participate in the study. All students were asked to put their survey (either completed or blank) in a manila envelope and seal it closed. This was intended to allow students to feel secure that their responses were not to be seen by the teacher. It was important for students to know that their responses would be confidential and they could answer the questions honestly.

To maintain anonymity, the script asked students not to write their name on their survey, but to write it on the sticky note already placed on their envelope. When teachers collected the envelopes they answered the demographic questions (Appendix H) about each student and removed the sticky note that had the student's name written on it. This method allowed students to remain anonymous.

Scoring methods. A 4-point rating scale was used for students' responses (Appendix E). Students were asked to circle the picture that represented how they would feel in response to each item based on the scenario provided. Each item received a numeric value based on the student's response (1 point for a response of very bad, 2 points for a response of bad, 3 points for a response of good, and 4 points for a response of very good). The points for each item were not available for students to see; students were only

provided with the picture and word for each response so they would not be swayed to select a response because they thought it would give them more points. A higher score should correspond with a more positive attitude toward reading. For phase 1 of this study, I was the only person to see the scores and I entered the data into the computer for statistical analysis.

Item analysis. To determine the construct validity, I entered data into PASW 18 and ran a confirmatory factor analysis (CFA) followed by an oblique rotation to determine how the items loaded on the factors. The "factors" in CFA are latent variables that cannot be directly measured. CFA analyzes observable behaviors (e.g., if a student chooses to read over the weekend) to determine the unobservable factors (e.g., the student's attitude toward traditional recreational reading) researchers want to investigate (Marsh, 1987). CFA is conducted by analyzing the pattern of correlations between the observed measures; it is expected that highly correlated measures will be influenced by the same unobservable factors.

To test whether the survey items measured the unobservable factors as I intended, I initially ran the data unconstrained, which is the first step in CFA. Five factors were obtained, each with loadings between .454 and .907 (see Table 2 and 3 in Appendices I and J for pattern and structure matrices). Next I ran the data with the constructs set to load on four factors based on the logic of how I developed the ATRS (with traditional academic, traditional recreational, technological academic, and technological recreational). I used an oblique rotation because I believe the factors are correlated since they all measure students' attitudes towards reading. The purpose of using rotation is to organize the correlated data produced from analyzing results with constrained factors. With the factor

analysis set to load on four factors, the loadings were between .405 and .876 (see Appendices K and L for pattern and structure matrices). Low to moderate loadings (.40 to .70) are most common in social sciences, above .80 is considered strong (Costello & Osborne, 2005). These loadings ranged from low (.405) to strong (.876) and the four factors were not as clearly divided as I anticipated. The items loaded on the following factors: 5 items-recreational, 6 items-academic, 6 items-technological, and 3 items-traditional recreational. For the first two factors, recreational and academic, there was a mixture of traditional and new literacies interspersed. Analogously, the technological factor included a mixture of both recreational and academic items. The final construct, traditional recreational, was the only one that loaded as I expected. Because the survey items did not load as anticipated, they will need to be revised to have strong construct validity.

The points for each item were summed to equal a composite score for all subjects. To determine the reliability of the survey, I assigned a point value (1-4) to each response on the survey and entered the values into PASW 18. I then calculated Cronbach's alpha for the composite scores to determine the internal consistency of items. Additionally, Cronbach's alpha is widely suggested as a method to determine internal consistency in several texts about affective instrument development (e.g., Anderson & Bourke, 2000; de Vaus, 1990; Gable & Wolf, 1993). The results indicated strong internal consistency ($\propto$=.873). When I calculated Cronbach's alpha for each construct individually, the results were strong for three of the four constructs (recreational, $\propto$=.788; technological, $\propto$=.736; academic, $\propto$=.768; Crocker & Angina, 2006). The fourth construct indicated moderate internal consistency (traditional recreational, $\propto$=.591; Crocker & Angina, 2006). The lower alpha may be partially due to having only three items in that construct (Crocker & Angina,

2006). This information will guide the revision of the items in the second phase of survey construction. I used this method because McKenna and Kear (1990) used it when they developed the ERAS.

Test/item bias. During the focus group, some questions were found to contain details that may not maintain their currency. For example, one item asks students "How do you feel about Social Networking Sites (for example, Facebook, My Space, Twitter)?" The examples in this question may not withstand time; since the inception of this survey changes have already occurred and "My Space" is no longer a well-known Social Networking Site. I revised the format of the survey to provide detailed scenarios and removed the examples in items that were in question. These revisions were completed prior to administration of the survey to students.

Phase 2

The second phase of the survey development was completed in this study.

Item development. After completing phase one, I revised the survey items in three ways. First, based on the results of the EFA, I determined that the lines between recreational and academic reading were blurred and not the main focus of this survey, which aims to gain insight on how students feel about reading print and digital texts. Therefore, I decided to focus on only two constructs: attitudes toward reading print and digital texts. Second, because I was no longer trying to distinguish reading activities between academic and recreational, I removed the scenarios from the survey because they were mainly added to distinguish whether the reading activity was for a recreational or academic purpose. Third, I reformatted the survey items to each have sub-questions for print, e-reader, and Internet reading (see Appendix K for revised survey). Additionally, I

sought research to support the inclusion of each survey item. If I did not have research to substantiate the use of a particular item, I removed it from the survey. This resulted in all survey items representing actions that research has deemed important in measuring attitudes toward reading (see Appendix I for a table of supporting research aligned with survey items).

Cognitive interviews. The next step I took in the ATRS survey development was to interview a small sample (n=5) of students from a population similar to the one I studied. Cognitive interviews are private, one-on-one interviews that allow the researcher to find out how a participant would read and think about each item on a survey (Willis, 2005). I met individually with two third-grade girls, and three fourth-grade boys to conduct cognitive interviews. I used the protocol I created to guide the cognitive interviews to determine how the participants would interprete the survey items (Appendix L).

The purpose of conducting cognitive interviews is to gain information about the items in a survey from a sample of subjects similar to the population of interest (Willis, 2005). Cognitive interviews do not validate survey items. However, they allow participants to contribute information about survey items that may cause problems with the instrument's validity. I conducted the cognitive interviews using verbal probing techniques such as "What do think this question is asking?" and "What do you think of when I say library?" However, the participants were invited to think aloud about other parts of the questions as they responded. Verbal probing involves the interviewer reading the survey question then asking questions to probe the participant's thoughts. Because the survey was to be administered orally, reading the questions aloud as cognitive interview participants follow along replicated the used in the schools. Think alouds invite the participant to

verbally share the thought process they go through when responding to an item. This combination of techniques allowed me, the interviewer, to maintain control of the interview and focus on specific aspects of each question. One disadvantage of probing is the potential for participants to react to the probes and find issues with items they would not have otherwise noticed; thus it is important to develop probes that do not create problems in the items that do not really exist (Willis, 2005). I took notes during the cognitive interviews that provided me with information I used to modify the ATRS prior to administering it to the large sample of students; this helped me develop a survey with clear, unambiguous questions.

Following the interviews, I revised the survey to correct ambiguities the participants brought up before I administered the survey to the large sample of students. This process strengthened the items on the ATRS and in turn will make the instrument a more effective tool for teachers to use.

Response scale. The response scale I used in the pilot was effective; the teachers and students that participated in the survey administration and the phase one focus group participants found no problems with the four-point rating scale (Appendix E). Prior to the pilot's administration, I asked the teachers to let me know if there were any parts of the survey that were unclear and they provided feedback that the response scale was clear and easy for their students to understand. Focus group participants also said the scale seemed to be clear and appropriate for third through fifth grade students. The use of graphics and inclusion of words in the response scale have an effect on how respondents answers survey items (Christian, Dillman, & Smyth, 2007) and because this

scale worked in the first phase of the survey development, I used the same scale for phase two.

Participant recruitment. I worked with two charter schools to complete my research. The schools were very similar in demographics, as shown in Table 3 below and both schools have a policy to allow research to take place in the classroom if it is for the benefit of students. The number of students at each grade level, percent of students eligible for free or reduced price lunch, and student to teacher ratio were all very similar. The race/ethnicity percentages were similar in the Black, Asian, and Other categories. There was a large difference in the number of Hispanic and White students. School 1 had a 42% Hispanic population and school 2 had a 12.36% Hispanic population. School 1 had a 49% White population and school 2 had 74.73% White population. This difference is largely due to the location of the schools and the demographic of families that live in the surrounding areas. Although the race demographic is quite varied, the test scores indicate the students in both schools perform at similar levels on the state's standardized reading test for third, fourth, and fifth grade as shown in Table 4 below. Additionally, the students share similar characteristics regarding access to technology as displayed in Table 5 below.

The number of students at each grade level is similar but the teacher to student ratio shows there are smaller class sizes in school 2. Although similar, school 2 also had less than 1% of the students receiving free or reduce price lunch while school 2 has 4% of the students receiving free or reduced price lunch. Standardized test scores for the two schools were also similar, with 4th grade scores being the closest together (school 1: 67% at or above grade level; school 2: 69% at or above grade level). Third and fifth grade score were also comparable (3rd grade scores: school 1: 75%, school 2: 89%; 5th grade scores: school 1:

80%, school 2: 72%). These demographics are important to consider when analyzing result for the ATRS survey because students with higher socioeconomic status tend to do better in school (Potter, 2013) and attitude correlates to performance (McKenna & Kear, 1990; Walberg & Tsai, 1985).

The students in the sample studied have similar access to technology at home and in school. This is important to consider because access to technology can effect how people feel about it (Porter & Donthu, 2006). Over three-fourths of the students surveyed have access to a computer at home and in school. More than 66% of the students have access to an e-reader at home. The significant difference is in access to an e-reader at school, the percent of students with access ranges from 9.4% to 40% by grade level and an outlier of 100% access to an e-reader in school for the third graders in school 1.

Table 2. School Demographics.

Race/Ethnicity				Number of Students				Free/Reduced Lunch		Student:Teacher Ratio	
School 1		School 2		School 1		School 2		School 1	School 2	School 1	School 2
White	49%	White	74.73%	K	69	K	54	4%	<1%	23:1	17:1
Black	9%	Black	4.55%	1	74	1	56				
Hispanic	42%	Hispanic	14.36%	2	62	2	57				
Asian	2%	Asian	1%	3	60	3	58				
Other	1%	Native American	1%	4	69	4	68				
				5	71	5	69				

Note: student number for kindergarten, 1st, and 2nd grade are included because they were used to calculate the schools' demographic data.

Table 3. FCAT Data.

FCAT Reading Scores, 2012*	School 1	School 2
3rd grade	75%	89%
4th grade	67%	69%
5th grade	80%	72%

** % indicates students scoring at or above level*

Table 4. Access to Technology.

	School 1						School 2					
	3rd grade		4th grade		5th grade		3rd grade		4th grade		5th grade	
	M	F	M	F	M	F	M	F	M	F	M	F
Computer in Home	97.7	100	97.4	100	100	95.5	100	100	100	100	100	94.7
Use Computer Out of School	81.8	94.4	92.3	91.2	75	97.7	85.4	97.1	95.6	88.9	86.2	86.8
Computer in School	100	100	100	94.1	93.8	100	90.2	100	97.8	100	100	97.4
Use Computer in School	88.6	97.2	97.4	94.1	93.8	100	87.8	100	97.8	97.2	100	100
eReader in Home	72.7	94.4	66.7	82.4	78.1	84.1	82.9	82.4	82.2	77.8	86.2	84.2
eReader in School	100	100	25.6	35.3	9.4	27.3	12.2	11.8	40.0	19.4	17.2	18.4

The number indicates the percent of students that responded yes to access questions above.

The first school I made contact with, School 1, was willing to work with me after a professor I worked with introduced me to the principal and I explained my research to her. She agreed to act as liaison between her teachers and me. To recruit the second school I spoke with teachers I worked with from a different charter school and they were interested

in my research. These teachers acted as liaisons between me and the school's principal. After several communications and one face-to-face meeting the principal agreed to take part in my research study and from that point on she was my contact person at the school. She was excited about the purpose of the survey because she said she believed it was important for teachers to know how their students feel about the different modes of reading that are prevalent in today's society.

The participants were students in grades three through five at one of two participating charter schools from a central Florida school district. I delivered the survey materials to the liaisons at the two schools and they distributed the materials and arranged for teachers to return the materials to the front office when completed. I picked up the completed surveys and all extra materials three weeks after the drop-off date from School 1 and four and a half weeks after drop-off from School 2.

Directions for administration. The directions for administration that were used for the survey pilot worked well, therefore, the revised directions for this administration of the survey were very similar. This revised directions included having the survey administrator read aloud the directions to students and provide an option for students to opt out of responding to the survey questions without repercussions. Additionally, students were reminded not to write their name on the survey or envelope. When students finished answering all survey questions, they put their survey inside the manila envelope and sealed it closed. This process allowed students to know their responses were confidential. The directions for administration are provided in Appendix M.

Scoring methods. At this phase of the survey creation, the teacher did not have access to the students' responses; however, a score-recording page is now available with

the survey so teachers can record all of a student's responses on one page (see Appendix Q for score page). I designed the score sheet following the style of the ERAS because I found it to be an uncomplicated tool for teachers to use. I deemed it uncomplicated because the directions for use were clear and concise, it was not time consuming to score, and pre-service teachers were able to administer and score the survey with ease.

Item analysis. I analyzed items to determine the extent of the validity and reliability of the survey using quantitative methods as discussed below.

Research question 1. To answer research question 1, determining the construct validity, I entered data into PASW 18 and ran an exploratory factor analysis with an oblique rotation, because the constructs are correlated, to determine if the items load on the factors as I intend. These are the same methods I used for determining the validity of items in phase one of the survey's creation and I made revisions to the survey based on results from my analysis of the pilot items. Data were analyzed without separating the schools because the individual schools did not have ample participants to maintain an N large enough for factor analysis to be reliable. With survey development, it is best to have about 10 participants per a survey item (Nunnally, 1967). In this survey there are 24 questions, which would require 240 participants. Each school had close to that number (school 1: 229, school 2: 223) but not enough to allow for missing data to be removed from the count. I then ran an exploratory factor analysis to determine if there was a factor model that would better account for variance.

Research question 2. I entered all survey responses into PASW 18 software for analysis. To answer research question 2, determining the reliability of the survey, I calculated Cronbach's alpha for the composite score, for each subscale (print, computer,

and digital text), and for each demographic category (i.e., grade level, gender, and school number self-reported by students on their survey) to determine if the items function differently based on these factors. Cronbach's alpha is the method I used in phase one to determine the internal consistency of items. It is also the method used by McKenna and Kear (1990) and is suggested in affective instrument development books (e.g., Anderson & Bourke, 2000; de Vaus, 1990; Gable & Wolf, 1993).

Research question 3. The survey items were written to be nonbiased; however, there is a chance of unintentional bias in the items. For example, I have a high enjoyment for recreational reading and my feelings may be passed into the survey scenarios and items, which may unintentionally affect students' responses. Another type of bias that may be present is gender bias; I am a female and the items I wrote may be viewed differently by male and female students. To investigate research question three I analyzed the students' responses using cumulative logit modeling, a form of logistic regression, to determine if there is gender bias in the items.

Logistic regression investigates whether variables (such as gender, ethnicity, grade level) predict results; in this study this was not a desirable result. Cumulative logit modeling is a type of logistic regression used for analysis of ordinal response data. Ordinal variables can be placed in a ranked order but the value between each is unknown. I did not want the questions to be biased toward students of a specific gender or grade level. However, research indicates that females tend to have higher positive attitudes toward reading than males (Guthrie & Wigfield, 2000) and I also anticipate the students from schools located in higher socioeconomic areas of the district will have higher positive

attitudes toward reading (Guthrie, Schafer, & Huang, 2001; Guthrie & Wigfield, 2000). I expect my data to substantiate these differences.

Conclusion

The purpose of this study was to create a valid and reliable survey that measures how students feel about reading print and digital texts. To respond to the research questions concerning item validity, I administered the survey to a large sample of students and ran a factor analysis to provide statistical proof of item validity. To address my next research question, survey reliability, I calculated Cronbach's alpha for composite scores, gender, school, and grade level to determine the extent of the survey's reliability. At the conclusion of this study, this comprehensive analysis will ensure the ATRS is a reliable and valid tool that teachers can confidently use to measure their students attitudes toward reading.

CHAPTER 4

In this chapter, I will present the research questions and the results of the study. The purpose of this study was to develop and validate a reliable survey to measure elementary students' attitudes toward reading print and digital texts. The survey was administered to a large sample of students in grades 3-5 at two charter schools (n=454), and the results were analyzed with both confirmatory and exploratory factor analysis to determine construct validity, Cronbach's alpha to examine score reliability, and cumulative logit modeling to investigate item bias.

The research questions examined in this study are:

1. To what extent does evidence from a factor analysis support the Attitude Toward Reading Survey (ATRS) as a valid measure of students' attitudes toward reading?
2. To what extent does evidence from Cronbach's alpha support the Attitude Toward Reading Survey (ATRS) as a reliable measure of students' attitudes toward reading?
3. To what extent does item bias analysis using logistic regression support the Attitude Toward Reading Survey (ATRS) as a valid measure of students' attitudes toward reading?

Descriptive Statistics

I distributed surveys to two elementary charter schools in one school district. The teachers for third, fourth, and fifth grade students administered the surveys to their students and resulted in a total of 452 surveys, 229 from School 1 and 223 from School 2 (Table 4, below, provides descriptive data for the students who completed a survey and

demographic information for the two schools was provided in chapter 3). Of the 452 surveys there were 155 from third grade, 154 from fourth grade, and 143 from fifth grade. Boys completed 230 surveys and girls completed 222 surveys.

Table 5. Descriptive Statistics.

	School 1		School 2		Total
	boys	girls	boys	girls	
3rd grade	44	36	41	34	155
4th grade	39	34	45	36	154
5th grade	32	44	29	38	143
Total	115	114	115	108	452

Data Analysis

Research Question 1

To determine the construct validity, I entered data into PASW 18 and ran confirmatory and exploratory factor analysis (CFA & EFA) followed an oblique rotation to determine how the items loaded on the factors. The purpose of using rotation is to organize the correlated data produced from analyzing results with constrained factors. I used oblique rotation due to my belief that the factors are correlated because the items all measure students' attitudes toward reading. The "factors" in factor analysis (FA) are latent variables that cannot be directly measured. FA analyzes observable behaviors (e.g., if a student likes to read print books from various genres) to determine the unobservable factors (e.g., the student's attitude toward reading print materials) researchers want to investigate (Marsh, 1987). FA is conducted by analyzing the pattern of correlations between the observed measures; it is expected that highly correlated measures will be influenced by the same unobservable factors. The factors will be discussed below based on

data with all students from both schools to maintain a large enough sample. As discussed in chapter 3, the two charter schools have similar demographics. The race/ethnicity percentages were similar with the exception of the amount of Hispanic students (School 1: 42% Hispanic; School 2: 12.36% Hispanic). Although the demographics for the race/ethnicity is varied, test scores indicate both schools have similar test scores for students in third, fourth, and fifth grades as measured by the state's standardized tests.

Confirmatory Factor Analysis

The ATRS was developed to measure elementary students' attitudes toward reading across three media of text: print, e-reader, and Internet. The items on the survey were developed to determine if students' attitudes vary when reading texts in different forms. Based on the logic of how the ATRS was developed, I ran the data with the constructs set to load on three factors. Factor one accounted for 25.9% of the variance, factor two for 10.1% and factor three 7.8%. The cumulative variance for all three factors was 43.9%. After principal factor extraction, the communalities (common variance) ranged from .166 to .558 (Table 5). The communalities indicate that approximately 43.9% of the common variance is explained by the factor model (as shown in Table 6). Table 7 shows the inter-factor correlation matrix.

I used an oblique rotation because I believe the factors are correlated since they all measure students' attitudes towards reading. With the factor analysis set to load on three factors, the loadings for data from all students in both schools were between .247 and -.829 (see Tables 8 and 9 for pattern and structure matrices). The structure matrix represents the variance explained by a factor for both unique and common contributions; the pattern matrix contains coefficients that represent unique contributions. Both matrices are

considered when working with oblique rotations. According to Kline (1994), factor loadings are considered to be high when greater than 0.6 and moderately high when greater than 0.3 and "the positive or negative sign is irrelevant" (p. 6). In social sciences low (below .40) to moderate loadings (.40 to .70) are most common, above .80 is considered strong (Costello & Osborne, 2005). Comrey and Lee (1992) suggest that loadings below .45 are poor, loadings between .45 and .55 are fair, and above .55 are good to excellent. I named the factors to indicate how the items that loaded together are related to students' attitudes about reading. Despite the labels, it is important to note the factors are not the cause of students' attitudes. The loadings, shown in tables 8 and 9 below, ranged from low (.247) to strong (-.829). Most items were clearly loaded with print items loading together, computer items loading together, and e-reader items loading together. There was one item that loaded outside of its intended group (item 7b: How do you feel about reading the news from an e-reader (such as a Nook or Kindle)?). There were also two items (2A: How do you feel about reading magazines? and 8A: How do you feel when a friend reads with you from a book?) that, although loaded in the anticipated group, did not load as strongly as other items (2A: .350 and 8A: .330; other items in the print factor loaded at or above .522).

Table 6. Communalities of Items.

How do you feel about…	Extraction
…reading to learn new things from a book? (1a)	.478
…reading to learn new things from an e-reader? (1b)	.512
…reading to learn new things from the Internet? (1c)	.470
…reading magazines? (2a)	.166
…reading magazines from an e-reader? (2b)	.447
…reading magazines from the Internet? (2c)	.417

Table 6 (continued)

…learning about something that interests you from a book? (3a)	.468
…learning about something that interests you from an e-reader? (3b)	.515
…learning about something that interests you from the Internet? (3c)	.493
…reading something you chose from an author that is new to you from a book? (4a)	.446
…reading something you chose from an author that is new to you from an e-reader? (4b)	.538
…reading something you chose from an author that is new to you from the Internet? (4c)	.553
…reading different types of writing from a book? (5a)	.270
reading different types of writing from an e-reader? (5b)	.514
reading different types of writing from the Internet? (5c)	.536
…telling a friend about something you read from a book? (6a)	.353
…telling a friend about something you read from an e-reader? (6b)	.496
…telling a friend about something you read from the Internet? (6c)	.398
…reading the news from a newspaper? (7a)	.456
…reading the news from an e-reader? (7b)	.360
…reading the news from the Internet? (7c)	.558
…when a friend reads with you from a book? (8a)	.249
…when a friend reads with you from an e-reader? (8b)	.424
…when a friend reads with you from the Internet? (8c)	.414
Total	10.531

Table 7. Communalities of Factors.

Factor	Eigenvalue	% of Variance	Cumulative %
e-reader	6.229	25.956	25.956
Internet	2.428	10.115	36.071
print	1.875	7.814	43.886

Table 8. Inter-Factor Correlation Matrix.

Factor	e-reader	Internet	Print
e-reader	1.000	-.284	.322
Internet	-.284	1.000	-.297
print	.322	-.297	1.000

Table 9. Pattern Matrix for Unconstrained Factors; all students in both schools.

How do you feel about…	Component		
	e-reader	**Internet**	**print**
…reading to learn new thinks from an e-reader? (1b)	.729	.015	-.030
…reading magazines on an e-reader? (2b)	.616	-.135	.004
…learning about something that interests you from an e-reader? (3b)	.720	-.027	-.034
…reading something you chose by authors that are new to you from an e-reader? (4b)	.685	-.058	.076
…reading different types of writing from an e-reader? (5b)	.691	-.054	.024
…telling a friend about something you read from an e-reader? (6b)	.673	.072	.127
…when a friend reads with you from an e-reader? (8b)	.638	-.073	-.037
…reading to learn new thinks from the Internet? (1c)	-.061	-.722	-.103
…reading magazines from the Internet? (2c)	.195	-.521	.093
…learning about something that interests you from the Internet? (3c)	-.081	-.726	-.019
…reading something you chose by authors that are new to you from the Internet? (4c)	.041	-.720	.033
…reading different types of writing from the Internet? (5c)	.110	-.717	-.082
…telling a friend about something you read from the Internet? (6c)	.187	-.577	.077
…reading the news from an e-reader? (7b)	.257	-.339	.221
…reading the news from the Internet? (7c)	-.112	-.733	.114
…when a friend reads with you from the Internet? (8c)	.217	-.557	-.026
…reading to learn new thinks from a book? (1a)	-.059	.000	.708
…reading magazines? (2a)	.047	-.093	.350
…learning about something that interests you from a book? (3a)	.062	.114	.689
…reading something you chose by authors that are new to you from a book? (4a)	.057	.017	.652
…reading different types of writing from a book? (5a)	-.016	-.010	.522
…telling a friend about something you read from a book? (6a)	.187	.083	.531
…reading the news from the newspaper? (7a)	-.286	-.262	.605
…when friends read with you from a book? (8a)	.290	.017	.330

Table 10. Structure Matrix for Unconstrained Factors; all students in both schools.

How do you feel about…	Component		
	e-reader	**Internet**	**print**
…reading to learn new thinks from an e-reader? (1b)	.715	-.183	.200
…reading magazines on an e-reader? (2b)	.656	-.312	.243
…learning about something that interests you from an e-reader? (3b)	.717	-.222	.206
…reading something you chose by authors that are new to you from an e-reader? (4b)	.726	-.275	.314
…reading different types of writing from an e-reader? (5b)	.714	-.258	.263
…telling a friend about something you read from an e-reader? (6b)	.693	-.157	.322
…when a friend reads with you from an e-reader? (8b)	.647	-.244	.191
…reading to learn new thinks from the Internet? (1c)	.111	-.674	.092
…reading magazines from the Internet? (2c)	.373	-.604	.311
…learning about something that interests you from the Internet? (3c)	.119	-.697	.170
…reading something you chose by authors that are new to you from the Internet? (4c)	.257	-.741	.260
…reading different types of writing from the Internet? (5c)	.287	-.724	.167
…telling a friend about something you read from the Internet? (6c)	.262	-.621	.272
…reading the news from an e-reader? (7b)	.424	-.477	.404
…reading the news from the Internet? (7c)	.133	-.735	.296
…when a friend reads with you from the Internet? (8c)	.367	-.611	.209
…reading to learn new thinks from a book? (1a)	.169	-.193	.689
…reading magazines? (2a)	.187	-.210	.393
…learning about something that interests you from a book? (3a)	.251	-.108	.675
…reading something you chose by authors that are new to you from a book? (4a)	.262	-.194	.666
…reading different types of writing from a book? (5a)	.155	-.160	.519
…telling a friend about something you read from a book? (6a)	.335	-.128	.567
…reading the news from the newspaper? (7a)	-.017	-.361	.590
…when friends read with you from a book? (8a)	.392	-.164	.419

With the data from all students in both schools, the items that loaded on the three factors were examined and named print, e-reader, and Internet. The names are given to indicate how the factors are related to students' attitudes about reading and are not the cause of their attitude.

