THE EFFECTS OF COLLABORATIVE STRATEGIC READING ON
INFORMATIONAL TEXT COMPREHENSION AND METACOGNITIVE
AWARENESS OF FIFTH GRADE STUDENTS

by

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Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

This study examined the effects of Collaborative Strategic Reading (CSR) on informational text comprehension and metacognitive awareness of fifth grade students. This study tested the theories of metacognition and social cognition with a focus on self-regulation and self-efficacy. Participating students included a heterogeneous mix of regular education students, students with disabilities, and English learners (ELs). Using a quasi-experimental pretest-posttest nonequivalent control group design, this study examined the effects of CSR on informational text comprehension using the Qualitative Reading Inventory-5 (QRI-5) and Georgia’s Criterion-Referenced Competency Test (CRCT). Metacognitive awareness was measured using the Metacognitive Awareness of Reading Strategies Inventory (MARSI). Data was analyzed using multivariate analysis of covariance (MANCOVA) and multivariate analysis of variance (MANOVA) due to correlations between the dependent variables and the need to use student reading level and student subgroup as covariates. The MANCOVA analysis found a statistically significant difference on the QRI-5 between the experimental and control groups with the experimental group outperforming the control group, while controlling for student reading level and student subgroup; however, there was no statistically significant difference on the CRCT or on CRCT reading domains. The MANOVA analysis found no significant difference between the experimental and control groups on the MARSI and MARSI subscales.

Keywords: Collaborative Strategic Reading, reading comprehension, informational text, metacognition, self-regulation, self-efficacy, elementary students
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Consider it pure joy, my brothers and sisters, whenever you face trials of many kinds, because you know that the testing of your faith produces perseverance. Let perseverance finish its work so that you may be mature and complete, not lacking anything. (James 1: 2-4, New International Version)
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Criterion-Referenced Competency Test (CRCT)
Collaborative Strategic Reading (CSR)
English Learner (EL)
Multivariate Analysis of Variance (MANOVA)
Multivariate Analysis of Covariance (MANCOVA)
Metacognitive Awareness of Reading Strategies Inventory (Marsi)
Qualitative Reading Inventory-5 (QRI-5)
CHAPTER ONE: INTRODUCTION

Each year for the past 16 years, the International Reading Association (IRA) has conducted a survey entitled *What’s Hot, What’s Not* (Cassidy & Grote-Garcia, 2012). The purpose of this survey is to stimulate further research in “hot” topics in literacy as determined by literacy leaders in the United States and around the world. The 2013 survey found six topics considered to be “very hot” including Common Core State Standards, adolescent literacy, comprehension, high stakes-assessment, and informational/non-fiction texts (Cassidy & Grote-Garcia, 2012).

During the 2012-2013 school year, forty-six states and three U.S. territories implemented Common Core State Standards for English Language Arts (Common Core State Standards Initiative, 2012a). The standards follow the 2009 National Assessment of Educational Progress Reading Framework in balancing literary and informational text instruction with a gradual shift from 50% informational text in fourth grade to 70% informational text in 12th grade (Common Core State Standards Initiative, 2012a). Informational text is more difficult to comprehend than narrative text (Williams et al., 2007). Its content is frequently unfamiliar and abstract for students, and its varied text structures create barriers to comprehension (Meyer & Poon, 2011; Williams et al., 2007). Additionally, there has been a lack of informational text in elementary classrooms (Duke, 2000). In Duke’s (2000) landmark study, she found an average of 3.6 minutes per day spent interacting with informational text in first grade classrooms, and even less in low socio-economic status (SES) classrooms. Unfortunately, most elementary teachers have received limited instruction in the teaching of informational text and content area reading (Moss, 2005).
To enhance reading comprehension, researchers recommend using metacognitive and cognitive strategies (Eilers & Pinkley, 2006; Jitendra, Burgess, & Gajria, 2011; Law, 2009). Metacognition is cognition about cognition and involves monitoring memory and comprehension (Flavell, 1977, 1979). The use of metacognition increases the likelihood of the use of appropriate strategies (Pressley & Wharton-McDonald, 2006). Metacognitive reading strategies include planning, monitoring, and self-evaluation (Paris & Oka, 1989). Cognitive strategies are mental or behavioral actions readers use to process information including summarizing, questioning, and using graphic organizers (Van Keer & Verhaeghe, 2005). Of critical importance is the readers’ ability to self-regulate their learning through metacognitive and cognitive strategies and believe in their self-efficacy to accomplish the task (Schunk & Zimmerman, 2007).