Each survey item was asked with three parts; part a asked about students' attitudes toward reading print, part b about e-readers, and part c about Internet reading. The items all had the same question beginning and ended with "from a book?" or "from an e-reader (such as a Nook or Kindle)?" or "from the Internet?".

Factor 1: e-reader. Each of the seven items that loaded on factor one was about students' attitudes toward reading from an e-reader. The items range from questions about how students feel about reading books from various genres to reading magazines. Item 1b loaded the highest (pattern coeffecient = .729) on factor one and asks "How do you feel about reading to learn new things from an e-reader (such as a Nook or Kindle)?" and item 2b loaded the lowest (.616) and asks "How do you feel about reading magazines from an e-reader (such as a Nook or Kindle)?" The remaining five items loaded with high coeffecients, which indicates a good fit for these items within this factor model.

Factor 2: Internet. The second factor was named Internet because eight of the nine items that loaded on it were about reading from the Internet. Item 7b (How do you feel about reading the news from an e-reader (such as a Nook or Kindle)?) had the lowest factor loading and was the only item that loaded on this factor that did not inquire about students' attitudes toward reading from the Internet, it asked students how they felt about reading the news from an e-reader. The item did not load strongly on any of the three factors (factor 1: .257; factor 2: -.339; factor 3: .221). A possible explanation for this is that

students in grades three through five either do not read the about news, do not use an e-reader to read about the news, or do not like to read about the news. The item that loaded the highest on factor two was 7c (pattern coeffecient = -.733), which asks "How do you feel about reading the news from the Internet?" Item with the lowest loading (excluding 7b, discussed above) was 2c (-.521). This item asks "How do you feel about reading magazines from the Internet?" This is the same item that loaded the lowest on the e-reader factor. Because the remaining items loaded with high coeffecients, the data indicates this factor model is a good fit.

Factor 3: Print. The third factor was named print because the eight items that loaded on it asked students how they felt about reading from a book. The items on this factor loaded between .330 and .689. These items were all about how students feel about reading from a book and items included questions such as "How do you feel about reading to learn new things from a book?" and "How do you feel about telling a friend about something you read from a book?" The two items that loaded the lowest were 8a (.330) and 2a (.350). Item 8a asks how students feel about reading with a friend and item 2a asks how students feel about reading from a magazine. For each of the three factors, the item about how students feel about reading from a magazine has a low factor loading. The item with the highest factor loading is 1a (.708), which asks how students feel about reading to learn new things from a book. The remaining items had loadings between .522 and .689, which indicates a good fit for this factor model.

Exploratory Factor Analysis

Because the confirmatory factor analysis accounted for less than 50% of the common variance, I ran an exploratory factor analysis (EFA) with the data unconstrained

to examine how the survey items were correlated and if they measured the unobservable factors as I intended. After extraction with principal factor extraction, the communalities (common variance) ranged from .609 to .821 (Table 10). The communalities indicate that approximately 71.5% of the common variance is explained by the factor model (Table 11). I then examined the Eigenvalues, or the latent roots of the factors, to determine the total variance associated with the factors. Eigenvalues greater than one were considered significant and the results yielded eight factors when data were run for both schools. I examined the items that loaded on each of the eight factors (loadings between -.499 and .904, see Tables 13 and 14 for pattern and structure matrices) to determine how they were related. Most items were clearly loaded with print items loading together, Internet items loading together, and e-reader items loading together. There was one item that loaded outside of its intended group (item 7b: How do you feel about reading the news from an e-reader [such as a Nook or Kindle]?).

Table 11. Communalities of Items when Unconstrained.

How do you feel about…	Extraction
…reading to learn new things from a book? (1a)	.611
…reading to learn new things from an e-reader? (1b)	.697
…reading to learn new things from the Internet? (1c)	.609
…reading magazines? (2a)	.794
…reading magazines from an e-reader? (2b)	.764
…reading magazines from the Internet? (2c)	.691
…learning about something that interests you from a book? (3a)	.720
…learning about something that interests you from an e-reader? (3b)	.735
…learning about something that interests you from the Internet? (3c)	.635
…reading something you chose from an author that is new to you from a book? (4a)	.676
…reading something you chose from an author that is new to you from an e-reader? (4b)	.716

Table 11 (continued)

…reading something you chose from an author that is new to you from the Internet? (4c)	.684
…reading different types of writing from a book? (5a)	.688
reading different types of writing from an e-reader? (5b)	.728
reading different types of writing from the Internet? (5c)	.694
…telling a friend about something you read from a book? (6a)	.782
…telling a friend about something you read from an e-reader? (6b)	.715
…telling a friend about something you read from the Internet? (6c)	.662
…reading the news from a newspaper? (7a)	.754
…reading the news from an e-reader? (7b)	.772
…reading the news from the Internet? (7c)	.716
…when a friend reads with you from a book? (8a)	.776
…when a friend reads with you from an e-reader? (8b)	.821
…when a friend reads with you from the Internet? (8c)	.726
Total	17.166

Table 12. Communalities of Factors.

Factor	Eigenvalue	% of Variance	Cumulative %
e-reader	6.229	25.956	25.956
Internet	2.428	10.115	36.071
Learning from Print	1.875	7.814	43.886
Reading with Friends	1.716	7.152	51.103
Reading Magazines	1.456	6.066	57.103
Recreational Print	1.282	5.341	62.445
News	1.171	4.881	67.325
Self-Selected Print	1.008	4.200	71.526

Table 13. Factor-Correlation Matrix

Factor	e-reader	Internet	Learning from Print	Reading with Friends	Reading Magazines	Recreational Print	News	Self-Selected Print
e-reader	1.000	-.127	.052	.208	.191	.034	-.134	-.148
Internet	-.127	1.000	-.042	-.167	-.159	-.019	.276	.085
Learning from Print	.052	-.042	1.000	.058	.120	.032	-.115	-.172
Reading with Friends	.208	-.167	.058	1.000	.219	-.030	-.139	-.222
Reading Magazines	.191	-.159	.120	.219	1.000	.049	-.239	-.142
Recreational Print	.034	-.019	.032	-.030	.049	1.000	-.042	-.007
News	-.134	.276	-.115	-.139	-.239	-.042	1.000	.172
Self-Selected Print	-.148	.085	-.172	-.222	-.142	-.007	.172	1.000

Table 14. Pattern Matrix for Unconstrained Factors; all students in both schools

	Component							
How do you feel about…	e-reader	Internet	Learning from Print	Reading with Friends	Reading Magazines	Recreational Print	News	Self-Selected Print
…reading to learn new things from an e-reader? (1b)	**.807**	-.035	.153	-.009	.031	-.056	-.040	.097
…learning about something that interests you from an e-reader? (3b)	**.814**	-.135	.202	-.009	.008	-.045	.043	.089
…reading something you chose by authors that are new to you from an e-reader? (4b)	**.589**	-.005	-.160	.027	.031	.096	-.123	-.457

Table 14 (continued)

… reading different types of writing from an e-reader? (5b)	**.609**	-.018	-.044	.156	.063	.439	-.036	-.121
…telling a friend about something you read from an e-reader? (6b)	**.516**	.090	-.024	.140	.061	-.376	-.056	-.401
…reading to learn new things from the Internet? (1c)	.112	**-.715**	.069	-.173	.101	-.041	-.085	.158
…learning about something that interests you from the Internet? (3c)	.033	**-.780**	.154	-.034	.041	.018	.028	.076
…reading something you chose by authors that are new to you from the Internet? (4c)	-.021	**-.631**	-.172	.014	.073	.019	-.123	-.384
…reading different types of writing from the Internet? (5c)	.077	**-.674**	-.061	.189	-.005	.343	-.017	-.033
…telling a friend something you read from the Internet? (6c)	-.032	**-.560**	.015	.226	-.056	-.339	-.040	-.298
…reading to learn new things from a book? (1a)	.098	-.083	**.691**	-.084	.015	.024	-.166	-.098
…learning about something that interests you from a book? (3a)	.150	-.015	**.851**	.139	.003	.092	-.031	.073
…when a friend reads with you from a book? (8a)	-.125	.148	.241	**.840**	.123	-.017	.002	.050
…when a friend reads with you from an e-reader? (8b)	.222	.106	-.093	**.852**	.002	.068	-.043	.059
…when a friend reads with you from the Internet? (8c)	-.112	-.386	-.111	**.681**	.004	-.039	-.068	-.056
…reading magazines? (2a)	-.204	.088	.083	-.007	**.904**	-.006	.015	-.011
…reading magazines from an e-reader? (2b)	.373	.021	-.148	.059	**.715**	.014	.033	-.028

Table 14 (continued)

…reading magazines from the Internet? (2c)	.025	-.307	-.050	.055	**.671**	-.016	-.114	.061
…reading different types of writing from a book? (5a)	-.038	-.096	.334	.053	.035	**.641**	.072	-.308
…telling a friend about something you read from a book? (6a)	.050	-.044	.411	.166	.067	**-.499**	.111	-.467
…reading the news from a newspaper? (7a)	-.202	.090	.196	-.074	.026	-.019	**-.812**	-.140
…reading the news from an e-reader? (7b)	.265	.074	-.056	.097	.049	-.017	**-.798**	.041
…reading the news from the Internet? (7c)	-.050	-.400	-.015	.099	.002	-.014	**-.643**	.144
…reading something you chose by authors that are new to you from a book? (4a)	-.036	.058	.184	-.038	.107	.263	-.169	**-.659**

Table 15. Structure Matrix for Unconstrained Factors; all students in both schools.

	Component							
How do you feel about…	e-reader	Internet	Learning from Print	Reading with Friends	Reading Magazines	Recreational Print	News	Self-Selected Print
…reading to learn new things from an e-reader? (1b)	**.813**	-.149	.186	.167	.201	-.020	-.163	-.061
…learning about something that interests you from an e-reader? (3b)	**.821**	-.226	.229	.173	.182	-.0101	-.110	-.069

Table 15 (continued)

…reading something you chose by authors that are new to you from an e-reader? (4b)	**.679**	-.156	-.029	.263	.229	.120	-.278	-.549
… reading different types of writing from an e-reader? (5b)	**.691**	-.159	.044	.316	.259	.460	-.194	-.258
…telling a friend about something you read from an e-reader? (6b)	**.598**	-.050	.077	.352	.225	-.357	-.184	-.512
…reading to learn new things from the Internet? (1c)	.176	**-.729**	.089	-.026	.203	-.009	-.277	.079
…learning about something that interests you from the Internet? (3c)	.126	**-.777**	.176	.100	.167	.040	-.202	-.015
…reading something you chose by authors that are new to you from the Internet? (4c)	.141	**-.702**	-.057	.223	.237	.036	-.361	-.440
…reading different types of writing from the Internet? (5c)	.216	**-.726**	.000	.312	.177	.351	-.252	-.138
…telling a friend something you read from the Internet? (6c)	.114	**-.615**	.089	.383	.113	-.335	-.247	-.390
…reading to learn new things from a book? (1a)	.167	-.168	**.734**	.038	.167	.062	-.291	-.250
…learning about something that interests you from a book? (3a)	.220	-.096	**.811**	.206	.162	.119	-.158	-.125
…when a friend reads with you from a book? (8a)	.059	-.002	.283	**.820**	.280	-.037	-.105	-.164
…when a friend reads with you from an e-reader? (8b)	.381	-.069	-.039	**.867**	.208	.046	-.144	-.146
…when a friend reads with you from the Internet? (8c)	.090	-.505	-.044	**.740**	.203	-.057	-.251	-.217

Table 15 (continued)

…reading magazines? (2a)	-.040	-.030	.177	.139	**.858**	.032	-.160	-.112
…reading magazines from an e-reader? (2b)	.511	-.138	-.039	.282	**.775**	.053	-.178	-.165
…reading magazines from the Internet? (2c)	.207	-.450	.050	.258	**.748**	.024	-.353	-.087
…reading different types of writing from a book? (5a)	.067	-.138	.409	.127	.153	**.652**	-.083	-.377
…reading the news from a newspaper? (7a)	-.085	-.120	.297	.030	.193	.017	**-.801**	-.263
…reading the news from an e-reader? (7b)	.382	-.198	.049	.249	.286	.022	**-.824**	-.147
…reading the news from the Internet? (7c)	.086	-.575	.054	.212	.208	.014	**-.734**	-.013
…reading something you chose by authors that are new to you from a book? (4a)	.108	-.063	.331	.141	.251	.285	-.314	**-.718**
…telling a friend about something you read from a book? (6a)	.161	-.106	.484	.326	.184	-.486	-.054	**-.572**

Factor 1: e-reader. There were five items (numbers 1b, 3b, 4b, 5b, 6b) that loaded on factor one with loadings considered medium to high (Kline, 1994) between .516 and .814. Each of the items that loaded on factor one asks students how they feel about some aspect of reading with an e-reader. For example, item 1b asks "How do you feel about reading to learn new things from an e-reader (such as a Nook or Kindle)?" and item 6b asks "How do you feel about telling a friend about something you read from an e-reader (such as a Nook or Kindle)?"

Factor 2: Internet. The second factor also had five items loading moderately to highly (numbers 1c, 3c, 4c, 5c, 6c) between -.560 and -.780. Each item asks students how they feel about reading from the Internet. Item 3c asks "How do you feel about learning about something that interests you from the Internet?" and item 4c asks "Sometimes we hear about authors who are new to us and we decide we'd like to read some of their writings. How do you feel about reading something you chose by authors that are new to you from the Internet?"

Factor 3: Learning from print. There were two items that loaded on the third factor (items 1a and 3a) with high loadings of .691 and .851. The items ask students "How do you feel about reading to learn new things from a book?" and "How do you feel about learning something that interests you from a book?" I labeled factor 3 "Learning from print" because both items relate to reading from a book to learn.

Factor 4: Reading with friends. The fourth factor includes three items (8a, 8b, 8c) that ask students how they feel when a friend reads with them from a) a book, b) from an e-reader, c) from the Internet. I labeled this factor "Reading with friends" because each item

relates to how students feel about reading with friends. The format of the text is varied: print, e-reader, or Internet. Each item loaded highly, between .681 and .852.

Factor 5: Reading magazines. Factor five, like factor four above, includes three items (2a, 2b, 2c) that ask the same question (how students feel about reading magazines) from three different text formats (print, e-reader, or Internet). The items on this factor loaded highly (between .671 and .904).

Factor 6: Recreational print. Factor six had two items loading on it (5a and 6a). Both items asked students how they felt about reading from print books, item 5a asked "How do you feel about reading different types of writing (such as poetry, mysteries, comics, informational, etc.) from a book?" and item 6a asked "How do you feel about telling a friend about something you read from a book?" Both of these items represent a reading task considered recreational, thus I labeled this factor "Recreational print." The loadings were high at .641 and -.499, respectively.

Factor 7: News. Factor seven included three items (7a, 7b, 7c) that ask "How do you feel about reading news from a) a newspaper, b) an e-reader (such as a Nook or Kindle), c) the Internet?" These items loaded strongly (.643 to .812) and because each asks students' feelings about reading the news I labeled it "News."

Factor 8: Self-selected print. Only one item loaded on the eighth factor. The item asked "Sometimes we hear about authors who are new to us and we decide we'd like to read some of their writings. How do you feel about reading something you chose by authors that are new to you from a book?" This item had a strong loading of -.659.

Discussion of Factor Analysis

Although the items loaded as expected in the confirmatory factor analysis, after examining the results of the exploratory factor analysis, I eliminated several items from the survey. The items were eliminated because they did not differentiate the students' attitude towards reading from different text mediums. The removed items are discussed below in more detail.

Items 2a, 2b, and 2c asked students how they felt about reading magazines. The three items had low to moderate factor loadings with the CFA and loaded together with EFA, indicating they do not provide information about students' attitudes based on the medium of text, rather, the information suggests students have about the same attitude toward reading magazines regardless of how the magazine is presented. Items 7a, 7b, and 7c ask students how they felt about reading news. These items did not load as expected with CFA (7b and 7c loaded on the same factor) and all three items loaded together with EFA suggesting that, as with magazines, students' attitudes toward reading news are not affected by the medium in which it is presented. The last set of items that loaded together with EFA was 8a, 8b, and 8c. With the CFA the items loaded as expected and had low to moderate coefficients (between .330 and .638). These items ask students how they feel when a friend reads with them from a book, e-reader, or the Internet. As with two and seven, this suggests that students' attitudes toward reading with a friend is not affected by the medium of text.

Based on the results from both the confirmatory and exploratory factor analysis I determined the three-factor model represented a good fit for the survey items. There are several reasons I decided to accept the three-factor model. The first reason was based on

the logic that the survey was developed to investigate whether students' attitudes towards reading are affected by the medium of text. The CFA results indicate the items clearly distinguished between students' attitude about reading from the three mediums of text the ATRS was designed to measure. Second, although there were five eigenvalues greater than one, the fifth factor was only .092 above 1 and at a point where the eigenvalues began to level off (figure 4, page 121). Additionally, this factor included only two items that were about print books and could fit with the third factor, also about print books. The two factors (three: learn from print and five: share from print) may have loaded differently because students often are asked how they feel about reading based on academic or recreational factors. Finally, the fourth factor had three items loaded on it (items 6a, 6b, and 6c) asking about students' feelings about telling a friend about what they read. These items were eliminated because they do not distinguish differences between the medium of reading.

In addition to the reasons discussed above, Costello and Osborne (2005) noted that most statistical software programs result in too many factors with eigenvalues greater than one and that using this method is "among the least accurate methods for selecting the number of factors to retain" (p. 2). They suggest the scree plot as the best way for researchers to determine how many factors to retain. The proper way to read a scree plot is to determine the natural bend where the curve flattens and the number of datapoints above that point is the number of factors to be retained (Costello & Osborne, 2005). Suhr (2006) also explains the method of using the scree plot to determine the number of factors to retain. Suhr provides additional guidelines for how to determine the appropriate number of factors to retain. Each factor should have at least three items with significant

loadings, the rotated factor pattern should demonstrate simple structure, and variables should load on factors that measure different constructs. These guidelines support the acceptance of the three-factor model over the eight-factor model.

Because the items discussed above loaded separately in previous analysis and the eigenvalue was 1.343 (where eigenvalues began to level off) I decided to rerun the data with three factors to determine if these items would load together or load on different factors as they did in previous analyses. Additionally, reexamining the CFA with items removed would allow me to investigate how the removal of the three items discussed above would affect the common variance of the factor model. The results are discussed below in Figure 4.

Confirmatory Factor Analysis with Items Removed

The results from the CFA when factors were constrained to three indicate the factor model accounts for approximately 52.4% of the variance and the three factors were divided based on the medium of text. The factor loadings are shown in tables 16 and 17 below. A discussion of the results is presented after the tables.

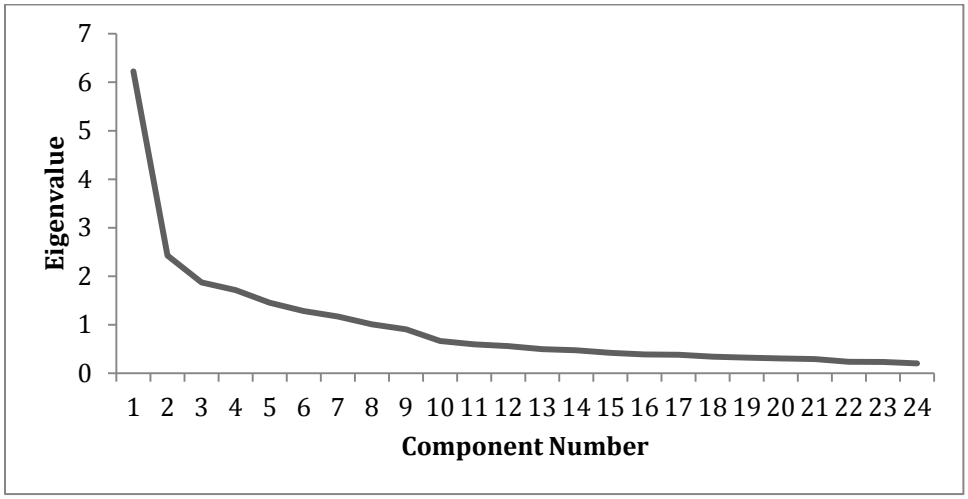

Figure 4. Scree Plot for Initial Confirmatory Factor Analysis.

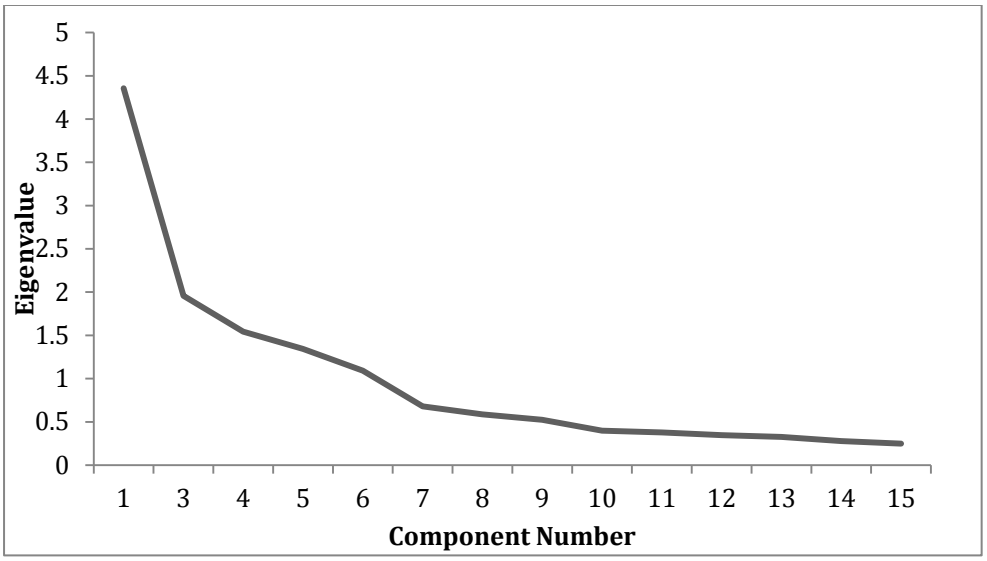

Figure 5. Scree Plot for Factor Analysis with Three Items Removed.

Table 16. Factor-Correlation Matrix.

Factor	e-reader	Internet	print
e-reader	1.000	.270	.344
Internet	.270	1.000	.246
print	.344	.246	1.000

Table 17. Pattern Matrix with Factors Constrained to Three.

How do you feel about…	Component		
	e-reader	Internet	print
…reading to learn new things from an e-reader? (1b)	**.794**	-.006	-.054
…learning about something that interests you from an e-reader? (3b)	**.779**	.065	-.051
…reading something you chose by authors that are new to you from an e-reader? (4b)	**.727**	.078	.041
… reading different types of writing from an e-reader? (5b)	**.649**	.094	.070
…telling a friend about something you read from an e-reader? (6b)	**.759**	-.088	.018

Table 17 (continued)

…reading to learn new things from the Internet? (1c)	-.019	**.745**	-.084
…learning about something that interests you from the Internet? (3c)	-.093	**.782**	.022
…reading something you chose by authors that are new to you from the Internet? (4c)	.039	**.752**	.060
…reading different types of writing from the Internet? (5c)	.053	**.752**	.017
…telling a friend about something you read from the Internet? (6c)	.121	**.566**	.043
…reading to learn new things from a book? (1a)	-.037	.051	**.726**
…learning about something that interests you from a book? (3a)	.009	-.070	**.753**
…reading something you chose by authors that are new to you from a book? (4a)	.056	.019	**.659**
…reading different types of writing from a book? (5a)	-.111	.075	**.651**
…telling a friend about something you read from a book? (6a)	.264	-.064	**.438**

Table 18. Structure Matrix with Factors Constrained to Three.

	Component		
	e-reader	Internet	print
…reading to learn new things from an e-reader? (1b)	**.773**	.195	.218
…learning about something that interests you from an e-reader? (3b)	**.779**	.263	.233
…reading something you chose by authors that are new to you from an e-reader? (4b)	**.762**	.284	.311
… reading different types of writing from an e-reader? (5b)	**.699**	.287	.316
…telling a friend about something you read from an e-reader? (6b)	**.741**	.121	.258
…reading to learn new things from the Internet? (1c)	.153	**.720**	.093

Table 18 (continued)

…learning about something that interests you from the Internet? (3c)	.125	**.763**	.183
…reading something you chose by authors that are new to you from the Internet? (4c)	.262	**.777**	.258
…reading different types of writing from the Internet? (5c)	.262	**.770**	.220
…telling a friend about something you read from the Internet? (6c)	.288	**.609**	.224
…reading to learn new things from a book? (1a)	.227	.220	**.726**
…learning about something that interests you from a book? (3a)	.249	.118	**.739**
…reading something you chose by authors that are new to you from a book? (4a)	.288	.196	**.683**
…reading different types of writing from a book? (5a)	.133	.205	**.631**
…telling a friend about something you read from a book? (6a)	.298	.115	**.513**

Factor 1: e-reader. Factor one included five items that all asked how students feel about reading from an e-reader. The pattern matrix loadings ranged from .649 to .794 and the structure matrix loadings ranged from .699 to .779. Items included were 1b, 3b, 4b, 5b, and 6b. Item 1b asked "How do you feel about reading to learn new things from an e-reader (such as a Nook or Kindle)?"

Factor 2: Internet. The second factor included five items (1c, 3c, 4c, 5c, 6c) that asked about students' attitudes toward reading from the Internet. Factor loadings from the pattern matrix ranged from .566 to .782 and from the structure matrix .609 to .777. Item 3c asked "How do you feel about learning something that interests you from the Internet?"

Factor 3: Print. The third and final factor included five items (1a, 3a, 4a, 5a, 6a) that asked students how they felt about reading from a book. These items had pattern matrix

loadings between .438 and .753 and structure matrix loadings between .513 and .739). Item 5a asked "How do you feel about reading different types of writing (such as poetry, mysteries, comics, informational, etc.) from a book?"

Research Question 1 Conclusion

The initial results of the confirmatory factor analysis indicated the survey items loaded as intended but accounted for less than half of the common variance. Because of the large percentage of unaccounted variance, I ran an exploratory factor analysis to investigate what other factors might be affecting the three-factor model. Results from the EFA indicated the survey had some items that were not measuring students' attitudes about reading from the three different media being measured (print, e-reader, Internet). The items that did not clearly distinguish students' attitudes between the text formats were removed from the survey and the data were analyzed again to determine if the validity of the survey was stronger with the ambiguous items removed.

With the three sets of items removed (items 2a, 2b, 2c; 7a, 7b, 7c; 8a, 8b, 8c) the results indicated greater validity for the survey. For the three-factor model, the communalities account for approximately 52.4% of the total variance. When the factors were constrained to three the items loaded cleanly together; all items regarding print loaded together, e-reader items loaded together, and Internet items loaded together. The results indicate the items measure students' attitudes about reading various mediums of text.

Research Question 2

To answer research question 2, determining the reliability of the survey, Cronbach's alpha was calculated because it is the suggested method for examining reliability of new

survey instruments in books that guide development of affective instruments (e.g., Anderson & Bourke, 2000; de Vaus, 1990; Gable & Wolf, 1993). Additionally, Nunnally (1967) advises the use of Cronbach's alpha in new survey development. A commonly accepted range of how alpha scores describe internal consistency (Crocker & Angina, 2006; Nunnally, 1978), is outlined below. Alpha was run for various groups (composite score, grade level, and school, and gender) to determine if reliability between the groups was significantly different.

Table 19. Cronbach's alpha Values and Internal Consistency.

Cronbach's alpha	Internal Consistency
$\alpha \geq 0.7$	strong
$0.5 \leq \alpha < 0.7$	moderate
$\alpha < 0.5$	weak

Alpha was initially calculated for the composite score and the factors by which students can be differentiated (school, grade, gender) to determine if the items function differently based on these factors. Alpha was then calculated for the items that loaded on each factor from the factor analysis discussed in research question one. Once items were removed from the survey, alpha was rerun for each group discussed above.

Initial Alpha for Composite Score

Cronbach's alpha was first calculated for the composite score ($\alpha = .872$). This strong alpha indicates the composite score is reliable because alpha scores above 0.7 are considered strong (Crocker & Angina, 2006; Nunnally, 1978). Table 19 presents the item means, standard deviations, item-total correlation, and alpha if item was deleted. Review of the alpha if the item was deleted demonstrates the strength of each item because remains

between .863 and .871, which means that removal of any item would not affect the composite alpha score significantly.

Table 20. Initial Cronbach's alpha for Composite Scores; alpha if all items retained = .872.

How do you feel about…	item mean	item standard deviation	item- total correlation	alpha if item deleted
…reading to learn new things from a book? (1a)	3.31	.680	.363	.869
…reading to learn new things from an e-reader? (1b)	3.39	.747	.430	.867
…reading to learn new things from the Internet? (1c)	3.14	.814	.375	.869
…reading magazines? (2a)	2.95	.949	.296	.871
…reading magazines from an e-reader? (2b)	2.89	.964	.503	.865
…reading magazines from the Internet? (2c)	2.45	.955	.556	.863
…learning about something that interests you from a book? (3a)	3.47	.662	.354	.869
…learning about something that interests you from an e-reader? (3b)	3.40	.719	.452	.867
…learning about something that interests you from the Internet? (3c)	3.21	.796	.419	.867
…reading something you chose from an author that is new to you from a book? (4a)	3.16	.741	.400	.868
…reading something you chose from an author that is new to you from an e-reader? (4b)	3.18	.827	.525	.864
…reading something you chose from an author that is new to you from the Internet? (4c)	2.76	.923	.536	.864
…reading different types of writing from a book? (5a)	3.37	.751	.286	.871
reading different types of writing from an e-reader? (5b)	3.33	.792	.500	.865
reading different types of writing from the Internet? (5c)	2.87	.907	.510	.865
…telling a friend about something you read from a book? (6a)	3.36	.709	.370	.869

Table 20 (continued)

…telling a friend about something you read from an e-reader? (6b)	3.16	.829	.455	.866
…telling a friend about something you read from the Internet? (6c)	2.94	.907	.482	.865
…reading the news from a newspaper? (7a)	2.43	1.041	.333	.871
…reading the news from an e-reader? (7b)	2.69	.958	.537	.864
…reading the news from the Internet? (7c)	2.61	1.030	.498	.865
…when a friend reads with you from a book? (8a)	3.29	.838	.372	.869
…when a friend reads with you from an e-reader? (8b)	3.13	.946	.443	.867
…when a friend reads with you from the Internet? (8c)	2.93	.962	.514	.864

Note: N=414.

Initial Alpha by Schools

The purpose of examining alpha reliability by schools is to determine if there is a significant difference in the reliability between the two schools in this study. As shown in table 20 above, the alpha reliability, when run by school, indicates at both schools' results had strong reliability (school 1: $\alpha = .863$; school 2: $\alpha = .880$). Removal of any item would not significantly affect the reliability for either school. The reliability alpha with items removed range from .853 to .864 for school 1 and from .871 to .878 for school 2.

Initial Alpha by Gender

When examining the alpha reliability for the items by the students' gender the results indicated a strong reliability (male: $\alpha = .864$; female: $\alpha = .874$). Removing any item would not significantly affect the composite reliability, which indicates all items were

reliable. If items were removed the alpha would range from .855 to .866 for males and from .865 to .874 for females. Table 21 presents the results by gender.

Initial Alpha by Grade Level

When the alpha reliability was run by grade level, the results indicate that all grade levels in the sample had strong reliability (3rd grade: α = .870; 4th grade: α = .886; 5th grade: α = .856). Removal of any item would not significantly affect the reliability for any grade level. The reliability alpha with items removed range from .860 to .870 for third grade, from .878 to .889 for fourth grade, and from .846 to .857 for fifth grade. Results are displayed in table 22 below.

Alpha for Factors Constrained to Three

Alpha was then run for each of the three factors based on results from the confirmatory factor analysis. As discussed above, the factors were constrained to three because the logic of the survey was to measure students' attitudes toward reading across three media of text (print, e-reader, and Internet). Reliability was high for e-reader (α = .827) and Internet (α = .833) and moderately high for print (α = .689). Results are further discussed below.

Initial Alpha for e-reader

The reliability for the items that loaded in the factor named e-reader was high (α = .827) and not significantly affected with removal of any item. Alpha if an item was removed did not gain strength for any item and was reduced to a range of .796 and .823.

Table 21. Initial Cronbach's alpha by school; alpha if all items retained: school 1: α = .863; school 2: α = .880.

How do you feel about…	item mean		item standard deviation		item- total correlation		alpha if item deleted	
	School 1	School 2	School 1	School 2	School 1	School 2	School 1	School 2
…reading to learn new things from a book? (1a)	3.29	3.34	.663	.699	3.54	.378	.860	.877
…reading to learn new things from an e-reader? (1b)	3.39	3.39	.749	.751	.431	.432	.857	.876
…reading to learn new things from the Internet? (1c)	3.16	3.12	.816	.813	.422	.330	.858	.878
…reading magazines? (2a)	2.93	2.98	.915	.987	.248	.345	.864	.878
…reading magazines from an e-reader? (2b)	2.92	2.85	.964	.965	.438	.566	.857	.872
…reading magazines from the Internet? (2c)	2.54	2.36	.924	.982	.519	.587	.854	.871
…learning about something that interests you from a book? (3a)	3.44	3.52	.629	.696	.369	.351	.859	.878
…learning about something that interests you from an e-reader? (3b)	3.39	3.41	.713	.727	.465	.446	.857	.875
…learning about something that interests you from the Internet? (3c)	3.24	3.17	.792	.800	.412	.425	.858	.876
…reading something you chose from an author that is new to you from a book? (4a)	3.17	3.14	.724	.761	.349	.447	.860	.875
…reading something you chose from an author that is new to you from an e-reader? (4b)	3.18	3.17	.777	.879	.526	.526	.855	.873
…reading something you chose from an author that is new to you from the Internet? (4c)	2.77	2.74	.899	.950	.553	.521	.853	.873

Table 21 (continued)

…reading different types of writing from a book? (5a)	3.39	3.35	.667	.835	.198	.354	.864	.878
reading different types of writing from an e-reader? (5b)	3.38	3.27	.731	.853	.420	.563	.858	.872
reading different types of writing from the Internet? (5c)	2.97	2.75	.851	.953	.506	.510	.855	.873
…telling a friend about something you read from a book? (6a)	3.31	3.42	.695	.720	.392	.365	.859	.877
…telling a friend about something you read from an e-reader? (6b)	3.14	3.19	.801	.861	.420	.493	.858	.874
…telling a friend about something you read from the Internet? (6c)	2.99	2.90	.897	.918	.516	.449	.854	.875
…reading the news from a newspaper? (7a)	2.37	2.49	1.031	1.051	.270	.406	.864	.877
…reading the news from an e-reader? (7b)	2.69	2.68	.925	.996	.519	.555	.854	.872
…reading the news from the Internet? (7c)	2.68	2.54	1.036	1.021	.529	.467	.854	.875
…when a friend reads with you from a book? (8a)	3.38	3.18	.762	.905	.358	.379	.860	.877
…when a friend reads with you from an e-reader? (8b)	3.25	2.99	.869	1.008	.391	.482	.859	.874
…when a friend reads with you from the Internet? (8c)	3.06	2.78	.874	1.032	.552	.481	.853	.874

Note: School 1, N=216. School 2; N=198.

Table 22. Initial Cronbach's Alpha by Gender; alpha if all items retained: male: α = .864; female: α = .874.

How do you feel about…	item mean		item standard deviation		item- total correlation		alpha if item deleted	
	male	female	male	female	male	female	male	female
…reading to learn new things from a book? (1a)	3.30	3.33	.721	.638	.374	.353	.861	.872
…reading to learn new things from an e-reader? (1b)	3.29	3.49	.808	.785	.433	.400	.859	.871
…reading to learn new things from the Internet? (1c)	3.15	3.13	.831	.799	.314	.464	.862	.869
…reading magazines? (2a)	2.75	3.17	1.048	.785	.252	.305	.866	.873
…reading magazines from an e-reader? (2b)	2.74	3.04	.994	.910	.488	.492	.857	.868
…reading magazines from the Internet? (2c)	2.37	2.54	.979	.924	.544	.559	.855	.866
…learning about something that interests you from a book? (3a)	3.44	3.50	.706	.615	.354	.348	.861	.872
…learning about something that interests you from an e-reader? (3b)	3.30	3.50	.748	.675	.405	.482	.860	.869
…learning about something that interests you from the Internet? (3c)	3.20	3.21	.758	.834	.425	.426	.859	.870
…reading something you chose from an author that is new to you from a book? (4a)	3.05	3.27	.809	.649	.386	.386	.860	.871
…reading something you chose from an author that is new to you from an e-reader? (4b)	3.04	3.31	.870	.759	.568	.445	.855	.869
…reading something you chose from an author that is new to you from the Internet? (4c)	2.70	2.82	.962	.881	.514	.557	.856	.866

Table 22 (continued)

…reading different types of writing from a book? (5a)	3.32	3.43	.820	.672	.266	.294	.864	.873
reading different types of writing from an e-reader? (5b)	3.28	3.37	.793	.791	.464	.535	.858	.867
reading different types of writing from the Internet? (5c)	2.92	2.82	.957	.853	.480	.592	.857	.865
…telling a friend about something you read from a book? (6a)	3.27	3.45	.740	.666	.354	.361	.861	.872
…telling a friend about something you read from an e-reader? (6b)	3.02	3.30	.842	.794	.395	.492	.860	.868
…telling a friend about something you read from the Internet? (6c)	2.90	2.99	.935	.878	.469	.495	.858	.868
…reading the news from a newspaper? (7a)	2.48	2.38	1.086	.994	.345	.352	.863	.873
…reading the news from an e-reader? (7b)	2.58	2.80	.985	.920	.558	.495	.855	.868
…reading the news from the Internet? (7c)	2.60	2.63	1.035	1.027	.492	.518	.857	.867
…when a friend reads with you from a book? (8a)	3.16	3.41	.867	.790	.427	.274	.859	.874
…when a friend reads with you from an e-reader? (8b)	3.00	3.26	.950	.925	.439	.421	.859	.870
…when a friend reads with you from the Internet? (8c)	2.81	3.04	1.006	.902	.472	.544	.858	.866

Note: male N = 208. Female N = 206.

Table 23. Initial Cronbach's Alpha by Grade Level; alpha if all items retained: 3rd grade: α = .870; 4th grade: α = .886; 5th grade: α = .856.

How do you feel about…	item mean			item standard deviation			item- total correlation			alpha if item deleted		
	3	4	5	3	4	5	3	4	5	3	4	5
…reading to learn new things from a book? (1a)	3.42	3.35	3.16	.685	.640	.696	.404	.368	.350	.866	.884	.853
…reading to learn new things from an e-reader? (1b)	3.36	3.39	3.43	.807	.728	.708	.408	.481	.394	.866	.881	.852
…reading to learn new things from the Internet? (1c)	3.11	3.14	3.17	.789	.910	.731	.300	.477	.307	.869	.881	.854
…reading magazines? (2a)	2.90	2.94	3.02	1.053	.911	.880	.313	.193	.421	.870	.889	.851
…reading magazines from an e-reader? (2b)	2.87	2.92	2.87	1.006	.890	1.002	.567	.469	.482	.861	.881	.849
…reading magazines from the Internet? (2c)	2.39	2.54	2.43	.977	1.000	.880	.589	.529	.555	.860	.880	.846
…learning about something that interests you from a book? (3a)	3.53	3.51	3.37	.700	.657	.621	.336	.350	.403	.868	.884	.852
…learning about something that interests you from an e-reader? (3b)	3.35	3.40	3.46	.776	.691	.690	.481	.460	.410	.864	.882	.851
…learning about something that interests you from the Internet? (3c)	3.13	3.22	3.26	.888	.768	.725	.354	.540	.350	.868	.880	.853
…reading something you chose from an author that is new to you from a book? (4a)	3.27	3.08	3.12	.717	.838	.638	.413	.410	.396	.866	.883	.852
…reading something you chose from an author that is new to you from an e-reader? (4b)	3.24	3.06	3.23	.842	.915	.693	.488	.604	.471	.864	.878	.849
…reading something you chose from an author that is new to you from the Internet? (4c)	2.81	2.69	2.78	.948	.997	.810	.517	.616	.444	.862	.877	.850
…reading different types of writing from a book? (5a)	3.35	3.39	3.39	.795	.774	.682	.258	.345	.234	.870	.884	.856

Table 23 (continued)

reading different types of writing from an e-reader? (5b)	3.27	3.31	3.40	.805	.795	.777	.455	.568	.467	.865	.879	.849
reading different types of writing from the Internet? (5c)	2.89	2.84	2.87	.920	.984	.808	.437	.618	.442	.865	.877	.850
…telling a friend about something you read from a book? (6a)	3.33	3.34	3.41	.711	.785	.616	.431	.344	.332	.865	.884	.853
…telling a friend about something you read from an e-reader? (6b)	3.10	3.17	3.22	.888	.836	.760	.488	.456	.409	.863	.882	.851
…telling a friend about something you read from the Internet? (6c)	2.88	2.97	2.99	.906	.975	.832	.493	.473	.481	.863	.881	.849
…reading the news from a newspaper? (7a)	2.21	2.58	2.49	1.082	1.045	.964	.392	.318	.284	.867	.886	.857
…reading the news from an e-reader? (7b)	2.55	2.82	2.68	1.042	.969	.837	.512	.562	.546	.863	.879	.846
…reading the news from the Internet? (7c)	2.39	2.72	2.72	1.100	1.031	.923	.526	.559	.385	.862	.879	.852
…when a friend reads with you from a book? (8a)	3.44	3.32	3.08	.719	.889	.859	.404	.366	.403	.866	.884	.604
…when a friend reads with you from an e-reader? (8b)	3.19	3.12	3.07	.966	.975	.894	.431	.481	.414	.865	.881	.851
…when a friend reads with you from the Internet? (8c)	2.96	2.86	2.97	.996	1.020	.858	.455	.566	.525	.865	.878	.847

Note: 3rd grade N = 135; 4th grade N = 145; 5th grade N = 134.

Table 24. Initial Alpha for e-reader.

How do you feel when…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading to learn new things from an e-reader? (1b)	3.39	.748	.599	.802
…reading magazines from an e-reader? (2b)	2.88	.960	.533	.811
…learning about something that interests you from an e-reader? (3b)	3.41	.713	.596	.803
reading something you chose from an author that is new to you from an e-reader? (4b)	3.18	.829	.630	.796
reading different types of writing from an e-reader? (5b)	3.33	.790	.634	.797
…telling a friend about something you read from an e-reader? (6b)	3.16	.832	.576	.804
…reading the news from an e-reader? (7b)	2.70	.950	.448	.823
…when a friend reads with you from an e-reader? (8b)	3.11	.950	.455	.822

Note: α = .827. N = 438.

Initial Alpha for Internet

The reliability for the items that loaded in the factor named Internet was also high (α = .833) and not significantly affected with removal of any item. Alpha if an item was removed did not gain strength for any item and was reduced to a range of .803 and .823.

Table 25. Initial Alpha for Internet.

How do you feel when…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading to learn new things from the Internet? (1c)	3.14	.806	.526	.818
…reading magazines from the Internet(2c)	2.45	.953	.490	.823

Table 25 (continued)

…learning about something that interests you from the Internet? (3c)	3.20	.786	.576	.813
reading something you chose from an author that is new to you from the Internet? (4c)	2.76	.914	.640	.803
reading different types of writing from the Internet? (5c)	2.87	.905	.625	.805
…telling a friend about something you read from the Internet? (6c)	2.95	.900	.536	.817
…reading the news from the Internet(7c)	2.63	1.019	.568	.813
…when a friend reads with you from the Internet? (8c)	2.93	.961	.539	.817

Note: α = .833. N = 431.

Initial Alpha for Print

The factor named Print had a moderately high reliability (α = .689) that would not be significantly affected by the removal of any item. The alpha if an item was deleted would range from .636 to .674, all within the moderately high range.

Table 26. Initial Alpha for Print.

How do you feel when…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading to learn new things from a book? (1a)	3.32	.677	.474	.642
…reading magazines from a book(2a)	2.96	.934	.283	.686
…learning about something that interests you from a book? (3a)	3.48	.655	.475	.643
reading something you chose from an author that is new to you from a book? (4a)	3.17	.739	.487	.636
reading different types of writing from a book? (5a)	3.39	.745	.353	.665

Table 26 (continued)

…telling a friend about something you read from a book? (6a)	3.34	.712	.396	.656
…reading the news from a book? (7a)	2.43	1.043	.347	.674
…when a friend reads with you from a book? (8a)	3.28	.831	.321	.673

Note: α = .689. N = 436.

Alpha by Factors with Eigenvalues Greater than One

Next, the alpha reliability coefficient was calculated for each factor with an Eigenvalue greater than one to determine if there was a significant difference in the reliability of the survey when items were not removed. There were eight factors and alpha ranged from low (.298) to high (.813). The results for seven of the eight factors are discussed below; factor eight (self-selected print) yielded only one item thus alpha could not be obtained.

Alpha for e-reader

As shown in table 26 above, the five items in the e-reader factor have a strong reliability (α = .813). Removal of any item would slightly lower the reliability to a range of .766 to .799, but the results would not be significant because alpha would still be greater than 0.7 and considered strong.

Table 27. Alpha for e-reader.

How do you feel about…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading to learn new things from an e-reader? (1b)	3.40	.746	.622	.771
…learning about something that interests you from an e-reader? (3b)	3.41	.710	.641	.767

Table 27 (continued)

reading something you chose from an author that is new to you from an e-reader? (4b)	3.19	.827	.636	.766
reading different types of writing from an e-reader? (5b)	3.34	.788	.590	.780
…telling a friend about something you read from an e-reader? (6b)	3.16	.829	.531	.799

Note: alpha = .813. N = 445.

Alpha for Internet

The five items that loaded on the factor for Internet had a strong reliability (α = .780). The alpha is not significantly reduced when any item is removed and does not gain strength with the removal of any item. The alpha would range from .714 to .765 with an item removed.

Table 28. Alpha for Internet.

How do you feel about…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading to learn new things from an e-reader? (1b)	3.14	.806	.511	.753
…learning about something that interests you from an e-reader? (3b)	3.21	.783	.576	.734
reading something you chose from an author that is new to you from an e-reader? (4b)	2.76	.912	.625	.714
reading different types of writing from an e-reader? (5b)	2.87	.902	.589	.727
…telling a friend about something you read from an e-reader? (6b)	2.96	.894	.478	.765

Note: alpha = .780. N = 442.

Alpha for Learning from Print

With only two items in the factor named Learning from Print the alpha was moderate (α = .642) and the alpha if an item was deleted could not be obtained with only one item remaining. This indicates the reliability cannot be statistically calculated with only one item.

Table 29. Alpha for Learning from Print.

How do you feel about…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading to learn new things from a book? (1a)	3.31	.675	.473	*
…learning about something that interests you from a book? (3a)	3.48	.651	.473	*

*Note: alpha = .642. N = 451. *single item will not have an alpha value.*

Alpha for Reading with Friends

The Reading with Friends factor contained three items and had strong reliability (α = .770). Removal of item 8a or 8c would not result in a significant reduction in alpha (α = .711; α = .752) but without item 8b alpha drops to .599.

Table 30. Alpha for Reading with Friends.

How do you feel about…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…when friends read with you from a book? (8a)	3.28	.837	.589	.711
…when friends read with you from an e-reader? (8b)	3.12	.948	.682	.599
…when friends read with you from the Internet? (8c)	2.93	.953	.552	.752

Note: alpha = .770. N = 441.

Alpha for Reading Magazines

Reliability for reading magazines is strong (α = .722) but removal of any item would reduce alpha to a range from .586 and .683. All items are needed in this factor to maintain a strong reliability.

Table 31. *Alpha for Magazine.*

How do you feel about…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading magazines? (2a)	2.97	.945	.501	.683
…reading magazines from an e-reader? (2b)	2.90	.961	.581	.586
…reading magazines from an e-reader? (2c)	2.46	.951	.547	.629

Note: alpha = .722. N = 437.

Alpha for Recreational Print

The reliability for reading recreational print is low (α = .298) and with only two items in this factor an alpha if either item was removed could not be obtained.

Table 32. Alpha for Recreational Print.

How do you feel about…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading different types of writing from a book? (5a)	3.38	.751	.175	*
…telling a friend about something you read from a book? (6a)	3.34	.716	.175	*

*Note: alpha = .298. N = 447. *single item will not have an alpha value.*

Alpha for News

The reliability for reading the news was high (α = .722) and would remain moderately high if any item was removed (α ranges from .607 to .660).

Table 33. Alpha for News.

How do you feel about…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading the news from a newspaper? (7a)	2.45	1.046	.523	.660
…reading the news from an e-reader? (7b)	2.70	.955	.567	.607
…reading the news from the Internet? (7c)	2.61	1.019	.541	.636

Note: alpha=.722. N=443.

Alpha for Self-Selected Print

The final factor has only one item. Alpha cannot be obtained for a single item. Because alpha cannot be obtained the reliability of this item is unknown. This contributes to the need to combine factors; merging factors allows the reliability to be investigated.

Table 34. Alpha for Self-Selected Print.

How do you feel about…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading something you chose by authors that are new to you from a book? (4a)	3.17	.734	*	*

*Note: N = 451. *single item will not have item-total correlation or an alpha value.*

Alpha for Composite Score after Items Removed

Based on analysis from the factor analysis, I withdrew nine items from the survey and reran the data to determine the reliability. Alpha remained high (α = .822) for the composite score and would not be significantly affected by removing any single item. Alpha would remain high with a range from .804 and .819. The alpha score when the items are removed maintains a higher value for each item than when alpha was calculated with all

items. This information tells me that the reliability of the instrument is greater when the items are removed from the survey.

Table 35. Alpha for Composite Score after Items Removed.

How do you feel about…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading to learn new things from a book? (1a)	3.31	.679	.397	.814
…reading to learn new things from an e-reader? (1b)	3.40	.740	.468	.810
…reading to learn new things from the Internet? (1c)	3.14	.811	.371	.816
…learning about something that interests you from a book? (3a)	3.48	.657	.362	.816
…learning about something that interests you from an e-reader? (3b)	3.41	.712	.513	.807
…learning about something that interests you from the Internet? (3c)	3.20	.789	.413	.813
…reading something you chose from an author that is new to you from a book? (4a)	3.16	.739	.398	.814
…reading something you chose from an author that is new to you from an e-reader? (4b)	3.18	.826	.543	.804
…reading something you chose from an author that is new to you from the Internet? (4c)	2.76	.916	.517	.806
…reading different types of writing from a book? (5a)	3.38	.749	.309	.819
reading different types of writing from an e-reader? (5b)	3.34	.789	.515	.806
reading different types of writing from the Internet? (5c)	2.87	.905	.499	.807

Table 35 (continued)

…telling a friend about something you read from a book? (6a)	3.36	.704	.371	.816
…telling a friend about something you read from an e-reader? (6b)	3.16	.832	.437	.811
…telling a friend about something you read from the Internet? (6c)	2.95	.897	.441	.812

Note: α = .822; N = 432.

Alpha by School after Items Removed

The reliability for each school remained high after the nine items were removed from the survey (school 1 α = .821; school 2 α = .823). The removal of any item would not significantly affect the alpha for either school. If an item were removed alpha for school one would range from .802 to .824 and alpha for school two would range from .804 to .821. For school one the alpha would be slightly higher if item 5a (reading different types of writing from a book) was removed, but the difference is not significant.

Alpha by Gender after Items Removed

The reliability for the items when separated by gender was strong (male α = .815; female: α = .827) and would remain strong if any item was removed. For males, if an item were removed the new alpha would range from .793 to .812. For females the new alpha if an item was removed would range from .810 to .825. The removal of any item would not increase alpha at all and the reduced alpha value is not significantly different.

Alpha by Grade Level after Items Removed

When analyzed by grade level, the alpha reliability coefficient was strong (3rd grade: α = .808; 4th grade: α = .851; 5th grade: α = .795). The alpha would not be significantly

affected if any item were removed for any grade level. The alpha would range from .790 to .806 in third grade, from .832 to .850 in fourth grade, and from .775 to .793 in fifth grade.

Alpha for Factors Constrained to Three after Items Removed

The items were again run based on three constrained factors after the nine items were removed. Alpha reliability remained between a moderately high alpha (.678) and a high alpha (.813) for all three factors.

Alpha for e-reader

The e-reader items had the highest reliability with a strong alpha (α = .813). Removing any item would not significantly lower the reliability and would result in an alpha ranging between .767 and .799.

Alpha for Internet

The alpha for Internet items was moderately high (α = .780). Alpha would remain moderately high (.714 - .765) if any item was removed.