Collaborative Strategic Reading (CSR) is a reading program that combines four metacognitive and cognitive strategies. The first strategy is Preview which involves activating prior knowledge and analyzing text structure before a passage is read (Klingner, Vaughn, Boardman, & Swanson, 2012b). The next strategy is Click and Clunk in which students self-monitor during reading. The third strategy is Get the Gist in which students find and write the main idea during reading. The final strategy is Wrap Up where students learn to generate questions and review text after an entire passage is read (Klingner et al., 2012b). Its design merges reciprocal teaching and cooperative learning (Johnson & Johnson, 1989b; Klingner & Vaughn, 1999; Palinscar & Brown, 1984). Students work in small, heterogeneous cooperative groups applying the above strategies to comprehend content area text (Klingner & Vaughn, 1999). Research has found CSR to be successful with struggling readers, particularly those with learning
disabilities (Jitendra et al., 2011; Klingner, Vaughn, & Schumm, 1998; Vaughn, Klingner, & Bryant, 2001) and English learners (ELs) (Klingner, Boardman, Eppolito, & Schonewise, 2012a; Klingner & Vaughn, 2000; Klingner et al., 1998).

The purpose of this study is to determine the effectiveness of CSR on informational text comprehension and metacognitive awareness of a heterogeneous group of fifth grade students including regular education students, gifted students, students with learning disabilities, and ELs. Only one CSR study has been conducted at the fifth grade level (Klingner & Vaughn, 2000), and its focus was EL students and vocabulary. No previous studies have examined the effect of CSR on metacognitive awareness (Jacobs & Paris, 1987). Hence, this study extends previous CSR research by focusing on the impact of CSR on the reading comprehension and metacognitive awareness of a heterogeneous group of fifth grade students.

This chapter will include the background, problem statement, purpose statement, significance of the study, research questions, hypotheses, identification of variables, definitions, research summary, assumptions, and limitations.

**Background**

Two landmark studies brought reading comprehension and informational text into the limelight. Durkin (1978-1979) studied elementary classrooms from grades three to six to determine the extent of reading comprehension instruction. She found little to no comprehension instruction, and the majority of comprehension instruction she observed focused on assessment through teacher questions. Moreover, she found no reading comprehension instruction during social studies instruction. The teachers stressed covering content over comprehension of text (Durkin, 1978-1979). Duke (2000)
researched informational text in first grade classrooms and found an overall scarcity, particularly in low-SES schools. The mean percentage of displayed informational text was 3.6% in high-SES classrooms and only 1.5% in low-SES classrooms. Classroom libraries in high-SES schools contained a mean of 12.7% informational texts, while low-SES schools contained a mean of 6.9%. Duke (2000) hypothesized that students perform poorly with informational text due in part to insufficient experience with this genre. Following these landmark studies, there was an increased emphasis on informational text and reading comprehension strategy instruction in educational research.

Several theories are prominent in the research literature regarding reading achievement. To begin with, metacognitive theory provides a framework for reading strategy instruction (Camahalan, 2006; Pressley & Wharton-McDonald, 2006). Metacognitive theory states that when students are given opportunities to think metacognitively and are explicitly taught metacognitive strategies, academic achievement is positively affected (Camahalan, 2006). Researchers have found a link between metacognition and long-term use of taught strategies (Houtveen & van de Grift, 2007; Pressley & Wharton-McDonald, 2006). Other research has expanded metacognitive theory through social cognitive theory (Zimmerman, 1995). Social cognitive theory states that individuals contribute to life’s circumstances, and they are self-organizing, self-regulating, and self-reflective (Bandura, 2006). Individuals make appropriate adjustments using their metacognitive capability to reflect on their self-efficacy and the adequacy of their thoughts and actions (Bandura, 2006). Academic self-regulation involves planning and managing time, attending to instruction, organizing information strategically, and using social sources successfully (Schunk & Zimmerman, 1997). Self-
regulation goes beyond metacognition and involves a complex interaction between social, motivational, and behavioral factors (Zimmerman, 1995). “From a self-regulated learning perspective, reading comprehension involves the interaction of cognitive, metacognitive, and motivational variables” (Van Kraayenoord, Beinicke, Schlagmuller, & Schneider, 2012, p. 51). This self-regulatory perspective forms the theoretical framework for this study.

Although research supports the use of metacognitive and cognitive strategies to improve reading comprehension, classroom observations have shown limited use of these strategies (Pressley, 2006). Pressley, Wharton-McDonald, Hampston, and Echevarria (1998) found little explicit comprehension instruction and a lack of instruction in self-regulation of comprehension processes while reading. “It was striking how little teaching of self-regulation occurred” (Pressley, 2006, p. 299). Teachers seemed to believe comprehension behaviors would naturally occur if students were given enough assignments. In a review of classroom observation studies examining reading instruction for students with learning disabilities (LD), Swanson (2008) found few studies with evidence of reading comprehension instruction, and the comprehension instruction she found was considered low-quality. Comprehension strategy instruction was noticed in only three observations (Swanson, 2008). There is a clear gap between research on comprehension instruction and actual comprehension strategy instruction in the classroom (Klingner, Urbach, Golos, Brownell, & Menon, 2010). This study aims to bridge that gap.