Alpha for Print

The reliability for print items was moderate with alpha at .678. Removal of any items would not increase alpha and the reduction of alpha would not be significant with a range from .595 to .668.

Research Question 2 Conclusion

The items on the survey ranged from a low to high reliability based on the alpha coefficient (ranging between .298 and .886) with all but one at the moderate to high level. This indicates the composite is reliable and the survey would be a reliable tool for teachers to use to measure students' attitudes toward reading different mediums of text.

Table 36. Alpha by Schools after Items Removed.

How do you feel about…	item mean		item standard deviation		item-total correlation		alpha if item deleted	
	School 1	School 2	School 1	School 2	School 1	School 2	School 1	School 2
…reading to learn new things from a book? (1a)	3.29	3.34	.669	.691	.342	.455	.817	.812
…reading to learn new things from an e-reader? (1b)	3.40	3.40	.739	.742	.473	.464	.809	.811
…reading to learn new things from the Internet? (1c)	3.16	3.12	.824	.799	.435	.307	.811	.821
…learning about something that interests you from a book? (3a)	3.44	3.52	.625	.688	.352	.377	.816	.817
…learning about something that interests you from an e-reader? (3b)	3.39	3.43	.707	.719	.539	.490	.805	.810
…learning about something that interests you from the Internet? (3c)	3.24	3.16	.784	.794	.426	.399	.812	.815
…reading something you chose from an author that is new to you from a book? (4a)	3.18	3.14	.726	.754	.325	.470	.818	.811
…reading something you chose from an author that is new to you from an e-reader? (4b)	3.19	3.17	.777	.877	.558	.530	.803	.806
…reading something you chose from an author that is new to you from the Internet? (4c)	2.77	2.74	.902	.932	.555	.480	.802	.810
…reading different types of writing from a book? (5a)	3.41	3.36	.670	.827	.221	.385	.824	.817
reading different types of writing from an e-reader? (5b)	3.39	3.27	.732	.844	.464	.562	.809	.804

Table 36 (continued)

reading different types of writing from the Internet? (5c)	2.98	2.75	.849	.949	.516	.488	.805	.810
…telling a friend about something you read from a book? (6a)	3.31	3.42	.689	.718	.403	.350	.813	.818
…telling a friend about something you read from an e-reader? (6b)	3.14	3.18	.808	.860	.430	.447	.812	.812
…telling a friend about something you read from the Internet? (6c)	3.00	2.90	.891	.903	.483	399	.808	.816

Note: School 1: α = .821, N = 224. School 2: α = .823, N = 208.

Table 37. Alpha by Gender after Items Removed.

How do you feel about…	item mean		item standard deviation		item- total correlation		alpha if item deleted	
	male	female	male	female	male	female	male	female
…reading to learn new things from a book? (1a)	3.29	3.33	.724	.632	.405	.388	.806	.820
…reading to learn new things from an e-reader? (1b)	3.30	3.50	.799	.662	.468	.452	.801	.816
…reading to learn new things from the Internet? (1c)	3.15	3.13	.839	.784	.341	.420	.810	.818
…learning about something that interests you from a book? (3a)	3.46	3.50	.700	.610	.371	.348	.808	.822
…learning about something that interests you from an e-reader? (3b)	3.31	3.51	.741	.669	.470	.549	.801	.811
…learning about something that interests you from the Internet? (3c)	3.20	3.20	.749	.829	.447	.390	.803	.821

Table 37 (continued)

…reading something you chose from an author that is new to you from a book? (4a)	3.07	3.26	.811	.646	.369	.420	.808	.818
…reading something you chose from an author that is new to you from an e-reader? (4b)	3.06	3.30	.867	.765	.571	.495	.793	.813
…reading something you chose from an author that is new to you from the Internet? (4c)	2.71	2.81	.960	.868	.504	.528	.798	.811
…reading different types of writing from a book? (5a)	3.34	3.43	.818	.672	.304	.307	.812	.825
reading different types of writing from an e-reader? (5b)	3.30	3.37	.792	.786	.495	.536	.799	.810
reading different types of writing from the Internet? (5c)	2.93	2.81	.952	.852	.524	.505	.797	.812
…telling a friend about something you read from a book? (6a)	3.27	3.45	.730	.667	.342	.386	.809	.820
…telling a friend about something you read from an e-reader? (6b)	3.03	3.29	.846	.799	.381	.483	.807	.814
…telling a friend about something you read from the Internet? (6c)	2.91	2.99	.923	.870	.420	.461	.805	.816

Note: male: α = .815, N = 217. female: α = .827, N = 215.

Table 38. Alpha by Grade Level after Items Removed.

How do you feel about…	item mean			item standard deviation			item-total correlation			alpha if item deleted		
	3	4	5	3	4	5	3	4	5	3	4	5
…reading to learn new things from a book? (1a)	3.44	3.34	3.16	.687	.645	.681	.445	.384	.408	.796	.846	.783
…reading to learn new things from an e-reader? (1b)	3.38	3.39	3.44	.792	.725	.702	.433	.532	.434	.796	.839	.781
…reading to learn new things from the Internet? (1c)	3.13	3.13	3.16	.801	.906	.716	.313	.477	.271	.805	.842	.793
…learning about something that interests you from a book? (3a)	3.55	3.52	3.36	.688	.654	.614	.371	.339	..415	.801	.848	.783
…learning about something that interests you from an e-reader? (3b)	3.35	3.41	3.47	.762	.688	.683	.526	.519	.506	.790	.840	.776
…learning about something that interests you from the Internet? (3c)	3.15	3.22	3.25	.877	.761	.721	.342	.541	.347	.803	.839	.788
…reading something you chose from an author that is new to you from a book? (4a)	3.29	3.09	3.11	.718	.841	.624	.433	.388	.384	.797	.847	.785
…reading something you chose from an author that is new to you from an e-reader? (4b)	3.24	3.06	3.24	.830	.927	.688	.474	.640	.475	.793	.832	.778
…reading something you chose from an author that is new to you from the Internet? (4c)	2.82	2.68	2.77	.944	.990	.799	.509	.605	.383	.790	.834	.785
…reading different types of writing from a book? (5a)	3.39	3.39	3.36	.785	.771	.691	.291	.357	.267	.806	.848	.793
reading different types of writing from an e-reader? (5b)	3.29	3.31	3.41	.801	.798	.767	.466	.571	.508	.794	.837	.775

Table 38 (continued)

reading different types of writing from the Internet? (5c)	2.91	2.83	2.87	.908	.992	.803	.426	.601	.429	.797	.834	.781
…telling a friend about something you read from a book? (6a)	3.32	3.35	3.41	.706	.781	.611	.453	.321	.349	.795	.850	.787
…telling a friend about something you read from an e-reader? (6b)	3.08	3.18	3.23	.905	.831	.752	.428	.447	.452	.797	.843	.779
…telling a friend about something you read from the Internet? (6c)	2.88	2.96	3.01	.889	.968	.827	.402	.494	.412	.799	.841	.783

Note: 3rd grade: α = .808, N = 144; 4th grade: α = .851, N = 148; 5th grade: α = .795, N = 140.

Table 39. Alpha for e-reader.

How do you feel when…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading to learn new things from an e-reader? (1b)	3.40	.746	.622	.771
…learning about something that interests you from an e-reader? (3b)	3.41	.710	.641	.767
reading something you chose from an author that is new to you from an e-reader? (4b)	3.19	.827	.636	.766
reading different types of writing from an e-reader? (5b)	3.34	.788	.590	.780
…telling a friend about something you read from an e-reader? (6b)	3.16	.829	.531	.799

Note: α = .813. N = 445.

Table 40. Alpha for Internet.

How do you feel when…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading to learn new things from the Internet? (1c)	3.14	.806	.511	.753
…learning about something that interests you from the Internet? (3c)	3.21	.783	.576	.734
reading something you chose from an author that is new to you from the Internet? (4c)	2.76	.912	.625	.714
reading different types of writing from the Internet? (5c)	2.87	.902	.589	.727
telling a friend about something you read from the Internet? (6c)	2.96	.894	.478	.765

Note: α = .780. N = 442.

Table 41. Alpha for Print.

How do you feel when…	item mean	item standard deviation	item-total correlation	alpha if item deleted
…reading to learn new things from a book? (1a)	3.31	.677	.508	.595
…learning about something that interests you from a book? (3a)	3.48	.652	.497	.602
reading something you chose from an author that is new to you from a book? (4a)	3.17	.737	.451	.619
reading different types of writing from a book? (5a)	3.38	.751	.380	.653
…telling a friend about something you read from a book? (6a)	3.34	.717	.340	.668

Note: α = .678. N = 446.

Research Question 3

Research question 3, like question 1, is to investigate the construct validity. In research question 1 the items, which ask students about observable behaviors, were analyzed to determine how they loaded on the factors, which are unobservable. In research question 3 the items are analyzed for gender bias using cumulative logit modeling to predict or explain the probability of gender effecting students' attitudes toward reading.

Cumulative logit modeling is a form of logistic regression used with ordinal data, such as the rating scale used in the ATRS. The parameter, β, is of interest because it explains the effect of gender on item response, after controlling for responses on other items. When β is greater than zero, it is more likely for boys to exhibit a more positive attitude toward reading for that item. The estimated odds ratio is calculated with β and provides a value to indicate how much more or less likely boys are to have a more positive attitude toward an item than girls.

Table 41 (above) shows results of the cumulative logit model tests of interaction and main effects. The interaction shows if the difference between attitudes for boys and girls change with the total score. The test of main effects tells if there is a difference between genders after controlling for the total score. A p value less than .05 indicates there is a significant difference in the attitudes of boys and girls toward independent reading based on the results from the ATRS; the odds ratio ($e^{-\beta}$ in the table below) signifies the size of the effect, with 1.0 meaning no effect. For each specific item, an odds ratio lower than one indicates boys have a lower attitude than girls and an odds ratio greater than one indicate boys have a higher attitude toward reading than girls after controlling for the total score.

The interaction results indicate there is a significant difference between gender on only two items (5b: reading different types of writing from an e-reader; 6b: telling a friend about something you read from an e-reader) and that boys have a slightly better attitude for those two items. The odds ratio, however, indicates the effect is not very large ($e^{-\beta}$ for 5b=1.05; $e^{-\beta}$ for 6b=1.05). These results differ from the data in tables 21 and 36, which indicate the girls had a better attitude toward reading for these items. The test of main effects indicated a significant difference in gender for 11 items (1b, 2a, 2c, 3b, 4a, 4b, 6a, 6b, 7b, 8a, 8b). The odds ratio for the significant items ranged from 1.49 to 1.99, indicating boys were approximately one and a half to two times as likely to have a more positive attitude toward reading for the questions noted above on the ATRS as girls. Again, these results are not in line with the data in tables 21 and 36 which indicate that girls had a higher attitude toward reading.

The 11 items that yielded significant results based on the test of main effects ($p<.05$), came from two of the three sections of the survey (4 from print and 7 from e-reader). No item indicated boys were more than twice as likely as girls to have a more positive attitude toward reading as measured by the ATRS, and the results are not consistent with the data that indicated girls in this study had a higher attitude toward each of these items (results shown in Tables 21 and 36).

Table 42. Initial Parameter Estimates for Cumulative Logit Model.

Item	interaction					manifest (observed)				
How do you feel when…	β	SE	F	p	$e^{-\beta}$	β	SE	F	p	$e^{-\beta}$
…reading to learn new things from a book? (1a)	.012	.020	.326	.568	.99	-.056	.183	.096	.757	1.06
…reading to learn new things from an e-reader? (1b)	.014	.022	.435	.510	.99	**-.469**	**.184**	**6.469**	**.011**	**1.60**
…reading to learn new things from the Internet? (1c)	-.035	.020	3.063	.080	1.04	.054	.177	.092	.762	.95
…reading magazines? (2a)	-.002	.019	.015	,904	1.00	**-.687**	**.176**	**15.202**	**.000**	**1.99**
…reading magazines from an e-reader? (2b)	-.010	.021	.257	.612	1.01	**-.571**	**.174**	**10.722**	**.001**	**.1.77**
…reading magazines from the Internet? (2c)	.003	.021	.021	.884	1.00	-.302	.174	3.031	.082	1.35
…learning about something that interests you from a book? (3a)	-.002	.021	.011	.918	1.00	-.112	.186	.362	.548	1.12
…learning about something that interests you from an e-reader? (3b)	-.038	.023	2.822	.093	1.04	**-.589**	**.185**	**10.087**	**.001**	**1.80**
…learning about something that interests you from the Internet? (3c)	-.015	.020	.544	.461	1.02	-.078	.178	.194	.659	1.08
…reading something you chose from an author that is new to you from a book? (4a)	.006	.020	.095	.757	.99	**-.410**	**.184**	**4.977**	**.026**	**1.51**

Table 42 (continued)

…reading something you chose from an author that is new to you from an e-reader? (4b)	.034	.021	2.561	.110	.97	**-.587**	**.180**	**10.608**	**.001**	**1.80**
…reading something you chose from an author that is new to you from the Internet? (4c)	-.015	.020	.566	.452	1.02	-.159	.174	.834	.361	1.17
…reading different types of writing from a book? (5a)	-.005	.020	.069	.792	1.01	-.190	.182	1.091	.296	1.21
reading different types of writing from an e-reader? (5b)	**-.046**	**.023**	**3.937**	**.047**	**1.05**	-.229	.181	1.607	.205	1.26
reading different types of writing from the Internet? (5c)	-.015	.020	.507	.476	1.02	.333	.174	3.649	.056	.72
…telling a friend about something you read from a book? (6a)	-.010	.021	.234	.629	1.01	**-.568**	**.184**	**9.540**	**.002**	**1.76**
…telling a friend about something you read from an e-reader? (6b)	**-.046**	**.021**	**4.811**	**.028**	**1.05**	**-.672**	**.180**	**13.883**	**.000**	**1.96**
…telling a friend about something you read from the Internet? (6c)	-.016	.020	.629	.428	1.02	-.149	.174	.725	.394	1.16
…reading the news from a newspaper? (7a)	.002	.019	.013	.910	1.00	.166	.170	.955	.328	.85
…reading the news from an e-reader? (7b)	.013	.020	.402	.526	.99	**-.400**	**.173**	**5.346**	**.021**	**1.49**
…reading the news from the Internet? (7c)	-.012	.020	.339	.560	1.01	-.027	.171	.025	.875	1.03
…when a friend reads with you from a book? (8a)	.023	.020	1.237	.266	.98	**-.576**	**.182**	**10.064**	**.002**	**1.78**
…when a friend reads with you from an e-reader? (8b)	-.018	.021	.698	.403	1.02	**-.576**	**.178**	**10.543**	**.001**	**1.78**
…when a friend reads with you from the Internet? (8c)	-.020	.021	.889	.346	1.02	-.331	.174	3.615	.057	1.39

Total Score

The three research questions this study addresses led to exploration of the total score for the ATRS. As shown in Table 43 below, the students in school had a more positive attitude toward reading based on the mean total score for the survey with all eight items and when the three items were removed. However, when looking at the mean scores for the medium of text, students in School 2 had more positive attitudes toward print reading and when the three items were removed, School 2 students also had more positive attitudes toward reading from an e-reader. These results coincide with the higher percent of students in School 2 with access to e-readers in the home, although 100% of the third-grade students in School 1 have e-readers in school.

Table 43. Total Score Means on the ATRS by School.

School	Total Score All Items	Print All	e-reader All	Internet All	Total Score Items Removed	Print Items Removed	e-reader Items Removed	Internet Items Removed
1	74.03	25.28	25.27	23.41	48.28	16.59	16.47	15.15
2	72.74	25.47	25.05	22.40	47.91	16.80	16.53	14.71

The total scores by gender indicate the female students have a more positive attitude toward reading as measured in all sections of the ATRS, print, e-reader, and Internet. The results are the same for the survey with all eight items and when the three items were removed, as displayed in Table 43 above.

Table 44. Total Score Means on the ATRS by Gender.

Gender	Total Score All Items	Print All	e-reader All	Internet All	Total Score Items Removed	Print Items Removed	e-reader Items Removed	Internet Items Removed
male	71.67	24.85	24.30	22.69	47.34	16.40	16.00	14.92
female	75.17	25.92	26.06	23.16	48.88	17.00	17.01	14.95

The grade level difference in attitude, as shown in Table 44 above, indicates students in fourth grade have the most positive attitude when looking at the total score with all items but the least positive attitude when the three items were removed. When analyzed by medium of text the results are varied based on the presentation mode.

Table 45. Total Score Means on the ATRS by Grade.

Grade	Total Score All Items	Print All	e-reader All	Internet All	Total Score Items Removed	Print Items Removed	e-reader Items Removed	Internet Items Removed
3	72.96	25.53	24.85	22.71	48.22	16.92	16.35	14.93
4	73.69	25.55	25.19	22.87	47.85	16.71	16.37	14.81
5	73.57	25.01	25.46	23.20	48.26	16.41	16.80	15.07

The students' access to a computer and e-reader did not have an effect on their attitude toward reading as indicated by the means scores in Table 45 above.

Table 46. Total Score Means on the ATRS by Access.

Access	Total Score All Items	Print All	e-reader All	Internet All	Total Score Items Removed	Print Items Removed	e-reader Items Removed	Internet Items Removed
Computer in Home Yes	73.39	25.36	25.15	22.93	48.09	16.68	16.50	14.94

Table 46 (continued)

Computer in Home No	75.60	26.67	26.40	22.17	49.20	17.50	17.00	14.33
Use Computer out of School Yes	73.54	25.39	25.19	22.97	48.21	16.71	16.53	14.98
Use Computer out of School No	72.09	25.24	24.85	22.49	46.97	16.50	16.26	14.52
Computer at School Yes	73.51	25.38	25.18	23.00	48.18	16.70	16.51	14.99
Computer at School No	69.50	25.30	24.60	19.60	45.10	16.50	16.20	12.40
Use Computer at School Yes	73.52	25.41	25.19	22.95	48.14	16.71	16.51	14.94
Use Computer at School No	72.21	24.87	25.29	22.73	48.07	16.53	16.67	14.87
e-reader at Home Yes	73.65	25.37	25.51	22.88	48.38	16.72	16.79	14.91
e-reader at Home No	72.47	25.41	23.60	23.15	46.92	16.55	15.22	15.02
e-reader at School Yes	74.01	25.36	25.65	22.97	48.64	16.73	16.83	15.01
e-reader at School No	73.08	25.38	24.90	22.90	47.80	16.65	16.32	14.89

Data Analysis Conclusion

Initially, the factor analysis results indicated the survey had some items that were not measuring students' attitudes about reading from the three different mediums being measured (print, e-reader, Internet). These items were removed from the survey and data

was reanalyzed to determine if the validity of the survey was improved. The results indicated greater validity for the survey with the items removed. For the three-factor model, the communalities account for approximately 52.4% of the total variance. When the factors were constrained to three, the items loaded cleanly together; all items regarding print loaded together, e-reader items loaded together, and Internet items loaded together. The results indicate the items measure students' attitudes about reading various mediums of text.

Additionally, the survey is a reliable tool for teachers to use with their students. Results indicate all but one item yielded moderate to high alpha coefficient indicating moderate to high reliability for the survey as a whole. The item with a poor reliability asked how students feel about reading to learn new things from a book (item 1a). The companion items (1b and 1c) had acceptable alpha scores (1b=.771 and 1c=.753). This result might indicate the limited use of reference materials in the classrooms surveyed.

Finally, analysis with cumulative logit modeling shows the survey to yield similar results for boys and girls. The differences in responses that can be predicted by gender include boys preferring to read from an e-reader more than girls and boys liking to read magazines, chose their own material, and talk with a friend about what they read more than girls. Gender was a significant predictor for only two items in the final survey when the total score was taken into account. When the total score was controlled, meaning the total score was not taken into account, there was a significant difference between boys' and girls' attitudes for 11 items. These data do not match the data, which indicates girls had a higher attitude than boys on the items on the survey. The mean score for girls was higher than boys on each of these items. Past research indicates girls have a more positive attitude

toward reading than boys (Baker & Wigfield, 1999; McGeown, Goodwin, Henderson, & Wright, 2012; Senn, 2012) and the data from the survey matches this research.

Overall, analysis of data indicates the survey is reliable and valid for use with students in grades three through five. Teachers can confidently use the survey to determine how their students feel about reading from different mediums of text.

CHAPTER 5

Allocating considerable time for reading practice during the instructional day is a key aspect of building students' self-concept, which is vital to success with reading (Duffy, 1967). The classroom environment should contain a wide variety of reading material and an enthusiastic teacher to stimulate students' interest and promote the development of reading. In addition to being enthusiastic, the classroom teacher can foster students' reading habits by knowing both the interests and preferences of students and using that knowledge to structure the classroom atmosphere. The Attitude Toward Reading Survey (ATRS) is an instrument that teachers can use to collect information about students' preferences for three different mediums of reading.

The purpose of this study was to create a valid and reliable survey to measure elementary students' attitudes toward print and digital reading. The specific research questions I investigated were:

1. To what extent does evidence from a factor analysis support the Attitude Toward Reading Survey (ATRS) as a valid measure of students' attitudes toward reading?
2. To what extent does evidence from Cronbach's alpha support the Attitude Toward Reading Survey (ATRS) as a reliable measure of students' attitudes toward reading?
3. To what extent does item bias analysis using logistic regression support the Attitude Toward Reading Survey (ATRS) as a valid measure of students' attitudes toward reading?

The correlation between the amount of times students engage in reading and students' reading achievement is known and accepted in the field of education (Henk & McKenna, 2004; NICHHD, 2000). It is important for teachers to help students develop a reading habit and, according to Duffy (1967), the first step in this process is to allow a substantial amount of time for students to read during the instructional day. Additionally, Duffy encouraged teachers to pay attention to students' interests in order to suggest new reading material that would interest students. Furthermore, research has established a link between students' attitudes towards reading and the amount of time they engage in reading independently (Cline & Kretke, 1980; Hester & Ray, 2005; Holt & O'Tuel; Yoon, 2002). This research indicates the importance of developing students' reading habits and the ATRS can assist teachers in this task. It is vital for the ATRS to be a reliable and valid measure because presently there is a lack of "truly valid and reliable instrumentation" to measure students' attitudes toward reading (Henk & McKenna, 2004, p. 201).

Discussion of Findings

Research Question 1

To address item validity as asked in research question one, I ran confirmatory and exploratory factor analysis to provide statistical evidence of item validity. Initially, I ran a confirmatory factor analysis constrained to three factors since the survey was designed to measure attitudes towards reading across three media of text. Although the items loaded as expected, only 43.9% of the variance was explained. Because there was such a large percentage of unexplained variance, I ran the data with an exploratory factor analysis to determine if the items would load on factors differently than the survey was designed to

measure. The exploratory factor analysis resulted in eight factors that accounted for 71.5% of the variance, a much higher amount than with the confirmatory factor analysis.

The eight-factor model accounted for 71.5% of the variance, however, the way the items loaded indicated that some questions did not differentiate between how students felt about reading from the different mediums of text, which is the main purpose of the ATRS. Also, according to Cohen (1992), more than 25% of variance explained is a large amount. Although the survey items also provide information to teachers about students' attitudes toward reading for a variety of purposes, the ATRS was created with the intention of discerning the mediums of texts from which students prefer to read. Specifically, the three items that asked students' feelings toward reading about the news, the three items that questioned how students feel about reading magazines, and the three items that asked how students felt about reading with a friend each loaded with the like items on one factor. The questions were evaluated based on how they loaded on the exploratory factor analysis and because the purpose of the survey was to differentiate students' attitudes about reading from different mediums of text, these items were removed from the survey. A confirmatory factor analysis was rerun with the items removed and results indicated the three-factor model accounted for 52.4% of the variance. Although this is a much lower percentage than the 71.5% variance accounted for by the eight-factor model, the items are cleanly loaded on the three factors as intended, there are at least three items with significant loadings in each factor group, and the three factors measure different constructs. According to Suhr (2006), these guidelines are acceptable for determining the number of factors to retain.

Reading about the News

Elementary students do not tend to read the news as frequently as adults. Students rarely read the news or other authentic texts at school (Albright & Ariail, 2005). This may account for why students feel the same about reading the news from any of the three mediums of text surveyed about. Often, when given a choice of what to read, newspapers are not among the options (Wolk 2010). Without teacher modeling and availability of newspapers, it makes sense that students would not engage in reading newspapers and would not have varied attitudes about which medium to read from.

Reading from Magazines

Personal observations and experiences suggest that older students and adults tend to read magazines more often than elementary students. This tends to happen because when given time to read in the classroom, teachers often encourage students to read novels and picture books. Albright and Ariail (2005) note that students in Kindergarten through eighth grade rarely read magazines or on-line articles in school. However, students do tend to enjoy reading magazines when not in school (Ivey & Broaddus, 2001). It is important for ample materials, including magazine and newspapers, to be available in the classroom and for students to have options to select these materials to read (Ivey & Broaddus, 2001).

Reading with Peers

Typically emergent readers buddy read and read aloud with peers as they learn to read and students in third through fifth grade spend most of their time reading silently on their own (Fountas & Pinnell, 2001). Vygotsky's position that learning is social promotes the idea of reading with a peer and engaging in discussion. Lint (2010) investigated buddy reading with emergent readers in 1st grade and found other research that also looked into

peer reading with primary grades (e.g., Griffin, 2002; MacGillivray & Hawes, 1994). This could be why the students felt the same about reading with a peer regardless of the medium of text, it is not an activity intermediate students engage in often.

With the three sets of items removed, the confirmatory factor analysis was run again. The three-factor model explained over half of the variance (52.4%) and indicated the items on the ATRS are valid and the survey can be used as a valid measure of intermediate students' attitudes toward independent reading across three media of text.

Research Question 2

To respond to research question two, concerning survey reliability, I administered the survey to a large sample of students and calculated Cronbach's alpha for composite scores, gender, school, and grade level to determine the extent of the survey's reliability. Cronbach's alpha measures the internal consistency, which determines how well the items in the survey measure the same concept, in this case, students' attitudes toward reading. The reliability coefficient ranged from moderate to high for each factor by which students can be differentiated when using data from the ATRS with all 24 items and the CFA constrained to 3. The range of alpha scores by composite, school, grade, and gender was from .689 to .886. These results indicate the survey is a reliable measure for teachers to use to determine their students' attitudes toward reading print and digital texts. When alpha was calculated based on data from the EFA, which resulted in 8 factors, the reliability was not as strong (α ranged from .298 to .813). As discussed in chapter four, alpha scores between .70 and .90 indicate the items are correlated yet not redundant (Tavakol & Dennick, 2011).

Composite

Initially, the composite reliability was calculated using all 24 items (α=.872). This is a strong reliability score and indicates there is approximately 13% of random error in the observed scores from the students surveyed. The alpha would not be significantly affected if any item were removed (α remains between .863 and .871). After removal of items based on data from the EFA, the reliability score remained high (α=.822), although not quite as strong. If any of the remaining items were deleted, the alpha score would remain strong between .804 and .819. This data indicates the survey has strong reliability and would be a good tool for use with students in grades three through five.

In my a priori assumption I stated that the items on the survey were correlated because they all ask about students' attitudes toward reading. This assumption fits with the alpha results, which show the items are all asking about the same concept. It is vital for teachers to be aware of this information and adjust the classroom environment to match students' interests and attitudes (Ivey & Broaddus, 2001). For example, by knowing the medium of text from which students prefer to read, teachers can provide learning centers and activities with Internet, print books, and e-readers for the students. The ATRS also provides insight for teachers about students' particular interest in situational reading because each item includes a description of an area of interest (e.g., reading to learn new things, telling a friend about what was read). Providing centers that incorporate these types of reading can engage students in the activity. Additionally, teachers can provide various lessons to pique students' interests in the less desired forms of reading. The ATRS can provide information to help guide teachers in this endeavor.

Gender

In survey construction, it is important to be aware of gender differences because a reliable survey for use in a classroom is most likely to be used if it can be used with both girls and boys. The differences between students' access to technology was not significantly varied between boys and girls. The alpha reliability was strong when analyzed by gender (male α= .815; female α=.827). The strong alpha indicates the ATRS is a reliable measure for both boys and girls.

School

The ATRS is intended to investigate students' attitudes toward reading across three media of text. The reliability for the survey is consistent across the two schools studied. Students in both schools have similar access to technology with over 75% of students having a computer at home and in school that they are able to use. More than 65% of students have an e-reader in their home but the percentage of students with access to an e-reader in school ranges from 9.4% (school 1, 5th-grade boys) to 100% (school 1, all 3rd-graders). The differences in the schools' demographics did not lead one school to have significant differences in reliability (school 1 α=.821; school 2 α=.823).

Factor 1: e-reader

The e-reader factor had the strongest reliability of the three factors (α=.813). Students tend to have positive attitudes toward reading from an e-reader because the various tools available on the device (Larson, 2010). For example, e-readers allow students to look up unknown words in a dictionary with the press of a button, eliminating the need to look up the word in a traditional dictionary, which disrupts the flow of reading. Another feature available on e-readers is the ability to highlight text and make notes without using

paper. As discussed in chapter two, students reported that reading from an e-reader gave their self-confidence a boost because of the feature to look up unknown words and to easily take notes while reading (Larson, 2010).

Factor 2: Internet

Items that loaded on the Internet factor had moderately strong reliability (α=.780). Lew, Kinzer, Coiro, and Cammack (2004) stress the need for schools to focus on teaching students with Internet sources. Students are engaged in new literacy reading more than in the past and the influx of the Internet in society means students must learn to be critical consumers of the information gained from Internet sources. Wolk (2010) points out that society is in the midst of a digital revolution that is reshaping what is read and the format in which it is read. Because of this societal revolution, the classrooms in which students are prepared to enter society must keep up with the digital changes by making the Internet readily available to students, teaching students how to consume material from the Internet, and providing ample time for practice.

Factor 3: Print

Reading from print books is still predominant in classrooms (Wolk, 2010) and will remain at the forefront of reading instruction (Lamb & Johnson, 2011). The reliability of the items to measure how students feel about reading independently from print books was moderate (α=.678). This may be due to students' lack of desire to read from the print medium (Gunter, 2012). According to Gunter, when given a choice, students tend to see little value in learning to read from print-based texts, although that is the medium most available for students to select from.

Investigating what motivates "media-centric, text-adverse" readers is lacking but needed in order to use the technology effectively to help increase students' reading comprehension and test scores (Gunter, 2012). As Fishbein and Ajzen's Expectancy-value theory (1974) explains, students are less likely to engage in something—in this case reading—if they see little value in it. With the knowledge that students see little need for print based reading in their future lives, teachers can increase motivation and attitude toward reading by increasing the amount of time students can use alternate devices for reading assignments. It is not suggested that the foundations of reading instruction leave traditional texts, rather, new ICTs should be incorporated into literacy instruction to increase students' awareness and motivation (Lamb & Johnson, 2011).

Attitudes Toward Reading Situations

In addition to the factors analyzed for research question 3, I reviewed the data and found that students' responses indicated they had differing attitudes based on the situation presented in the question, not only the medium of text. As discussed in chapter 4, the survey items ask about students' attitudes of reading in specific situations. Male students tend to have higher attitudes toward reading to learn new things than female students but females had higher attitudes toward reading to learn more about something that interests them. These items are similar and the results suggest that female students prefer to read about things that interest them when learning new things and males like to read to learn about anything new. Female students also tended to have a more positive attitude toward reading various genres of texts, reading material written by authors new to them than male students, and talking with friends about what they read. These results imply that male students read for a specific purpose to gain information and females read more for

enjoyment. These results are in line with research which indicates females have a higher attitude toward reading than males (Baker & Wigfield, 1999; McGeown, Goodwin, Henderson, & Wright, 2012; Senn, 2012).

Research Question 3

For research question three I analyzed data using cumulative logit modeling. This analysis determined the odds of gender predicting the response for an ATRS item. The results indicate that boys tend to respond to having better attitudes towards reading from e-readers and reading magazines, reading self-selected material from a new author, and talking to friends about what they read on the ATRS. This finding is interesting because research indicates that girls tend to have more positive attitudes towards reading than boys (Baker & Wigfield, 1999; McGeown, Goodwin, Henderson, & Wright, 2012; Senn, 2012). However, the item means, when analyzed by gender, indicate girls have a more positive attitude than boys. When the total score was taken into account, two items were significant which indicates the odds of boys responding to these ATRS items was higher than girls. This suggests that factors beyond gender influenced the students' responses to items on the ATRS.

Although girls tend to prefer reading more than boys, research has shown boys feel better about math, science, and technological activities (Shin, Sutherland, Norris, & Soloway, 2010). This information may contribute to the finding that boys enjoy reading from an e-reader more than girls. It is difficult to truly determine the difference in motivation and attitudes for reading from new literacies (such as the Internet and e-readers) versus print based on gender because the study of new literacies and the study of motivation and attitude come from different theoretical and epistemological standpoints

(Jacobs, 2012). The study of new literacies is grounded in qualitative and phenomenological standpoints while attitude and motivation research both stem from psychology and educational psychology and tend to be quantitative. Because of this, the connection between new literacies and attitude "remains in the realm of conjecture and implications" and should be investigated in a way that integrates the study of these (Jacobs, 2012, p. 2). The ATRS is a tool that can be used to begin looking into attitudes of readers from three different forms of text. Future research into attitude and motivation is needed and based on the research there may be changes in the ATRS.

Boys' brains actually develop differently than girls and research has indicated boys learn better with movement (Senn, 2012). Additionally, boys prefer nonfiction text and prefer to have a choice in what they read. Because boys need movement and action, it would make sense that they would prefer to read with peers. This shows that boys embrace the social aspect of reading and the authority they gain from choosing their reading material. This information is important for teachers to consider when developing reading lessons and when looking at results from the ATRS.

Contribution to Research

Educators share a common goal to help students be successful. As the common adage states, "practice makes perfect" it is true that students need to practice things to get better and that includes academic tasks such as reading. Students' motivation to read is correlated with the amount of time they read (Guthrie, Wigfield, Metsala, & Cox, 2004). Additionally, students' intrinsic motivation to read is influenced by their ability to read and comprehend text strongly (Deci, et. al., 1991). This information substantiates the value of working with students to increase their motivation and attitude toward reading.

The research pertaining to attitude and motivation with regards to reading attends to students' interactions with traditional texts. The ATRS is a survey that can add to past and guide future seminal research by including two growing forms of text mediums. The use of e-readers and Internet reading is quickly growing in society and education (Lamb & Johnson, 2011). Knowing how students attitudes toward reading with these text modes will enable teachers and researchers to look into attitude as it relates to students' interactions with information and communication technology. The Internet and e-readers are two modes of text that have been growing rapidly and are gaining popularity within schools and work in this area of research is new and limited (Coiro, 2012). The ATRS is a measure available for use by researchers and educators to add to this field of study.

Total Score

Tables 43 through 45 in chapter 4 illustrate the mean total scores for the ATRS broken down by school, gender, grade, and access. The total score provides an overall look at students' attitudes toward reading and the higher the score the more positive the student's attitude. The total scores by gender indicate the female students have a more positive attitude toward reading as measured in all sections of the ATRS, print, e-reader, and Internet. The results are the same for the survey with all eight items and when the three items were removed. This data substantiates past research that females have more positive attitudes toward reading than males (Baker & Wigfield, 1999; McGeown, Goodwin, Henderson, & Wright, 2012; Senn, 2012). In relation to research question 1, the validity of the survey is enhanced because with the total score for female students being slightly higher than for male students, the survey data is consistent with past research.

The survey does not fit, however, with past research that determined younger students have more positive attitudes toward reading than older students (Kush & Watkins, 1996; McKenna, et. al., 1995). The ATRS results do not indicate the third-grade students have better attitudes than the fourth- and fifth-graders. This result would be a topic to include in future research to determine if this is because the students in the two schools surveyed have positive attitudes toward reading as a whole.

Students' access to modern technologies also did not correlate to students' attitudes toward reading as measured by the ATRS. The differences in mean score for students with access and without was not significant and this may be due to the high percentage of students with access to computers and e-readers both in school and at home.

Limitations

This study was conducted at two charter schools in a central Florida school district. Although the population was somewhat varied, the results of this study are not generalizable to other situations because the students were all enrolled in charter schools in the same school district. The study could be replicated with public, private, and charter schools from districts across the United States of America to collect data that would represent a wider population.

The schools that were included in the survey administration also have a higher amount of technology integration than many public schools in the area. Based on discussion with teachers and administration from the schools and experience with teachers and students in public schools in the area I am able to attest to the increased amount of technology available in the two charter schools included in this study. For example, the teachers at the charter schools allow students to engage in projects using laptops and

digital cameras on a regular basis and all students have access to computers throughout the school day.

Additionally, based on students' self-responses, the majority of students have a computer at home (94.7%-100%) and are able to use it (75%-97.7%). In school access is also greater than 90%, although this number may have been inaccurately self-reported because for example, in school 2, 3rd grade, 100% of girls said they had access to a computer in school yet only 90.2% of boys reported that they had access and it seems unlikely that a school would let females use computers and not males. Access to e-readers was varied much more (66.7%-94.4% have access to an e-reader at home; 9.4%-100% have access to an e-reader in school). The access to technology the students in this study have may be a great deal higher than students in other areas. This is a limitation to the study because students with greater access to computers and e-readers may have higher attitudes towards these mediums of text than students with little to no access. Furthermore, greater access to technology may indicate the students are from a family with a higher socioeconomic status.

I provided printed directions for teachers to read when administering the survey to student, however, I was not present during administration and do not know how rigorous the administration process was. I am aware that there were weather conditions that caused schools to be closed during the time period the teachers had the surveys. The administrator from school 2 requested an extension for the teachers to administer the survey and I was able to pick up all materials two weeks after the originally scheduled pick-up date.

The format of the survey was multiple choice and teachers were asked to read the items aloud so students' reading level did not interfere with the results. I am not able to be

sure if students stayed with the pace as the teacher read the items or went ahead. There were several surveys that also had handwritten comments from students. The comments were nearly verbatim ("I have not experienced this and do not know how I would feel."), which leads me to believe these particular surveys were from one class and that the teacher prompted students to write that on their survey if they did not know how they would feel. To account for this situation, the survey directions explain that students may not have experienced some of the situations asked about and should respond with how they think they would feel. I could presume the teacher of the students who wrote this phrase on their survey did not stress this direction to students.

Implications

As society changes, educators must adapt the way they teach to better prepare students to be ready to step into the world. Only 9% of what society reads is from print (Bohn & Short, 2009), and 30% is from computers. The influx of blogs, e-mails, text messaging and e-readers has altered the way people read (Wolk, 2010). Students no longer see a value in learning to read from print-based texts because of this (Gunter, 2012). Traditional books are going to remain an active part of society and education and the skills needed to read traditional linear texts will remain the foundation for reading instruction; however, the new technologies will be added to the reading resources students will use and they will need to learn new skills to be successful (Lamb & Johnson, 2011). Based on these changes in society, it makes sense that the classroom environment should also be changing. However, the reading classroom of 2010 is not much different than the one from 1960 (Wolk, 2010). Rather than seeing students engaged in reading print texts, the modern

classroom would match society if students were reading from electronic devices such as e-readers and the Internet.

Reading is paramount to success in education and research has indicated a correlation between positive attitudes towards reading and success in reading (Henk & McKenna, 2004; Mathewson, 1994; NICHHD, 2000; Wigfield & Asher, 1984). Based on Mathewson's affective model (1994) the decision to read is affected by attitude, motivation, and physical feelings. Once a child make the decision and begins to read, their ability (or lack of) to comprehend and attend to the text and their physical feeling will contribute to the recall, reflection, and application of the text. These things all affect the child's attitude, motivation, and physical feeling, which can lead to the decision to read more or stop reading. The implications this research has for education are multifaceted.

I will discuss how the ATRS can be used in various ways to further education: by teachers with a desire to know more about their students' attitudes toward reading from various mediums of text; by researchers investigating students' attitudes across three mediums of text; and by schools inquiring about students' attitudes in order to choose where to allocate funds in regards to reading materials.

When teachers prepare their classroom curriculum, it is important for them to know their students' reading interests and preferences (Ivey & Broaddus, 2001). Society is moving into an electronic age and students will be expected to leave school with knowledge of how to read and comprehend from various mediums of text (Dalton & Proctor, 2008; Lamb & Johnson, 2011). This survey can provide teachers with information about their students' attitude toward reading from three mediums of text: print, e-readers, and Internet. When teachers have this information they can structure class lessons and

activities with the mediums students prefer to help them gain a more positive attitude toward reading overall. For example, in a classroom with the majority of students who prefer to read from an e-reader, the teacher could plan lessons that allow students to complete their reading from an e-reader instead of a print text. This does not mean the teacher would need funds for purchasing e-readers because many students have their own devices and several school districts are moving toward a "bring your own device" model (Raths, 2012). Additionally, lessons can be designed to increase attitudes towards reading other mediums of text. For example, students who prefer reading from an e-reader can complete some reading tasks from the device and the teacher can make connections to Internet reading and/or print reading based on the e-reader. This will help students become engaged with multiple mediums of text.

Researchers have been interested in how students' attitudes toward reading correlate with and predict academic success (Henk & McKenna, 2004). This survey is a tool that researchers can use to measure reading attitude across the three mediums of text predominant in modern society. The future of standardized tests are Internet-based. Students will be required to read from the computer screen and answer questions on the computer. Because students will soon be tested from this medium it is vital that teachers teach skills for reading on the Internet (Leu, Kinzer, Coiro, & Cammack, 2004). The skills needed for Internet reading are not the same as linear print texts (Dalton & Proctor, 2008). Students will need to learn how to self-regulate their reading on the Internet (Lamb & Johnson, 2011). It will be important for researchers to have a tool to measure how students feel about reading from the Internet to properly continue researching how attitudes impact success.

Principals and other educational leaders are required to make many decisions about where to allocate funds and what materials to purchase to help increase students' academic success. Having an idea about students' feelings about reading from various mediums of text can help them determine what types of reading material to purchase. Also, knowing how students feel can provide information about what types of teaching needs to be increased and modified. This can yield information that can guide training for teachers and other stakeholders in the school.

New information and communication technologies will not displace traditional reading, rather, ICTs will add to the access of information and social connections (Griswold & Wright, 2004). Educators will best prepare students if the traditional best practices for reading are not abandoned, but transformed to encompass ICTs (Lamb & Johnson, 2011). The ATRS will provide educators with information to guide instruction of reading with traditional, Internet, and e-reader texts.

Recommendations for Future Research

This study was conducted with a less than 500 students. In order for the survey to be a reliable tool for various populations to use, it will need further testing. Future research should include a larger-scale administration of the survey to a broader and more diverse population of students across the United States. The results from the future study could be analyzed and percentile ranks assigned to scores. This information would help teachers know where their students' attitudes toward reading are in relation to other students in the country. This would be valuable information for teachers because, as with academic assessments, being able to know how students compare to their peers lets the teacher know if the strategies they have been employing are working (their students have similar

or higher attitudes toward independent reading than peers) or if they need to revise their plan for motivating students to read (students have attitudes lower than their peers).

Future research would benefit from determining the reading level of the students who take the survey. This information would be valuable because, as McKenna and Kear (1990) noted, students with higher reading ability tend to have higher attitudes toward reading tasks, including independent reading.

Collecting more information about the students who take the survey would provide greater detail for future research. Knowing if students have and use specific electronic devices at home and with what frequency would impart data that can guide future research. For example, determining the correlation between frequency of use at home with attitude toward using the device for independent reading in school.

Creating an Internet version of the survey would allow the survey to be widely used by teachers and researchers. The paper survey used in this study will be available for use by educators, but with the restrictions on paper and copies in many schools, an on-line version would be an economical alternative. Additionally, on on-line survey could have additional features, such as self-scoring, to allow teachers to analyzes results with the click of the mouse. This will be a time-saving feature and a "green" solution to the copy-count restrictions. Although the on-line survey could be altered from the traditional format to include drop-down menus and different language (Manfreda & Vehovar, 2008), the ATRS-online would maintain the same response options and wording to maintain consistency between the print and online versions.

Additional Questions that Emerged

During this research study there were questions that emerged that can guide future research. The Attitude Toward Reading Survey is intended for use with students in third through fifth grade. To what extent would the survey be reliable and valid for students in other grade levels? Does ethnicity have any effect on the results? Baker and Wigfield (1999) found that ethnicity and family income did not have an effect on students' motivation to read, but the ATRS is intended to measure attitude toward reading, not motivation. Future research with the ATRS will yield ample information for use in literacy research and education.

Summary

The purpose of this study was to develop a reliable and valid survey to measure intermediate elementary students' attitudes toward reading from three mediums of text. The results of the study support the Attitude Toward Reading Survey as a reliable and valid measure for teachers to use. Based on the factor analysis, the items on the survey are reliable and measure the constructs as intended. A three-factor model was accepted and accounted for more than half of the variance (52.4%). The results of Cronbach's alpha reliability indicate the items are reliable with moderate to high alpha score (α ranged from .678 to .851). Finally, the survey items do not have significant item bias; there were 13 items with significant differences, only two when with the test of interaction. Boys had more positive attitudes toward reading in each instance.

The ATRS is ready for teachers to begin using it in their classrooms. Additional research can be done to make the survey a stronger measurement tool for teachers, especially for teachers in other locations. Administering the ATRS to a larger population

will provide more data to inform the reliability and validity decisions about the tool. This will also allow the ATRS to yield results that can allow teachers and researchers to compare students' results to peers.

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APPENDICES

Appendix A: Original Item Bank

Recreational

1. How do you feel about reading a book at home?
2. How do you feel about choosing a book to read during free time at school?
3. How do you feel about receiving a book of your choice as one of your gifts?
4. How do you feel about reading a book over the weekend?
5. How do you feel about reading books for enjoyment?
6. How do you feel about reading over summer break?
7. How do you feel about reading different kinds of books?
8. How do you feel about going to the library?
9. How do you feel about going to a bookstore?
10. How do you feel about starting a new book?
11. How do you feel about reading on a rainy day?
12. How do you feel about reading instead of playing video games?
13. How do you feel about reading instead of watching TV?
14. How do you feel when you get a new book?
15. How do you feel when you get to choose a new book to read?
16. How do you feel when someone reads a story to you?
17. How do you feel when you read a story to someone?
18. How do you feel about talking to others about what you read?

19. How do you feel about sharing books you liked with your friends?

20. How do you feel about giving books to others as a gift?

Academic

21. How do you feel about reading aloud in school?

22. How do you feel about answering questions about what you read?

23. How do you feel about reading from a textbook?

24. How do you feel about reading to learn new things?

25. How do you feel about using a dictionary to learn new words?

26. How do you feel about reading worksheets?

27. How do you feel about taking a written reading test?

28. How do you feel when it is time for reading in school?

29. How do you feel about the stories you read in school?

30. How do you feel when reading in school is given extra time?

31. How do you feel about small-group reading?

32. How do you feel about telling others about what you learned from a book?

33. How do you feel about reading pages from an encyclopedia to learn new things?

34. How do you feel about reading magazines?

35. How do you feel about reading the newspaper?

36. How do you feel when your teacher assigns a book to read?

37. How do you feel about researching information using books at the library?

38. How do you feel about using books to research topics on your own time?

39. How do you feel about using books to research assigned topics in school?

40. How do you feel about learning content (for example, math, science, social studies) by reading books?

Technological

41. How do you feel about reading your friends' blogs on the computer?
42. How do you feel about reading blogs written by famous people?
43. How do you feel about Social Networking Sites (for example, Facebook, My Space, Twitter)?
44. How do you feel about using the computer during free time?
45. How do you feel about reading stories on the computer?
46. How do you feel about learning new things from Wikipedia?
47. How do you feel about reading on-line pages to learn something?
48. How do you feel about using the computer to learn new words?
49. How do you feel about taking a reading test on the computer?
50. How do you feel about blogging about what you read?
51. How do you feel about sharing what you read with other people on the Internet?
52. How do you feel about reading current events on-line?
53. How do you feel about using the computer at home?
54. How do you feel about playing reading games on the computer (for example, Starfall, Earobics)?
55. How do you feel when your teacher assigns reading tasks on the computer?
56. How do you feel about reading websites during free time at school?
57. How do you feel about reading websites on the weekend?
58. How do you feel about researching topics on the computer for schoolwork?

59. How do you feel about researching topics on the computer on your own time?

60. How do you feel about reading about books on the computer?

Appendix B: Derivation of Original Item Bank

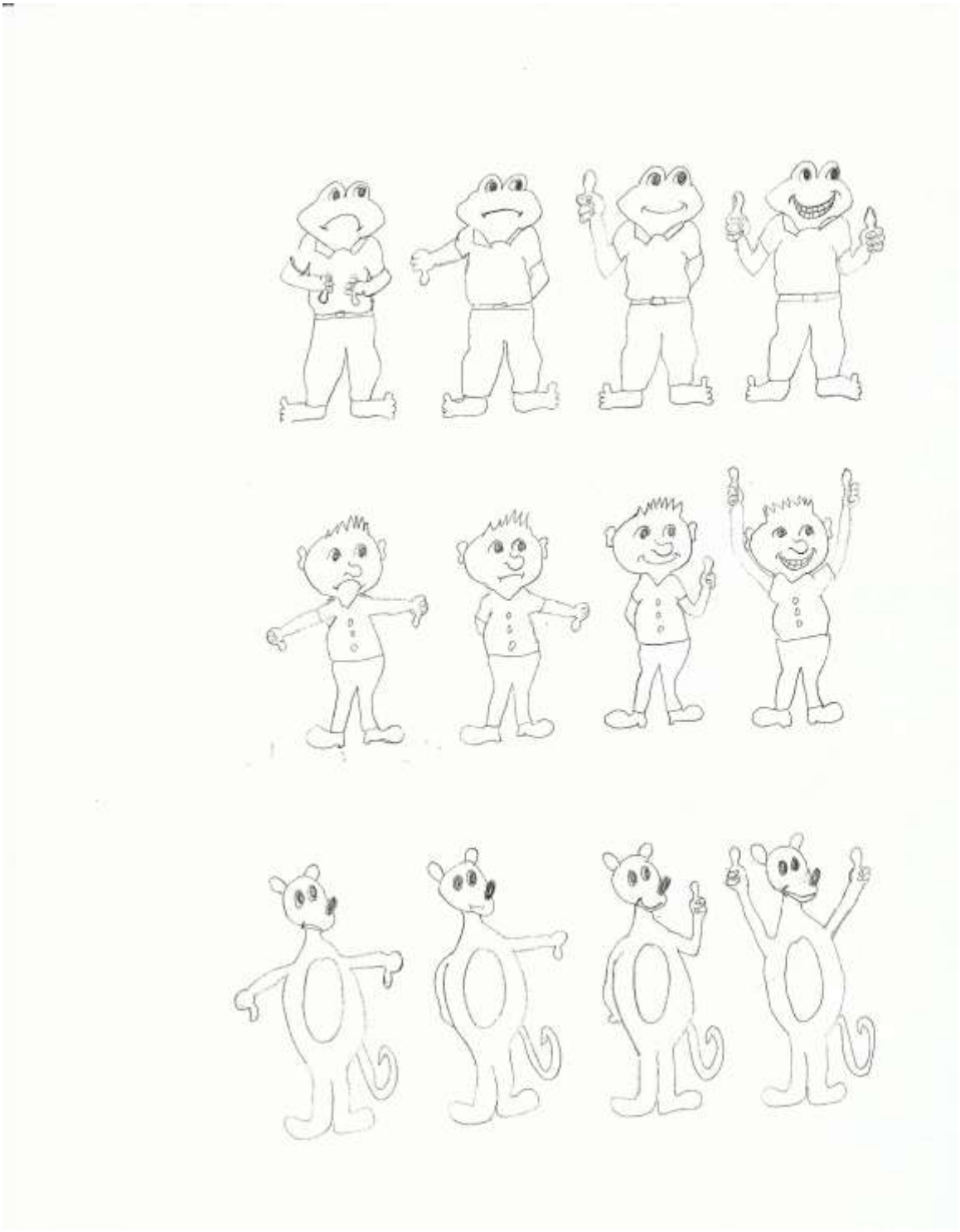
The Attitude Toward Reading Survey (ATRS) Original Item Bank for Academic and Recreational	Survey Questions that led to the development of The Attitude Toward Reading Survey (ATRS) Original Item Bank
Recreational Items	
1. How do you feel about reading a book at home?	• How do you feel about reading for fun at home (McKenna & Kear, 1990)? • Reading is a good way to spend spare time (Estes, 1971).
2. How do you feel about choosing a book to read during free time at school?	• How do you feel when you read a book in school during free time (McKenna & Kear, 1990)? • Reading is a good way to spend spare time (Estes, 1971). • There should be more time for free reading during the school day (Estes, 1971).
3. How do you feel about receiving a book of your choice as one of your gifts?	• How do you feel about getting a book for a present (McKenna & Kear, 1990)? • Books make good presents (Estes, 1971).
4. How do you feel about reading a book over the weekend?	• How do you feel when you read a book on a rainy Saturday (McKenna & Kear, 1990)? • Reading is a good way to spend spare time (Estes, 1971).
5. How do you feel about reading books for enjoyment?	• How do you feel about reading for fun at home (McKenna & Kear, 1990)? • Reading is a good way to spend spare time (Estes, 1971).
6. How do you feel about reading over summer break?	• How do you feel about reading during summer vacation (McKenna & Kear, 1990)? • Reading is a good way to spend spare time (Estes, 1971). • A certain amount of summer vacation should be set aside for reading (Estes, 1971).
7. How do you feel about reading different kinds of books?	• How do you feel about reading different kinds of books (McKenna & Kear, 1990)?

	• I like to read about… (Heathington, 1979).
8. How do you feel about going to the library?	• How do you feel about going to a bookstore (McKenna & Kear, 1990)? • I like to read library books (Heathington, 1979).
9. How do you feel about going to a bookstore?	• How do you feel about going to a bookstore (McKenna & Kear, 1990)? • Money spent on books is well spent (Estes, 1971).
10. How do you feel about starting a new book?	• How do you feel about starting a new book (McKenna & Kear, 1990)?
11. How do you feel about reading on a rainy day?	• How do you feel when you read a book on a rainy Saturday (McKenna & Kear, 1990)? • Reading is a good way to spend spare time (Estes, 1971).
12. How do you feel about reading instead of playing video games?	• How do you feel about spending free time reading (McKenna & Kear, 1990)? • How do you feel about reading instead of playing (McKenna & Kear, 1990)? • Reading is a good way to spend spare time (Estes, 1971).
13. How do you feel about reading instead of watching T.V.?	• How do you feel about spending free time reading (McKenna & Kear, 1990)? • How do you feel about reading instead of playing (McKenna & Kear, 1990)? • Reading is a good way to spend spare time (Estes, 1971).
14. How do you feel when you get a new book?	• How do you feel about getting a book for a present (McKenna & Kear, 1990)? • How do you feel about starting a new book (McKenna & Kear, 1990)?
15. How do you feel when you get to choose a new book to read?	• How do you feel about getting a book for a present (McKenna & Kear, 1990)? • How do you feel about starting a new book (McKenna & Kear, 1990)?
16. How do you feel when someone reads a story to you?	• Sharing books in class is a waste of time (Estes, 1971).

17. How do you feel when you read a story to someone?	•
18. How do you feel about talking to others about what you read?	• Sharing books in class is a waste of time (Estes, 1971).
19. How do you feel about sharing books you liked with your friends?	• Sharing books in class is a waste of time (Estes, 1971).
20. How do you feel about giving books to others as gifts?	• How do you feel about getting a book for a present (McKenna & Kear, 1990)? • Books make good presents (Estes, 1971). • Money spent on books is well spent (Estes, 1971).
Academic Items	
21. How do you feel about reading aloud in school?	√ How do you feel about reading out loud in class (McKenna & Kear, 1990)?
22. How do you feel about answering questions about what you read?	√ How do you feel when the teacher asks you questions about what you read (McKenna & Kear, 1990)?
23. How do you feel about reading from a textbook?	√ I like to read textbooks (Heathington, 1979).
24. How do you feel about reading to learn new things?	√ How do you feel about learning from a book (McKenna & Kear, 1990)?
25. How do you feel about using a dictionary to learn new words?	√ How do you feel about using a dictionary (McKenna & Kear, 1990)?
26. How do you feel about reading worksheets?	√ How do you feel about doing workbook pages and worksheets (McKenna & Kear, 1990)?
27. How do you feel about taking a written reading test?	√ How do you feel about taking a reading test (McKenna & Kear, 1990)?
28. How do you feel when it is time for reading in school?	√ How do you feel about reading in school (McKenna & Kear, 1990)?
29. How do you feel about the stories you read in school?	√ Sharing books in class is a waste of time (Estes, 1971).
30. How do you feel when reading in school is given extra time?	√ There should be more time for free reading during the school day (Estes, 1971).
31. How do you feel about small-group reading?	√
32. How do you feel about telling others about what you learned from a book?	√ Sharing books in class is a waste of time (Estes, 1971).
33. How do you feel about reading pages	√ I like to read encyclopedias

from an encyclopedia to learn new things?	(Heathington, 1979).
34. How do you feel about reading magazines?	√ I like to read magazines (Heathington, 1979).
35. How do you feel about reading the newspaper?	√ I like to read newspapers (Heathington, 1979).
36. How do you feel when your teacher assigns a book to read?	√ How do you feel about the stories you read in reading class (McKenna & Kear, 1990)?
37. How do you feel about researching information using books at the library?	√ I like to read library books (Heathington, 1979).
38. How do you feel about using books to research topics on your own time?	√ How do you fel about learning from a book (McKenna & Kear, 1990)?
39. How do you feel about using books to research assigned topics in school?	√ How do you fel about learning from a book (McKenna & Kear, 1990)?
40. How do you feel about learning content (for example, math, science, social studies) by reading books?	√ I like to read textbooks (Heathington, 1979).

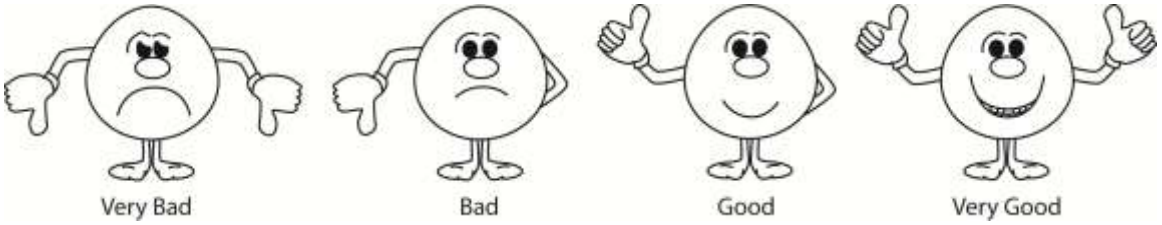
Appendix C: First Iterations of Response Scale



Appendix D: Phase One Focus Group Schedule

Date and Time	Participants
Wednesday, March 17, 2010 12:00-1:00 PM	1 tenure-earning assistant professor; Department of Childhood Education and Literacy Studies 1 full professor; Department of Childhood Education and Literacy Studies 1 assistant professor; Department of Childhood Education and Literacy Studies 1 instructor; Department of Childhood Education and Literacy Studies
Thursday, March 18, 2010 10:00-11:00 AM	1 full professor; Department of Educational Measurement and Research 1 advanced graduate student; Department of Educational Measurement and Research
Thursday, March 18, 2010 4:00-5:00 PM	1 public school teacher 1 tenure-earning assistant professor; Department of Childhood Education and Literacy Studies 3 advanced graduate students; Department of Childhood Education and Literacy Studies
Friday, March 19, 2010 12:00-1:00 PM	1 full professor; Department of Childhood Education and Literacy Studies 1 advanced graduate student; Department of Childhood Education and Literacy Studies

Appendix E: Final Response Scale



Appendix F: Directions for Administration with Consent (Pilot)

Directions for administering the survey: For the purpose of this project, please read the following directions before administering the survey. When you are ready to administer the survey, please read the script below to your students.

Teacher will read the following script for the assent process:

"I am going to pass out a survey that will ask you some questions about how you feel about reading. I will read each question aloud to you and you will be asked to circle your response. Feel free to answer truthfully because no one that knows you will see your response, including me. If you do not wish to participate you may sit quietly and follow along as I read through each question on the survey but you will not circle any responses.

I am going to give everyone an envelope. On each envelope there is a yellow post-it note. Please write your name on the yellow post-it note." *(Teacher will pass out a manila envelope to each student)*

"Now I am going to pass out the survey. Please do not write your name on the survey because no one who knows you will see your responses." *(Teacher will pass out survey)*

"Please follow along with me as I read each item aloud. If you chose not to respond you may leave the questions blank. If you start answering questions you may decide at any point to stop answering questions if you feel uncomfortable.

For number 1-2 please circle yes or no.

1. Do you have a computer in your home?
2. Are you able to use a computer when you're not at school?

For numbers 3-22 I will read the example first. Then I will read each question and you should circle how you would feel if you were in that situation. Two-thumbs-up means very good, one-thumb-up means good, one-thumb-down means bad, and two-thumbs-down means very bad."

(Teacher will read each item on the survey and pause to allow students time to respond)

"Now that I have finished reading the questions and you have circled your responses, or left them blank, please place your survey in the envelope that I passed out earlier and seal it closed. When your envelope is sealed I will collect them. The envelope will not be opened until the researcher picks them up and only the researcher will see your responses."

**After collecting the envelopes, please staple the demographic page to the envelope and answer the questions about the student. Then remove the post-it note with the student's name.

Appendix G: Revised Survey Items

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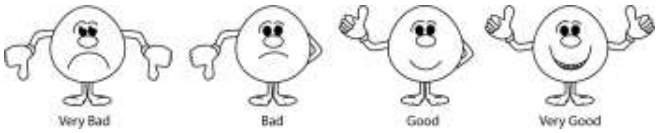

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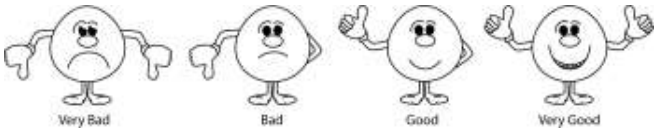

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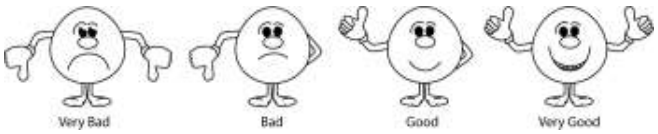

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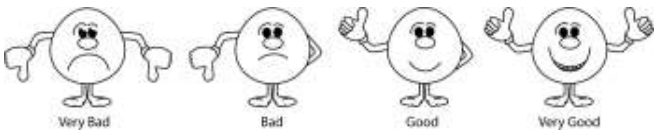

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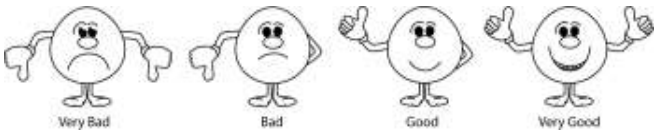

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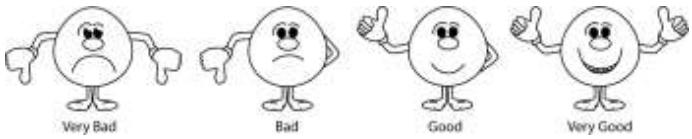

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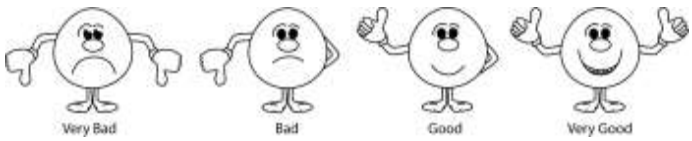

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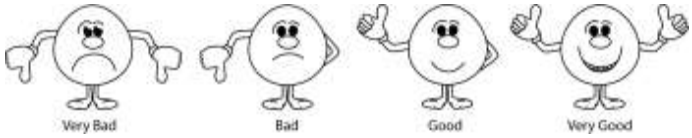

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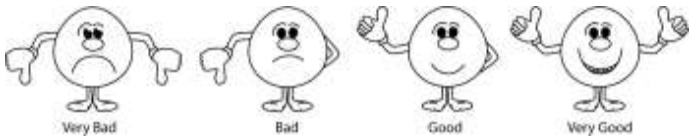

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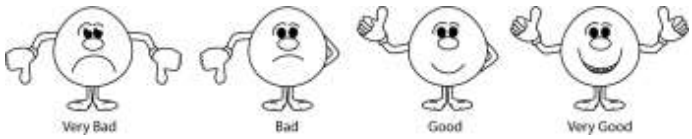

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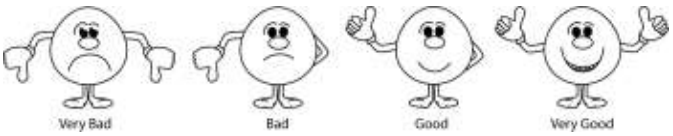

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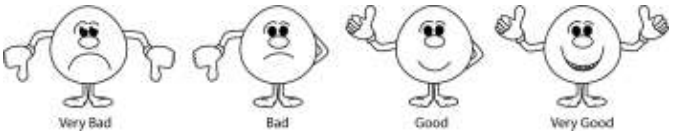

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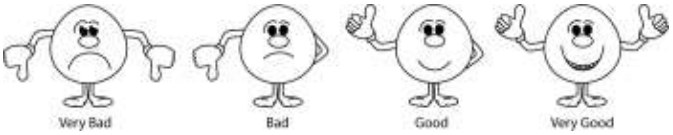

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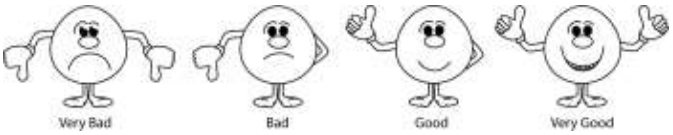

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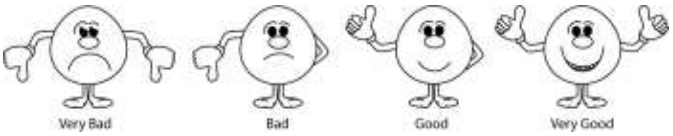

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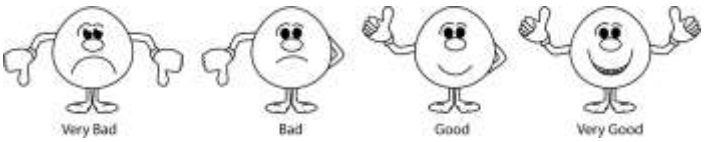

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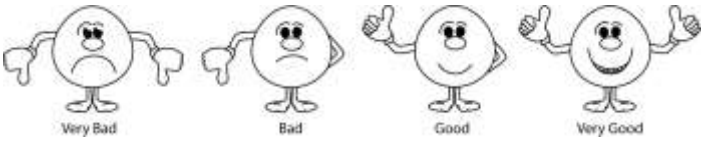

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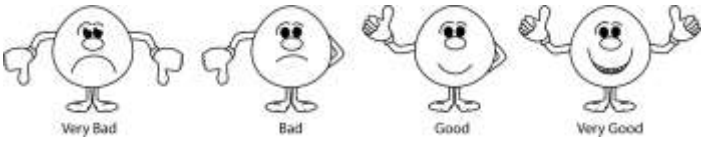

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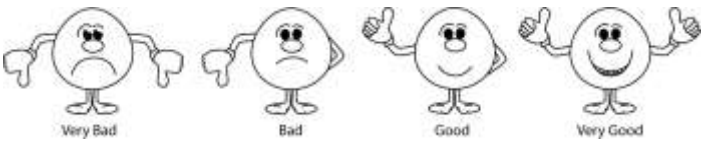

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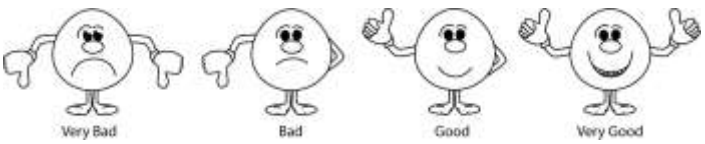


Appendix H: Demographic Page (Pilot)

1. County: _____ 2. Grade Level: _____

3. Gender: M F 4. Title 1: yes no

5. ESE: no yes (list program, i.e., ESOL, gifted, SLD, etc.):

_____

6. Ethnicity: Hispanic or Latino Not Hispanic or Latino

7. Race: American Indian or Alaska Native Asian Black or African American

Native Hawaiian or Other Pacific Islander White Mixed

Appendix I: Derivation of Revised Items

1	How do you feel about reading to learn new things: a. from a print book? b. from an e-reader? c. from the Internet?	"The characteristics of digital text are made more dramatic on the Internet, where texts live in unbounded time and space and there is no limit to the linkages and paths that can be taken in search of information, entertainment, communication, and community….Purpose is also less obvious, as websites often have multiple goals, layered and overlapping, overt and covert, in ways not typical of print" (Dalton & Proctor, 2008, p. 298). "Clearly, Internet inquiry offers many of the features associated with motivation and engagement, as described previously" Dalton & Proctor, 2008, p. 319). "Information books (i.e., newspapers, magazines, and trade books) are often of interest to students, and should be included in the classroom library. Children become excited to share facts and knowledge learned when reading" (Corcoran & Mamalakis, 2009, p. 139).
2	How do you feel about reading magazines: a. in print? b. on an e-reader? c. on the Internet?	"Information books (i.e., newspapers, magazines, and trade books) are often of interest to students, and should be included in the classroon library. Children become excited to share facts and knowledge learned when reading" (Corcoran & Mamalakis, 2009, p. 139). "New literacies are central to full civic, economic, and personal participation in a world community" (Coiro, Knobel, Lankshear & Leu, 2008, p. 14). "Students tend to find reading and learning in digital environments engaging, as digital natives, they are comfortable interacting with these environments" (Dalton & Proctor, 2008, p. 319).
3	How do you feel about reading to learn more about something you did that was interesting: a. from a print book? b. from an e-reader?	"Therefore, we propose that a stimulating task (e.g., dissecting an owl pellet or observing a stuffed owl), combined with the presence and accessibility of an interesting book on the identical topic, evokes situational interest in reading that book" (Guthrie, Wigfield, Humenick, Perencevich,

	c. from the Internet?	Taboada, & Barbosa , 2006, p. 243).
4	How do you feel about reading material of your choice written by authors you are not familiar with: a. from print books? b. from an e-reader? c. from the Internet?	"Students with high interest typically exhibited the following:…Other attributes that were important, but less frequently mentioned, included (e) naming multiple topics, authors, or series of interest, which indicated the student had favorite books, topics, or authors that he/she liked to read (Guthrie, J. T., Hoa, A. L., Wigfield, A., Tonks, S. M., Humenick, N. M., & Littles, E., 2007, p. 294). "Students tend to find reading and learning in digital environments engaging, as digital natives, they are comfortable interacting with these environments" (Dalton & Proctor, 2008, p. 319). "Choice is motivating because it affords student control. Children seek to be in control of their environment, rather than being manipulated by powerful others" (Guthrie & Wigfield, 2000, p. 411).
5	How do feel about reading material of your choice while at home: a. from a print book? b. from an e-reader? c. from the Internet?	"Choice is motivating because it affords student control. Children seek to be in control of their environment, rather than being manipulated by powerful others" (Guthrie & Wigfield, 2000, p. 411). "Students tend to find reading and learning in digital environments engaging, as digital natives, they are comfortable interacting with these environments" (Dalton & Proctor, 2008, p. 319). "…time spent reading books was the best predictor of a child's growth as a reader from the second to the fifth grade" (Anderson, Wilson, & Fielding, 1988, p. 297). "Reading books was the out-of-school activity that proved to have the strongest association with reading proficiency" (Anderson, Wilson, & Fielding, 1988, p. 297).
6	How do you feel about reading different kinds of books (for example, mysteries, comics,	"The intrinsically motivated reader is disposed to read a wide range of topics and genres" (Guthrie & Wigfield, 2000, p. 405).

	informational, etc.): a. from print books? b. from an e-reader? c. from the Internet?	"Students with high interest typically exhibited the following:…Other attributes that were important, but less frequently mentioned, included (e) naming multiple topics, authors, or series of interest, which indicated the student had favorite books, topics, or authors that he/she liked to read (Guthrie, J. T., Hoa, A. L., Wigfield, A., Tonks, S. M., Humenick, N. M., & Littles, E., 2007, p. 294). "With media-savvy, mobile-networked, "interaced beings" in today's classroom, teachers would be well served to understand the ways in which new youth cultures impact upon their everyday lives and identities" (Thomas, 2008, p. 691).
7	How do you feel about letting a friend borrow one of your: a. print books? b. e-reader books? c. Internet books?	"Children who like to share books with peers (Morrow, 1996)…are likely to be intrinsically motivated readers" (Guthrie & Wigfield, 2000, p.408). "Clearly, Internet inquiry offers many of the features associated with motivation and engagement, as described previously" Dalton & Proctor, 2008, p. 319). "…Children talked enthusiastically about interacting with others about the books and stories they were reading…The more books that children are exposed to, and know about, the more books they are likely to read" (Gambrell, 1996, p. 22). "New literacies are central to full civic, economic, and personal participation in a world community" (Coiro, Knobel, Lankshear & Leu, 2008, p. 14).
8	How do you feel about reading a book with a friend? a. print book? b. an e-reader? c. Internet?	"Children who like to share books with peers (Morrow, 1996)…are likely to be intrinsically motivated readers" (Guthrie & Wigfield, 2000, p.408). "Clearly, Internet inquiry offers many of the features associated with motivation and engagement, as described previously" Dalton & Proctor, 2008, p. 319).

		"…Children talked enthusiastically about interacting with others about the books and stories they were reading…The more books that children are exposed to, and know about, the more books they are likely to read" (Gambrell, 1996, p. 22). "New literacies are central to full civic, economic, and personal participation in a world community" (Coiro, Knobel, Lankshear & Leu, 2008, p. 14).
9	How do you feel about telling a friend about a book you read? a. print book? b. an e-reader? c. Internet?	"Children who like to share books with peers (Morrow, 1996)…are likely to be intrinsically motivated readers" (Guthrie & Wigfield, 2000, p.408). "Clearly, Internet inquiry offers many of the features associated with motivation and engagement, as described previously" Dalton & Proctor, 2008, p. 319). "…Children talked enthusiastically about interacting with others about the books and stories they were reading…The more books that children are exposed to, and know about, the more books they are likely to read" (Gambrell, 1996, p. 22). "New literacies are central to full civic, economic, and personal participation in a world community" (Coiro, Knobel, Lankshear & Leu, 2008, p. 14).
10	How do you feel about reading the news: a. from a newspaper? b. from an e-reader? c. from the Internet?	"Real-world experiences are intrinsically motivating" (Guthrie & Wigfield, 2000, p. 411). "Students tend to find reading and learning in digital environments engaging, as digital natives, they are comfortable interacting with these environments" (Dalton & Proctor, 2008, p. 319). "Reading books was the out-of-school activity that proved to have the strongest association with reading proficiency" (Anderson, Wilson, & Fielding, 1988, p. 297).

Appendix J: Directions for Administration with Consent

Directions for administering the survey: For the purpose of this project, please read the following directions before administering the survey. When you are ready to administer the survey, please read the script below to your students.

Teacher will read the following script for the assent process:

"I am going to pass out a survey that will ask you some questions about how you feel about reading. I will read each question aloud to you and you will be asked to circle your response. Feel free to answer truthfully because no one that knows you will see your response, including me. If you do not wish to participate you may sit quietly and follow along as I read through each question on the survey but you will not circle any responses.

I am going to give everyone an envelope. Please do not write your name on the envelope. After you complete the survey you will place it inside the envelope to keep your responses private." *(Teacher will pass out a manila envelope to each student)*

"Now I am going to pass out the survey. Please do not write your name on the survey because no one who knows you will see your responses." *(Teacher will pass out survey)*

"Please follow along with me as I read each item aloud. If you chose not to respond you may leave the questions blank. If you start answering questions you may decide at any point to stop answering questions if you feel uncomfortable.

For number 1-2 please circle yes or no.

1. Do you have a computer in your home?
2. Are you able to use a computer when you're not at school?

For numbers 3-5 please circle the answer to the question about yourself as best as you can.

3. What grade are you in? 3 4 5
4. Are you a boy or girl? BOY GIRL
5. Are you: White Black Asian Hispanic or Latino Native Hawaiian or Other Pacific Islander Mixed

For numbers 6-25, I will read each question and you should circle how you would feel if you were in that situation. Two-thumbs-up means very good, one-thumb-up means good, one-thumb-down means bad, and two-thumbs-down means very bad."

(Teacher will read each item on the survey and pause to allow students time to respond)

"Now that I have finished reading the questions and you have circled your responses, or left them blank, please place your survey in the envelope that I passed out earlier and seal it closed. When your envelope is sealed I will collect them. The envelope will not be opened until the researcher picks them up and only the researcher will see your responses."

Appendix K: Survey Used with Cognitive Interviews

For number 1-6, please circle yes or no.

1. Do you have a computer in your home? yes no
2. Are you able to use a computer when you're not at school? yes no
3. Do you have a computer at school? yes no
4. Are you able to use it? yes no
5. Do you have access to an e-reader at home? yes no
6. Do you have access to an e-reader at school? yes no

For numbers 6-9, please circle the answer to each question about yourself.

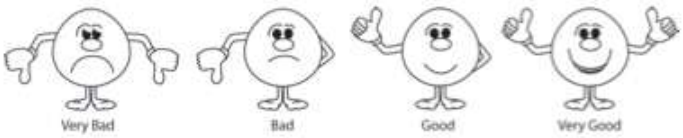
7. What grade are you in? **3** **4** **5**
8. Are you a boy or a girl? **BOY** **GIRL**
9. Are you: White Black Asian Hispanic or Latino
   Native Hawaiian or Other Pacific Islander Mixed

For numbers 10-18, read each question and circle how you would feel. Please respond to all three sections of each question: print books, e-readers, and the Internet.

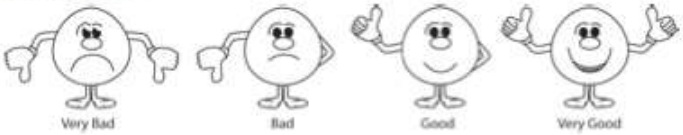
**For the term "print books" I am referring to any book that is printed and you turn the pages.*
**For the term "e-reader" I am referring to anything you can download books on and hold in your hand to read, for example, Kindle, Nook, iPad, tablet, iPhone, Blackberry, other smart phones, etc.*
**For the term "Internet" I am referring to any Internet reading you do on an actual computer (desktop or laptop) but not portable devices such as tablets, smart phones, iPads, etc.*

10. How do you feel about reading to learn new things:

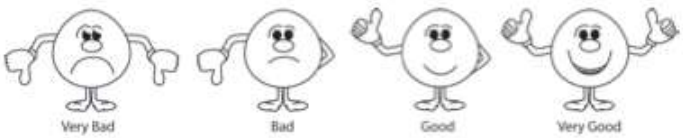
a. from a print book?



b. from an e-reader?

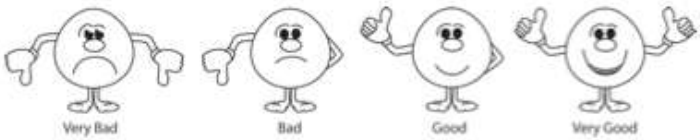


c. from the Internet?

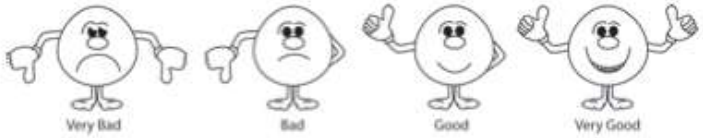


11. How do you feel about reading magazines:

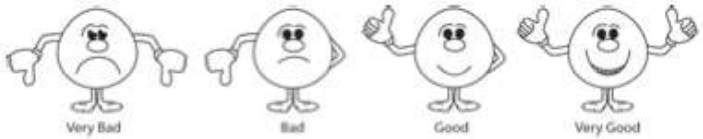
a. in print?



b. on an e-reader?

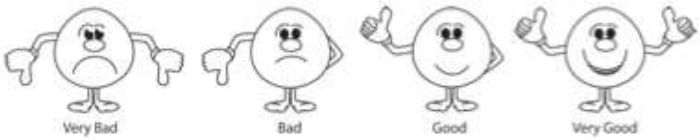


c. on the Internet?

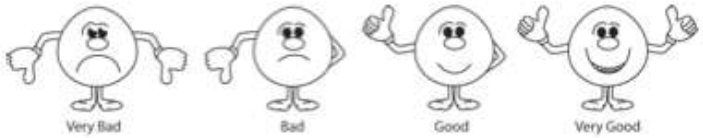


12. How do you feel about reading to learn more about something you did that was interesting:

a. from a print book?



b. from an e-reader?



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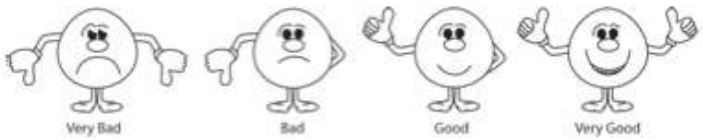
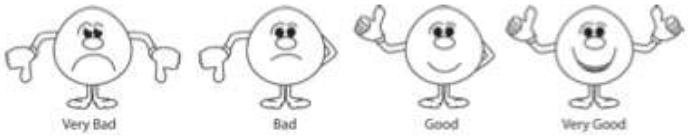
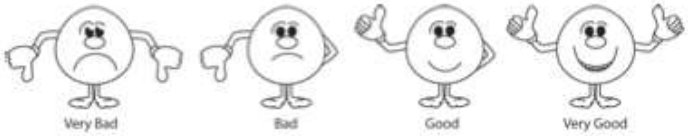


13. How do you feel about reading material of your choice written by authors you are not familiar with:

a. from a print book?



b. from an e-reader?



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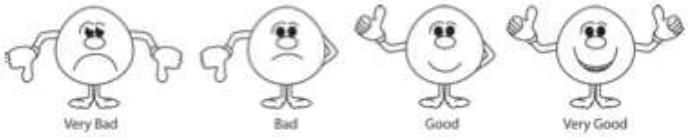
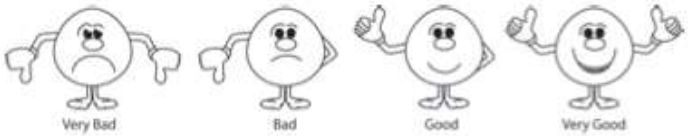
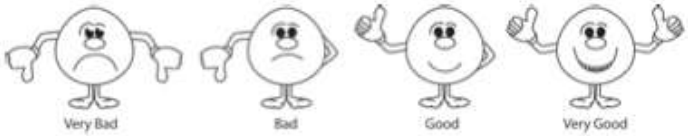


14. How do you feel about reading different kinds of books (for example, mysteries, comics, informational, etc.):

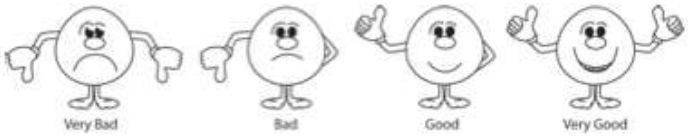
a. from a print book?



b. from an e-reader?

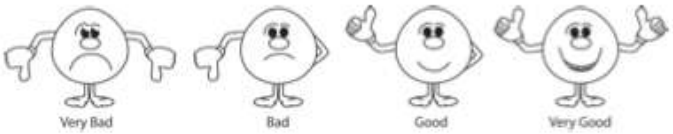


c. from the Internet?

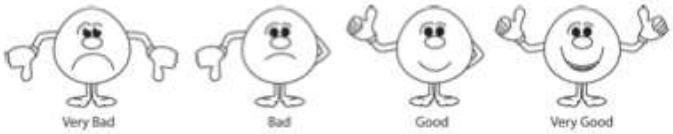


15. How do you feel about letting a friend borrow one of your:

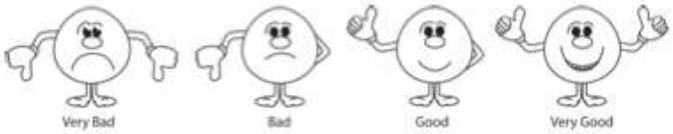
a. print books?



b. e-reader books?

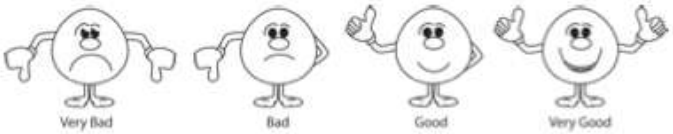


c. Internet books?

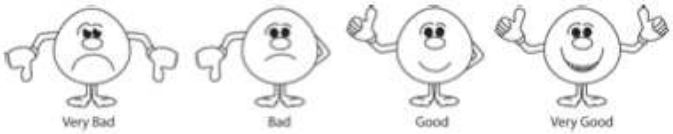


16. How do you feel about reading a book with a friend:

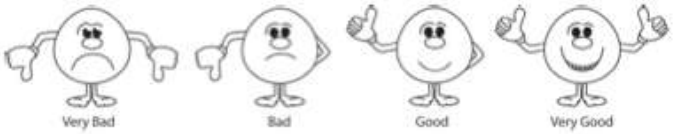
a. from a print book?



b. from an e-reader?

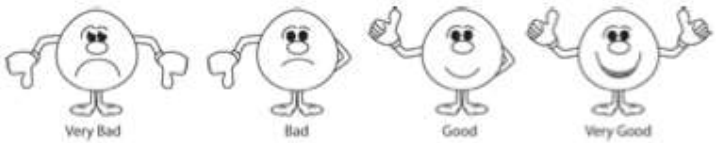


c. from the Internet?

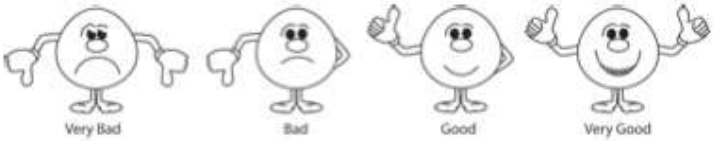


17. How do you feel about telling a friend about a book you read:

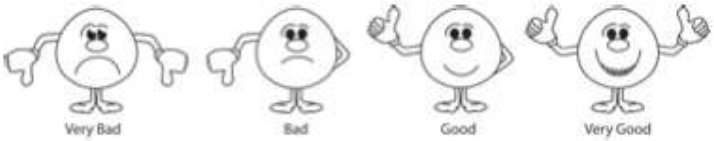
a. from a print book?



b. from an e-reader?

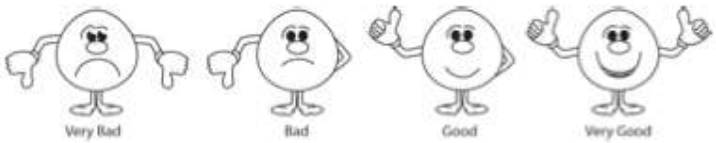


c. from the Internet?

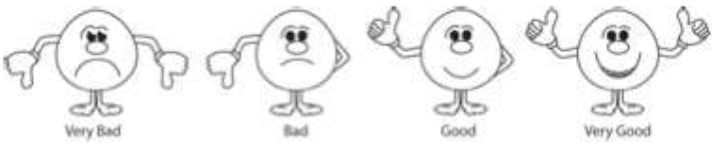


18. How do you feel about reading the news:

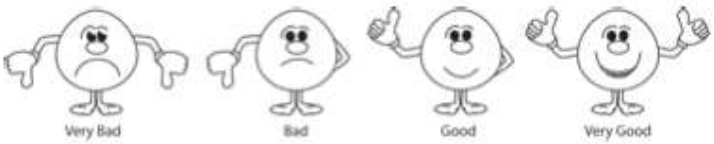
a. from a newspaper?



b. from an e-reader?



c. from the Internet?



Appendix L: Cognitive Interview Protocol

Hello, my name is _____ and I am so happy that you are willing to let me ask you some questions today. I am going to turn on my recorder so I can make sure to remember all of the things you tell me today.

What grade are you in?
Can you tell me the kinds of things you like to do in your spare time?

- What do you think I mean when I say *e-reader*?
- What do you think I mean when I say *print book*?
- What do you think I mean when I say *the Internet*?

Thanks for explaining that to me. When I use the word e-reader while we talk today I mean the kind of book that you read on a computer, cell phone, iPad, Kindle (show examples to allow participant to understand). For print book I mean the kind of book you read that has pages printed on paper (show an example to make sure participant understands). For the Internet I mean when you read from the Internet on a desktop or laptop computer, not when you read from the Internet on a phone or tablet.

(Provide a copy of the survey to the participant.) I am going to read some questions that ask you to tell me about yourself. Instead of telling me your answer, I would like you to tell me what you think I am asking you. Do you have any questions?

- Do you have a computer in your home?
- Are you able to use a computer when you're not in school?
- Do you have a computer in your school? Are you able to use it?
- Do you have access to an e-reader at home? In school?
- What are you thinking about as you answered those questions?

- Are you White, Black, Asian, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, or Mixed?

Now I am going to read the directions on the survey. Remember, you are not going to complete the survey with me. Instead, I want you to tell me what you think I am telling you or asking you. So when I read the directions I want you to tell me what I am asking you to do, if you were going to complete the survey, using your own words.

- **For numbers 10-18, read each question and circle how you would feel. Please respond to all three sections of each question: print books, e-readers, and the Internet.**

**For the term "print books" I am referring to any book that is printed and you turn the pages.*
**For the term "e-reader" I am referring to anything you can download books on and hold in your hand to read, for example, Kindle, Nook, iPad, tablet, iPhone, Blackberry, other smart phones, etc.*
**For the term "Internet" I am referring to any Internet reading you do on an actual computer (desktop or laptop) but not portable devices such as tablets, smart phones, iPads, etc.*

How do you feel about reading to learn new things:
a. from a print book?
b. from an e-reader?
c. from the Internet?

What do you think of when I say "new things"?

How do you feel about reading magazines:
a. in print?
b. on an e-reader?
c. on the Internet?

How do you feel about reading to learn more about something you did that was interesting?
a. from a print book?
b. from an e-reader?
c. from the Internet?

What do you think about when I say "something you did that was interesting?

How do you feel about reading material of your choice written by authors you are not familiar with:
a. from a print book?

b. from an e-reader?
c. from the Internet?

How do you feel about reading material of your choice while at home:

a. from a print book?
b. from an e-reader?
c. from the Internet?

How do you feel about reading different kinds of books (for example, mysteries, comics, informational, etc.):

a. from a print book?
b. from an e-reader?
c. from the Internet?

How do you feel about letting a friend borrow one of your:

a. print books?
b. e-reader books?
c. Internet books?

How do you feel about reading a book with a friend:

a. from a print book?
b. from an e-reader?
c. from the Internet?

How do you feel about telling a friend about a book you read?

a. from a print book?
b. from an e-reader?
c. from the Internet?

How do you feel about reading the news:

a. from a newspaper?
b. from an e-reader?
c. from the Internet?

- What do you think about the faces that are used for answers?
- Do you have any other comments or thoughts about the questions we talked about?

Thanks for all of your help today. It was very helpful to get your ideas.

Appendix M: Directions for Administration Used in Study

Directions for Survey Administration

Directions for administering the survey: For the purpose of this project, please read the following directions before administering the survey. When you are ready to administer the survey, please read the script below to your students.

Teacher will read the following script for the assent process:

"I am going to pass out a survey that will ask you some questions about how you feel about reading. I will read each question aloud and ask you to circle your response. Feel free to answer truthfully because no one that knows you will see your response, including me. If you do not wish to participate you may sit quietly and follow along as I read through each question on the survey but you will not circle any responses."

"I am going to give everyone an envelope. Please do not write your name on the envelope. After you complete the survey you will place it inside the envelope to keep your responses private." *(Teacher will pass out a manila envelope to each student)*

"Now I am going to pass out the survey. Please do not write your name on the survey because no one who knows you will see your responses." *(Teacher will pass out survey)*

"Please follow along with me as I read each item aloud. If you chose not to respond you may leave the question blank. If you start answering questions you may decide at any point to stop answering them if you feel uncomfortable. "

(Please read the following explanation of terms before reading the survey items. You may remind students what the terms mean at anytime throughout the administration of the survey.)

"For the term "book" the survey is asking about any book that is printed and you turn the pages. For the term "e-reader" the survey is asking about anything you can download books on and hold in your hand to read, for example, Kindle, Nook, iPad, tablet, iPhone, Blackberry, other smart phones, etc. For the term "Internet" the survey is asking about any Internet reading you do on an actual computer (desktop or laptop) but not portable devices such as tablets, smart phones, iPads, etc. Are there any questions?"

"We will begin with the questions about yourself on the half-sheet of paper stapled to the survey. For numbers 1-6, please circle yes or no.

3. Do you have a computer in your home?
4. Is there a computer you are allowed to use when you are outside of school?
5. Do you have a computer at school?
6. Are you able to use it?
7. Do you have access to an e-reader at home?

8. Do you have access to an e-reader at school?"

"For numbers 7-8, please circle the answer to the question about yourself.

6. What grade are you in? 3 4 5
7. Are you a boy or girl? BOY GIRL"

"Now we will begin the survey. For each item, I will read the question and you should circle how you would feel about that situation. You may not have experienced the situation but you should answer about how you think you would feel if you did. For example, you may never have been on an airplane before, but think about how you would feel if you were on an airplane to fly somewhere. Two-thumbs-up means very good, one-thumb-up means good, one-thumb-down means bad, and two-thumbs-down means very bad. Are there any questions?"

(The teacher will read each item on the survey and pause to allow students time to respond. The teacher may remind students what is meant by 'book', 'e-reader', and 'computer' at any time.)

"Now that I have finished reading the questions and you have circled your responses, or left them blank, please place your survey in the envelope that I passed out earlier and seal it closed. When your envelope is sealed I will collect them. The envelope will not be opened until the researcher picks them up and only the researcher will see your responses."

Appendix N: Student Information Page Used in Study

For number 1-6, please circle yes or no.

1. Do you have a computer in your home? yes no
2. Is there a computer you are allowed to use when you are outside of school? yes no
3. Do you have a computer at school? yes no
4. Are you able to use it? yes no
5. Do you have access to an e-reader at home? yes no
6. Do you have access to an e-reader at school? yes no

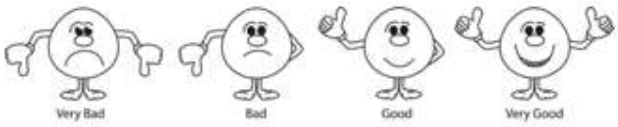
For numbers 7-8, please circle the answer to each question about yourself.

4. What grade are you in? **3** **4** **5**
8. Are you a boy or a girl? **BOY** **GIRL**

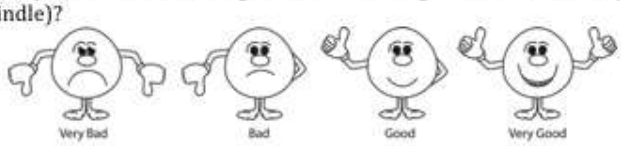
Appendix O: Survey Used in Study

For numbers 1-7, read each question and circle how you would feel. Please respond to all three sections of each question: print books, e-readers, and the Internet.

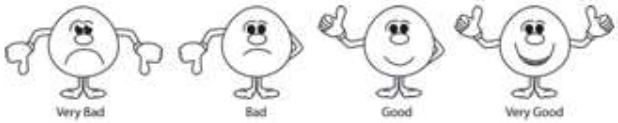
1. a. How do you feel about reading to learn new things from a book?



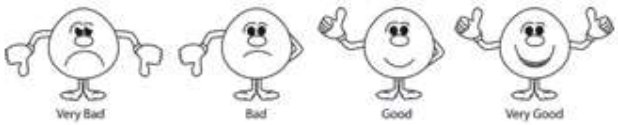
b. How do you feel about reading to learn new things from an e-reader (such as a Nook or Kindle)?



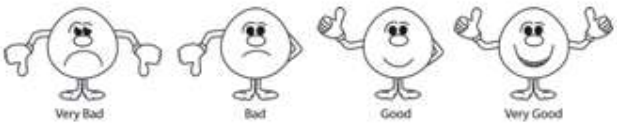
c. How do you feel about reading to learn new things from the Internet?



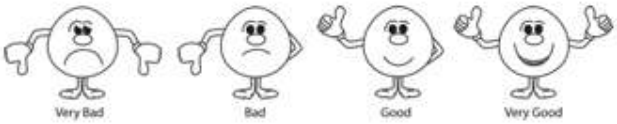
2. a. How do you feel about reading magazines?



b. How do you feel about reading magazines on an e-reader (such as a Nook or Kindle)?

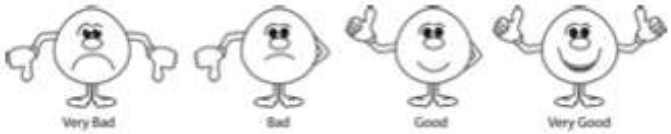


c. How do you feel about reading magazines on the Internet?

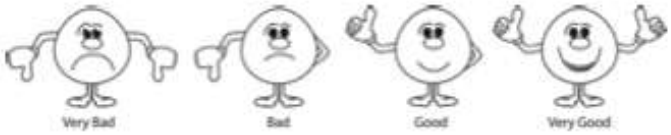


3. Sometimes we find something interesting and we want to learn more about it.
   a. How do you feel about learning about something that interests you from a book?

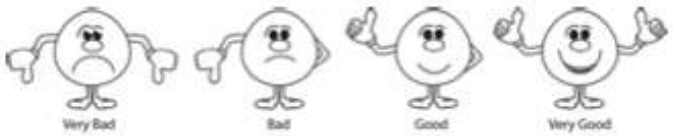
   b. How do you feel about learning about something that interests you from an e-reader (such as a Nook or Kindle)?



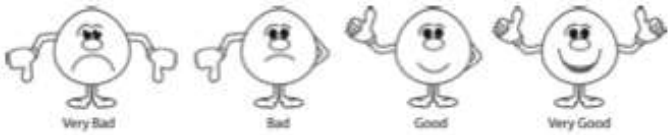
   c. How do you feel about learning about something that interests you from the Internet?



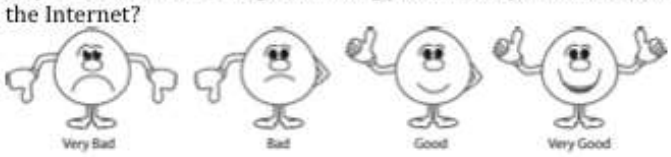
4. Sometimes we hear about authors who are new to us and we decide we'd like to read some of their writings.
   a. How do you feel about reading something you chose by authors that are new to you from a book?



   b. How do you feel about reading something you chose by authors that are new to you from an e-reader (such as a Nook or Kindle)?

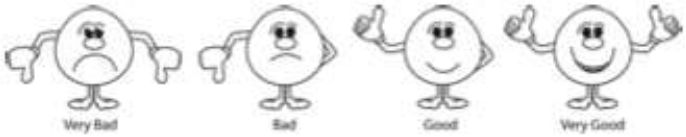


   c. How do you feel about reading something you chose by authors that are new to you from the Internet?

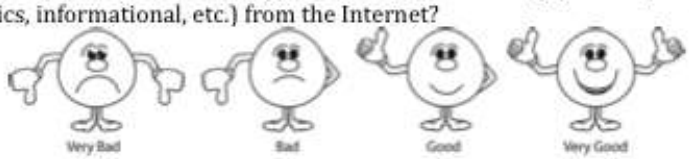


5. a. How do you feel about reading different types of writing (such as poetry, mysteries, comics, informational, etc.) from a book?

b. How do you feel about reading different types of writing (such as poetry, mysteries, comics, informational, etc.) from an e-reader (such as a Nook or Kindle)?

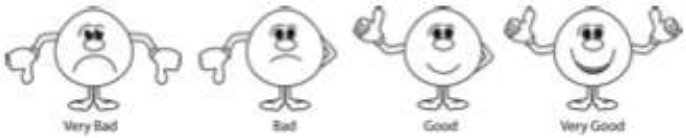


c. How do you feel about reading different types of writing (such as poetry, mysteries, comics, informational, etc.) from the Internet?

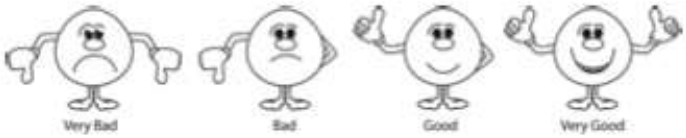


6. a. How do you feel about telling a friend about something you read from a book?

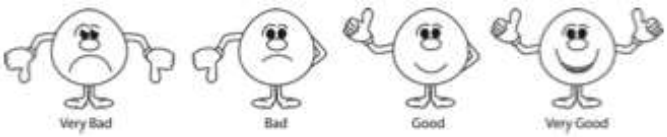
b. How do you feel about telling a friend about something you read from an e-reader (such as a Nook or Kindle)?



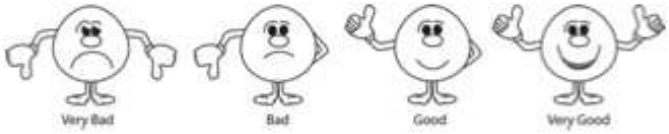
c. How do you feel about telling a friend about something you read from the Internet?



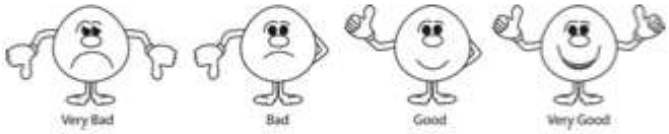
7. a. How do you feel about reading the news from a newspaper?



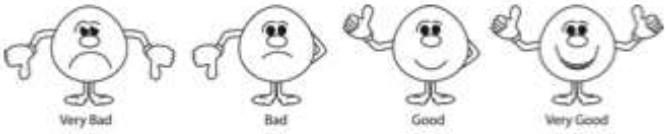
b. How do you feel about reading the news from an e-reader (such as a Nook or Kindle)?



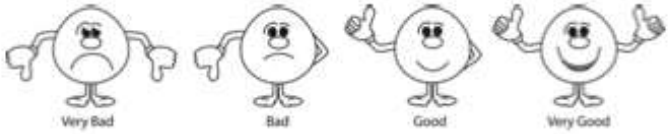
c. How do you feel about reading the news from the Internet?



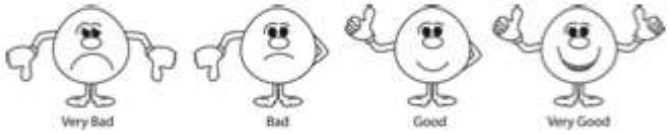
8. a. How do you feel when a friend reads with you from a book?



b. How do you feel when a friend reads with you from an e-reader (such as a Nook or Kindle)?



c. How do you feel when a friend reads with you from the Internet?



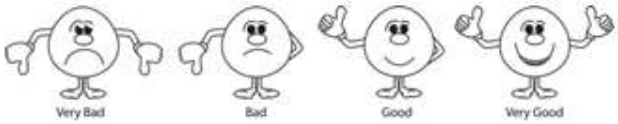
Appendix P: Final Survey (Revised from Data Analysis)

Student Name _____

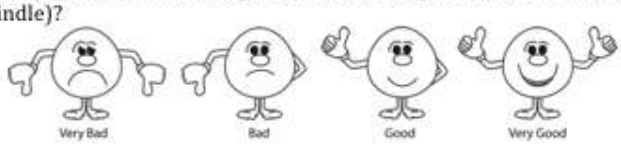
Date _____ **Teacher** _____

DIRECTIONS: For numbers 1-6, read each question and circle how you would feel. Please respond to all three sections of each question: print books, e-readers, and the Internet.

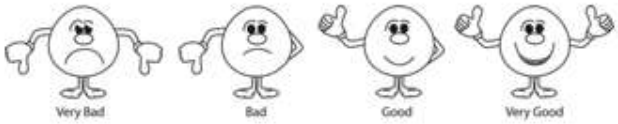
1. a. How do you feel about reading to learn new things from a book?



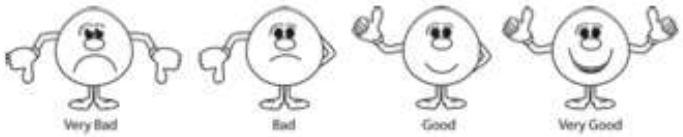
b. How do you feel about reading to learn new things from an e-reader (such as a Nook or Kindle)?



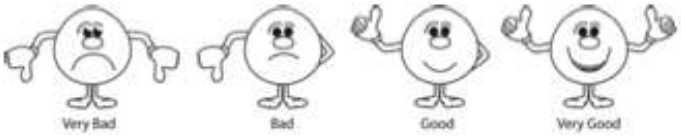
c. How do you feel about reading to learn new things from the Internet?



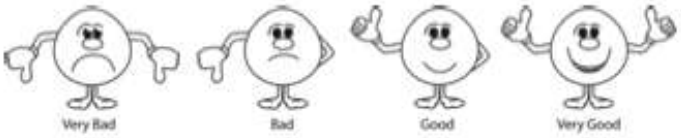
2. Sometimes we find something interesting and we want to learn more about it.
   a. How do you feel about learning about something that interests you from a book?



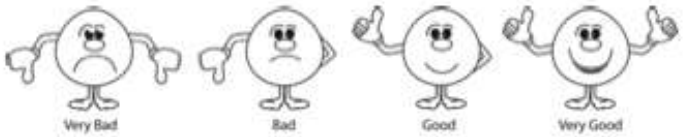
   b. How do you feel about learning about something that interests you from an e-reader (such as a Nook or Kindle)?



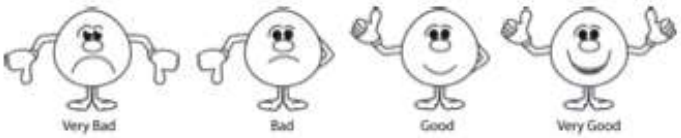
   c. How do you feel about learning about something that interests you from the Internet?



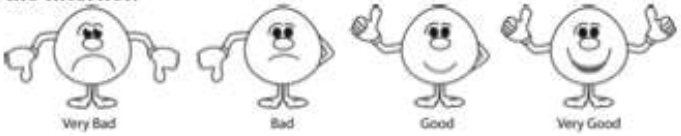
3. Sometimes we hear about authors who are new to us and we decide we'd like to read some of their writings.
   a. How do you feel about reading something you chose by authors that are new to you from a book?



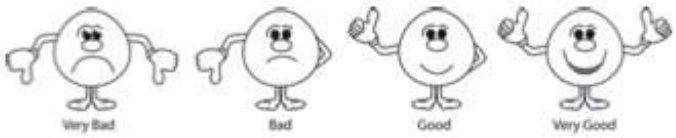
   b. How do you feel about reading something you chose by authors that are new to you from an e-reader (such as a Nook or Kindle)?



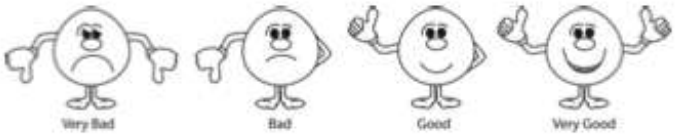
   c. How do you feel about reading something you chose by authors that are new to you from the Internet?



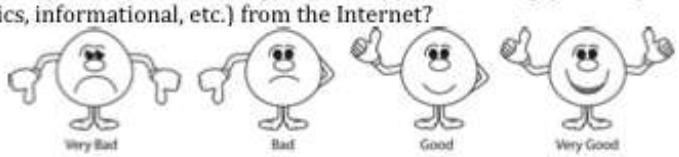
5. a. How do you feel about reading different types of writing (such as poetry, mysteries, comics, informational, etc.) from a book?



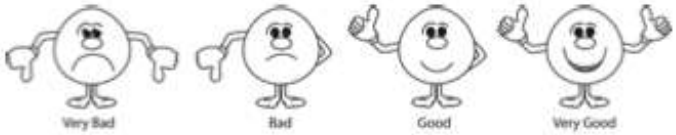
b. How do you feel about reading different types of writing (such as poetry, mysteries, comics, informational, etc.) from an e-reader (such as a Nook or Kindle)?



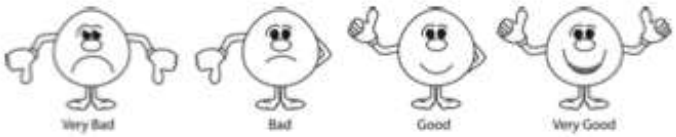
c. How do you feel about reading different types of writing (such as poetry, mysteries, comics, informational, etc.) from the Internet?



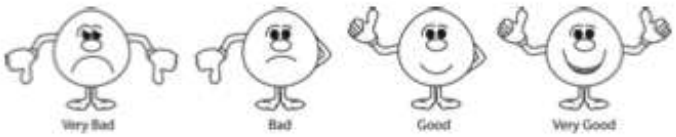
6. a. How do you feel about telling a friend about something you read from a book?



b. How do you feel about telling a friend about something you read from an e-reader (such as a Nook or Kindle)?



c. How do you feel about telling a friend about something you read from the Internet?



Appendix Q: Teacher's Score Page for Final Survey

Student Name _____

Grade _____ Administration Date _____

Scoring Guide

4 points Very Good

Print Text	E-reader	Computer
1a. _____	1b. _____	1c. _____
2a. _____	2b. _____	2c. _____
3a. _____	3b. _____	3c. _____
4a. _____	4b. _____	4c. _____
5a. _____	5b. _____	5c. _____
6a. _____	6b. _____	6c. _____

Print Score _____ + E-reader Score _____ + Computer Score _____

Total Score _____

Appendix R: Pattern Matrix for Unconstrained Factors

	Component				
	1	2	3	4	5
item 08	**.907**	1.103	-.161	.134	-.046
item 15	**.816**	.070	-.091	.141	-.210
item 10	**.731**	.089	.007	.180	-.054
item 14	**.661**	.025	-.121	-.029	.297
item 09	**.462**	.205	.137	-.416	.146
item 11	**.454**	-.145	.246	-.198	.297
item 20	-.044	**.812**	-.108	.144	-.044
item 18	.173	**.773**	-.240	.059	.069
item 21	-.284	**.612**	.038	.089	.359
item 06	.043	**.537**	.325	.124	-.332
item 19	.231	**.518**	.246	-.136	-.057
item 07	-.104	-.194	**.879**	.107	.005
item 03	-.170	.103	**.701**	-.222	-.088
item 22	.113	-.083	**.571**	.108	.212
item 16	-.404	.180	**.505**	.362	.038
item 13	.087	.142	-.009	**.730**	.253
item 17	.054	.178	-.138	**.706**	.158
item 05	.403	-.181	.266	**.487**	-.034
item 04	-.025	-.007	-.109	.313	**.837**
item 12	-.048	.028	.384	.023	**.588**

Appendix S: Structure Matrix for Unconstrained Factors

	Component				
	1	2	3	4	5
item 08	**.792**	.252	.261	.261	.130
item 10	**.790**	.448	.417	.349	.159
item 15	**.764**	.387	.297	.328	-.006
item 14	**.691**	.304	.329	.056	.455
item 09	**.586**	.358	.465	-.271	.412
item 11	**.569**	.140	.505	-.165	.511
item 05	**.543**	.236	.438	.538	.090
item 20	.261	**.786**	.190	.374	.035
item 18	.410	**.782**	.185	.292	.167
item 19	.537	**.663**	.537	.094	.204
item 06	.365	**.662**	.456	.363	-.124
item 21	.118	**.597**	.269	.185	.389
item 07	.286	.143	**.761**	.116	.234
item 22	.452	.262	**.680**	.137	.416
item 16	.374	.479	**.605**	.455	.194
item 03	.167	.226	**.602**	-.142	.150
item 13	.352	.440	.253	**.759**	.220
item 17	.236	.387	.086	**.738**	.079
item 04	.219	.183	.198	.203	**.756**
item 12	.338	.272	.578	-.004	**.711**

Appendix T: Pattern Matrix Constrained to 4 Factors

	Component			
	1	2	3	4
item 08	**.876**	-.093	-.063	.013
item 15	**.800**	.149	-.102	-.089
item 10	**.712**	.152	.048	.034
item 14	**.582**	-.129	.233	.130
item 05	**.468**	.059	.029	.271
item 20	-.050	**.808**	-.703	.032
item 06	.068	**.748**	.099	-.166
item 18	.129	**.667**	-.037	.041
item 19	.176	**.527**	.361	-.170
item 21	-.311	**.501**	.252	.270
item 16	.012	**.405**	.302	.237
item 12	-.096	-.070	**.679**	.374
item 07	-.069	.074	**.650**	.062
item 03	-.189	.238	**.626**	-.214
item 22	.108	.027	**.577**	.183
item 11	.370	-.249	**.556**	.031
item 09	.341	.037	**.527**	-.220
item 04	-.050	-.222	.279	**.733**
item 13	.170	.281	-.152	**.619**
item 17	.143	.309	-.311	**.548**

Appendix U: Structure Matrix Constrained to 4 Factors

	Component			
	1	2	3	4
item 08	**.818**	.275	.236	.236
item 10	**.805**	.481	.342	.319
item 15	**.800**	.439	.199	.192
item 14	**.650**	.217	.441	.307
item 05	**.587**	.367	.263	.442
item 20	.280	**.783**	.081	.302
item 06	.374	**.736**	.244	.152
item 18	.415	**.730**	.154	.321
item 19	.480	**.614**	.499	.152
item 16	.367	**.560**	.436	.451
item 21	.077	**.519**	.296	.410
item 12	.233	.167	**.704**	.453
item 22	.384	.260	**.657**	.340
item 07	.216	.201	**.652**	.197
item 11	.473	.036	**.645**	.162
item 09	.478	.210	**.613**	.003
item 03	.072	.206	**.564**	-.060
item 13	.427	.553	.089	**.746**
item 04	.181	.087	.361	**.691**
item 17	.332	.510	-.088	**.645**

Appendix V: Pattern Matrix for Unconstrained Factors

	Component							
	1	2	3	4	5	6	7	8
item 1b	**.807**	-.035	.153	-.009	.031	-.056	-.040	.097
item 3b	**.814**	-.135	.202	-.009	.008	-.045	.043	.089
item 4b	**.589**	-.005	-.160	.027	.031	.096	-.123	-.457
item 5b	**.609**	-.018	-.044	.156	.063	.439	-.036	-.121
item 6b	**.516**	.090	-.024	.140	.061	-.376	-.056	-.401
item 1c	.112	**-.715**	.069	-.173	.101	-.041	-.085	.158
item 3c	.033	**-.780**	.154	-.034	.041	.018	.028	.076
item 4c	-.021	**-.631**	-.172	.014	.073	.019	-.123	-.384
item 5c	.077	**-.674**	-.061	.189	-.005	.343	-.017	-.033
item 6c	-.032	**-.560**	.015	.226	-.056	-.339	-.040	-.298
item 1a	.098	-.083	**.691**	-.084	.015	.024	-.166	-.098
item 3a	.150	-.015	**.851**	.139	.003	.092	-.031	.073
item 8a	-.125	.148	.241	**.840**	.123	-.017	.002	.050
item 8b	.222	.106	-.093	**.852**	.002	.068	-.043	.059
item 8c	-.112	-.386	-.111	**.681**	.004	-.039	-.068	-.056
item 2a	-.204	.088	.083	-.007	**.904**	-.006	.015	-.011
item 2b	.373	.021	-.148	.059	**.715**	.014	.033	-.028
item 2c	.025	-.307	-.050	.055	**.671**	-.016	-.114	.061
item 5a	-.038	-.096	.334	.053	.035	**.641**	.072	-.308
item 6a	.050	-.044	.411	.166	.067	**-.499**	.111	-.467
item 7a	-.202	.090	.196	-.074	.026	-.019	**-.812**	-.140
item 7b	.265	.074	-.056	.097	.049	-.017	**-.798**	.041
item 7c	-.050	-.400	-.015	.099	.002	-.014	**-.643**	.144
item 4a	-.036	.058	.184	-.038	.107	.263	-.169	**-.659**

**Data for all students in both schools*

Appendix W: Structure Matrix for Unconstrained Factors

	Component							
	1	2	3	4	5	6	7	8
item 1b	**.813**	-.149	.186	.167	.201	-.020	-.163	-.061
item 3b	**.821**	-.226	.229	.173	.182	-.0101	-.110	-.069
item 4b	**.679**	-.156	-.029	.263	.229	.120	-.278	-.549
item 5b	**.691**	-.159	.044	.316	.259	.460	-.194	-.258
item 6b	**.598**	-.050	.077	.352	.225	-.357	-.184	-.512
item 1c	.176	**-.729**	.089	-.026	.203	-.009	-.277	.079
item 3c	.126	**-.777**	.176	.100	.167	.040	-.202	-.015
item 4c	.141	**-.702**	-.057	.223	.237	.036	-.361	-.440
item 5c	.216	**-.726**	.000	.312	.177	.351	-.252	-.138
item 6c	.114	-.615	.089	.383	.113	-.335	-.247	-.390
item 1a	.167	-.168	**.734**	.038	.167	.062	-.291	-.250
item 3a	.220	-.096	**.811**	.206	.162	.119	-.158	-.125
item 8a	.059	-.002	.283	**.820**	.280	-.037	-.105	-.164
item 8b	.381	-.069	-.039	**.867**	.208	.046	-.144	-.146
item 8c	.090	-.505	-.044	**.740**	.203	-.057	-.251	-.217
item 2a	-.040	-.030	.177	.139	**.858**	.032	-.160	-.112
item 2b	.511	-.138	-.039	.282	**.775**	.053	-.178	-.165
item 2c	.207	-.450	.050	.258	**.748**	.024	-.353	-.087
item 5a	.067	-.138	.409	.127	.153	**.652**	-.083	-.377
item 7a	-.085	-.120	.297	.030	.193	.017	**-.801**	-.263
item 7b	.382	-.198	.049	.249	.286	.022	**-.824**	-.147
item 7c	.086	-.575	.054	.212	.208	.014	**-.734**	-.013
item 4a	.108	-.063	.331	.141	.251	.285	-.314	**-.718**
item 6a	.161	-.106	.484	.326	.184	-.486	-.054	**-.572**

***** *Data for all students in both schools*

Appendix X: Pattern Matrix for Unconstrained Factors

	Component							
	1	2	3	4	5	6	7	8
item 1c	.609	-.180	-.214	-.276	.124	-.065	-.097	-.161
item 3c	.737	-.055	-.093	.058	.053	.053	.089	-.241
item 4c	.652	-.010	-.033	.129	.201	-.224	-.075	.240
item 5c	.750	-.077	.146	.197	-.064	.109	-.076	.064
item 6c	.646	.048	.171	-.082	-.091	-.412	-.072	.044
item 1b	.024	-.813	.070	-.205	.051	-.101	.048	-.134
item 3b	.053	-.845	-.008	.003	-.053	-.036	-.016	-.233
item 4b	.097	-.628	.001	.230	.151	-.245	-.028	.247
item 5b	.083	-.664	.138	.340	-.091	.140	-.119	.137
item 8a	-.175	.096	.803	-.008	.122	-.129	-.057	-.196
item 8b	-.053	-.219	.823	-.042	.002	-.013	-.013	.056
item 8c	.496	.095	.672	-.017	.093	-.022	.018	.032
item 4a	-.104	-.003	-.098	.592	.243	-.250	-.214	-.066
item 5a	.125	-.034	-.007	.825	-.058	.075	.061	-.149
item 2a	-.066	.199	.075	.097	.866	.034	.078	-.079
item 2b	-.059	-.399	.064	-.077	.702	.012	.012	.088
item 2c	.242	.035	.026	-.041	.716	.054	-.138	-.043
item 6a	.121	.082	.149	.045	-.077	-.832	.054	-.179
item 6b	-.066	-.357	.024	-.026	.029	-.689	-.094	.084
item 7a	-.023	.283	-.044	.144	-.059	-.119	-.793	-.120
item 7b	-.092	-.267	.076	-.075	.050	.036	-.845	.028
item 7c	.481	-.007	.071	-.102	.062	.221	-.578	-.039
item 1a	.017	-.001	-.004	.015	.099	-.194	-.130	-.731
item 3a	.045	-.208	.153	.271	-.008	.100	-.006	-.705

** Data for all students in School 1.*

Appendix Y: Structure Matrix for Unconstrained Factors

	Component							
	1	2	3	4	5	6	7	8
item 1c	.664	-.264	-.083	-.218	.245	-.147	-.255	-.189
item 3c	.740	-.149	.019	.098	.158	-.025	-.118	-.296
item 4c	.706	-.186	.117	.157	.339	-.321	-.299	.137
item 5c	.781	-.224	.247	.242	.090	-.008	-.269	-.029
item 6c	.697	-.125	.295	-.025	.100	-.492	-.266	-.040
item 1b	.148	-.825	.210	-.135	.179	-.208	-.082	-.107
item 3b	.209	-.847	.146	.082	.094	-.146	-.155	-.221
item 4b	.246	-.716	.178	.267	.287	-.352	-.221	.197
item 5b	.210	-.709	.250	.387	.040	.021	-.231	.099
item 8a	-.027	-.036	.822	.086	.240	-.265	-.156	-.256
item 8b	.084	-.341	.847	.034	.138	-.161	-.108	.013
item 8c	.574	-.104	.730	.053	.251	-.178	-.177	-.061
item 4a	.030	-.094	.040	.638	.326	-.322	-.363	-.168
item 5a	.146	-.075	.066	.834	-.013	.035	-.081	-.234
item 2a	.037	.092	.158	.122	.828	-.073	-.091	-.145
item 2b	.111	-.488	.202	-.032	.741	-.133	-.161	.056
item 2c	.382	-.113	.158	.022	.776	-.101	-.337	-.125
item 6a	.205	-.040	.282	.101	.079	-.851	-.121	-.242
item 6b	.085	-.446	.187	.028	.185	-.741	-.231	.047
item 7a	.132	.180	.024	.250	.095	-.207	-.785	-.220
item 7b	.159	-.371	.190	.062	.252	-.135	-.857	-.044
item 7c	.614	-.147	.162	.004	.239	.060	-.667	-.126
item 1a	.148	-.043	.106	.126	.211	-.273	-.263	-.765
item 3a	.162	-.231	.244	.372	.098	-.004	-.153	-.739

Data for all students in School 1.

Appendix Z: Pattern Matrix for Unconstrained Factors

	Component						
	1	2	3	4	5	6	7
item 1b	**.755**	.044	.143	-.140	.003	-.052	-.057
item 3b	**.801**	.200	-.051	-.140	.084	.168	.265
item 4b	**.611**	-.093	.207	.268	-.178	-.261	-.138
item 5b	**.636**	.084	.211	.168	.215	.065	-.246
item 6b	**.660**	-.211	-.085	.266	-.021	-.155	.307
item 1c	-.025	**.778**	.063	-.172	.045	.063	-.075
item 3c	.046	**.785**	-.021	-.074	.014	-.012	.237
item 4c	-.024	**.609**	.109	.251	-.128	-.234	.018
item 5c	.131	**.718**	.130	.236	.042	.072	-.238
item 1a	.163	.097	**.703**	-.224	-.100	-.157	.142
item 3a	.089	-.011	**.630**	-.080	.087	.049	.393
item 4a	.053	-.044	**.651**	.224	-.101	-.218	.005
item 5a	-.040	.175	**.698**	.107	.194	.117	-.243
item 8a	-.162	-.072	.204	**.717**	.230	.127	.197
item 8b	.265	-.078	-.069	**.802**	.078	.018	-.051
item 8c	-.058	.295	-.086	**.705**	-.113	-.160	.100
item 2a	-.116	-.077	.051	-.016	**.874**	-.174	.069
item 2b	.454	.033	-.068	.170	**.581**	-.055	-.066
item 2c	.171	.414	-.109	.093	**.513**	-.147	.011
item 7a	-.114	-.079	.240	-.131	.150	**-.827**	.024
item 7b	.277	.031	-.081	.055	.111	**-.700**	-.046
item 7c	-.112	.358	-.086	.037	.055	**-.672**	.045
item 6a	.098	-.145	.274	.129	.152	.030	**.718**
item 6c	-.009	.377	-.075	.272	-.069	-.130	**.586**

** Data for all students in school 2*

Appendix AA: Structure Matrix for Unconstrained Factors

	Component						
	1	2	3	4	5	6	7
item 1b	**.763**	.134	.285	.046	.153	-.176	.002
item 3b	**.792**	.241	.117	.066	.223	-.013	.297
item 4b	**.697**	.075	.347	.412	.019	-.385	-.032
item 5b	**.736**	.195	.363	.334	.389	-.115	-.160
item 6b	**.719**	-.057	.103	.426	.133	-.267	.385
item 1c	.053	**.775**	.106	-.052	.111	-.241	-.061
item 3c	.138	**.789**	.059	.071	.106	-.236	.252
item 4c	.136	**.697**	.187	.364	.012	-.445	.084
item 5c	.270	**.754**	.202	.346	.187	-.181	-.181
item 1a	.281	.166	**.741**	-.081	.042	-.286	.205
item 3a	.233	.037	**.679**	.043	.208	-.095	.443
item 4a	.241	.084	**.698**	.315	.065	-.349	.103
item 5a	.141	.217	**.706**	.175	.317	-.044	-.175
item 8a	.062	.019	.270	**.725**	.335	-.028	.270
item 8b	.423	.062	.060	**.845**	.230	-.137	.043
item 8c	.122	.413	.005	**.746**	.023	-.342	.179
item 2a	.079	.055	.200	.128	**.868**	-.222	.117
item 2b	.594	.181	.139	.360	**.687**	-.199	.010
item 2c	.337	.535	.070	.285	**.600**	-.328	.071
item 7a	.058	.142	.357	.030	.211	**-.817**	.112
item 7b	.405	.261	.106	.249	.220	**-.754**	.050
item 7c	.040	.530	.039	.187	.124	**-.752**	.113
item 6a	.239	-.071	.377	.247	.249	-.100	**.761**
item 6c	.129	.450	.033	.386	.037	-.319	**.626**

**Data for all students in school 2*

Appendix BB: Pattern Matrix Constrained to 3 Factors

	Component		
	1	2	3
item 1b	.729	.015	-.030
item 2b	.616	-.135	.004
item 3b	.720	-.027	-.034
item 4b	.685	-.058	.076
item 5b	.691	-.054	.024
item 6b	.673	.072	.127
item 8b	.638	-.073	-.037
item 1c	-.061	-.722	-.103
item 2c	.195	-.521	.093
item 3c	-.081	-.726	-.019
item 4c	.041	-.720	.033
item 5c	.110	-.717	-.082
item 6c	.187	-.577	.077
item 7b	.257	-.339	.221
item 7c	-.112	-.733	.114
item 8c	.217	-.557	-.026
item 1a	-.059	.000	.708
item 2a	.047	-.093	.350
item 3a	.062	.114	.689
item 4a	.057	.017	.652
item 5a	-.016	-.010	.522
item 6a	.187	.083	.531
item 7a	-.286	-.262	.605
item 8a	.290	.017	.330

**Data from all students in both schools*

Appendix CC: Structure Matrix Constrained to 3 Factors

	Component		
	1	2	3
item 1b	.715	-.183	.200
item 2b	.656	-.312	.243
item 3b	.717	-.222	.206
item 4b	.726	-.275	.314
item 5b	.714	-.258	.263
item 6b	.693	-.157	.322
item 8b	.647	-.244	.191
item 1c	.111	-.674	.092
item 2c	.373	-.604	.311
item 3c	.119	-.697	.170
item 4c	.257	-.741	.260
item 5c	.287	-.724	.167
item 6c	.262	-.621	.272
item 7b	.424	-.477	.404
item 7c	.133	-.735	.296
item 8c	.367	-.611	.209
item 1a	.169	-.193	.689
item 2a	.187	-.210	.393
item 3a	.251	-.108	.675
item 4a	.262	-.194	.666
item 5a	.155	-.160	.519
item 6a	.335	-.128	.567
item 7a	-.017	-.361	.590
item 8a	.392	-.164	.419

**Data from all students in both schools*

Appendix DD: Pattern Matrix Constrained to 3 Factors

	Component		
	1	2	3
item 1c	.708	-.100	-.156
item 2c	.388	-.041	.360
item 3c	.728	.046	-.054
item 4c	.683	-.123	.041
item 5c	.758	-.063	-.056
item 6c	.639	-.078	.087
item 7c	.697	.034	.130
item 8c	.422	-.121	.324
item 1b	.038	-.829	-.111
item 2b	.070	-.497	.156
item 3b	.096	-.792	-.101
item 4b	.147	-.740	-.021
item 5b	.125	-.666	-.086
item 6b	-.028	-.557	.201
item 8b	-.133	-.485	.357
item 1a	.040	.029	.584
item 2a	.022	.112	.508
item 3a	.006	-.123	.494
item 4a	-.015	-.057	.541
item 5a	.064	.034	.309
item 6a	.025	-.162	.484
item 7a	.250	.312	.502
item 7b	.233	-.288	.293
item 8a	-.246	-.180	.712

**Data from all students in school 1*

Appendix EE: Structure Matrix Constrained to 3 Factors

	Component		
	1	2	3
item 1c	.685	-.230	.080
item 2c	.505	-.217	.485
item 3c	.701	-.112	.152
item 4c	.724	-.293	.275
item 5c	.756	-.228	.185
item 6c	.683	-.249	.297
item 7c	.727	-.160	.330
item 8c	.548	-.297	.479
item 1b	.200	-.811	.097
item 2b	.233	-.551	.295
item 3b	.252	-.790	.115
item 4b	.315	-.770	.198
item 5b	.255	-.675	.109
item 6b	.163	-.598	.325
item 8b	.087	-.538	.432
item 1a	.208	1.119	.589
item 2a	.147	-.013	.488
item 3a	.182	-.241	.525
item 4a	.159	-.181	.549
item 5a	.148	-.055	.320
item 6a	.208	-.283	.530
item 7a	.327	.134	.503
item 7b	.388	-.412	.431
item 8a	.009	-.291	.681

**Data from all students in school 1*

Appendix FF: Pattern Matrix Constrained to 3 Factors

	Component		
	1	2	3
item 1b	.481	-.048	.303
item 2a	.247	.122	.198
item 2b	.677	.117	.023
item 3b	.579	-.006	.140
item 4b	.591	.020	.228
item 5b	.652	.028	.187
item 6a	.379	-.122	.365
item 6b	.791	-.111	.039
item 8a	.522	.052	-.060
item 8b	.819	.086	-.309
item 1c	-.255	.735	.090
item 2c	.327	.537	-.015
item 3c	-.093	.734	.037
item 4c	.016	.745	.044
item 5c	.131	.664	-.021
item 6c	.204	.498	-.043
item 7b	.280	.426	.149
item 7c	-.090	.746	.073
item 8c	.392	.529	-.299
item 1a	-.056	.064	.797
item 3a	.117	-.091	.690
item 4a	.169	.076	.575
item 5a	.056	.103	.529
item 7a	-.112	.381	.486

**Data from all students in school 2*

Appendix GG: Structure Matrix Constrained to 3 Factors

	Component		
	1	2	3
item 1b	.550	.140	.425
item 2a	.334	.226	.287
item 2b	.715	.306	.229
item 3b	.615	.178	.296
item 4b	.658	.223	.392
item 5b	.710	.241	.369
item 6b	.771	.112	.233
item 8a	.520	.184	.091
item 8b	.758	.253	-.070
item 1c	-.029	.682	.157
item 2c	.470	.624	.172
item 3c	.117	.715	.147
item 4c	.232	.758	.186
item 5c	.307	.696	.137
item 6c	.328	.546	.105
item 7b	.437	.530	.303
item 7c	.134	.735	.187
item 8c	.456	.581	-.095
item 1a	.178	.195	.794
item 3a	.279	.068	.704
item 4a	.346	.228	.635
item 5a	.228	.216	.563
item 6a	.444	.049	.445
item 7a	.124	.440	.526

**Data from all students in school 2*