CSR is a reading intervention rooted in metacognitive and social cognitive theories with a clear focus on strategy instruction and use when comprehending
informational text. The strategies of Previewing (activating background knowledge and making predictions), Get the Gist (identifying main ideas), and Wrap Up (summarizing and questioning) are cognitive strategies designed to help students efficiently comprehend text (Law, 2009; Pressley, Brown, El-Dinary, & Afflerbach, 1995; Vaughn et al., 2001). Click and Clunk is a metacognitive strategy in which students self-monitor as they read (Vaughn et al., 2001). Students mentally “click” when they understand text and “clunk” when they identify words or concepts they do not understand. In cooperative groups, students discuss their clicks and clunks and use fix-up strategies to de-clunk words or ideas, in addition to getting the gist and wrapping up the text (Klingner et al., 2012b). Although research has shown the effectiveness of CSR to improve reading comprehension of informational text, most of this research has focused on students with learning disabilities or limited English proficiency (Jitendra et al., 2011; Klingner et al., 1998; Vaughn et al., 2001). This study purposes to refine existing knowledge on CSR by examining its effectiveness with students of all achievement levels.

**Problem Statement**

Common Core State Reading Standards include increased complexity of texts and emphasis on informational text (Common Core State Standards Initiative, 2012a). Informational text is more difficult to comprehend, its content is frequently unfamiliar to students, and its varied text structures create barriers to comprehension (Williams et al., 2007). CSR is a program specifically designed to aid students in comprehending informational text (Klingner, Vaughn, Arguelles, Hughes, & Leftwich, 2004; Vaughn & Klingner, 1999). Students are taught specific strategies to develop their metacognitive awareness, monitor their understanding, and improve comprehension (Kim et al., 2006).
Hence, the problem in this study is the difficulty of comprehending complex informational text, and CSR is a potential solution to this problem.

**Purpose Statement**

The purpose of this quantitative, quasi experimental pretest-posttest nonequivalent control group study was to test the theories of metacognition (Pressley, 2006) and social cognition (Bandura, 2006; Zimmerman, 1995) by examining the effects of CSR on informational reading comprehension scores and metacognitive strategy awareness, controlling for student reading level, for fifth grade students at School E (experimental school). The independent variable had two levels: reading/science/social studies instruction with CSR and reading/science/social studies instruction without CSR. The dependent variables were generally defined as informational reading comprehension scores and metacognitive strategy awareness scores, and the control and intervening variables, student reading level and student subgroup, were statistically controlled in this study.

**Significance of the Study**

Research shows the effectiveness of CSR in improving reading comprehension for students with learning disabilities and ELs (Kim et al., 2006; Klingner et al., 1998; Vaughn et al., 2001). However, there are few studies examining the effectiveness of CSR for readers who are non-disabled at the upper elementary level (Vaughn et al., 2000). This study focuses on the effects of CSR on regular education, gifted education, special education, and ELs in heterogeneous fifth grade classrooms. This study also contributes to the knowledge base of self-regulation and metacognition theory and how these theories impact student achievement in reading (Schunk, 2008). It is hoped the use of CSR will
increase fifth grade students’ ability to self-regulate and self-monitor while they are reading, thus improving their ability to comprehend text, especially informational text.

This study could have great significance on the informational reading achievement of upper elementary students in the state of Georgia and any state with similar demographics implementing Common Core State Reading Standards. Many students experience great difficulty in the upper elementary grades as instructional focus shifts from learning to read to reading to learn (Jitendra et al., 2011). Text focus shifts to an increased emphasis on informational text which is more difficult to comprehend than narrative text (Williams, 2005).

CSR provides students of all academic levels with explicitly taught strategies to facilitate comprehension of informational text (Kim et al., 2006; Vaughn & Klingner, 1999). These strategies can be used during reading instruction and also during content instruction in science and social studies (Klingner et al., 1998). It is hoped that the use of CSR will result in a toolbox of reading comprehension strategies students will use each time they face difficult informational text in the classroom setting during instruction and assessment (Klingner et al., 2012b; Shook, Hazelkorn, & Lazano, 2011).

**Research Questions**

The research questions for this study are:

**RQ1**: Is there a statistically significant difference in Qualitative Reading Inventory (QRI-5) expository reading comprehension scores between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction?

**RQ2**: Is there a statistically significant difference in Georgia’s Criterion-Referenced Competency Test (CRCT) total reading comprehension scores between fifth
grade students who receive CSR instruction compared to students who do not receive CSR instruction?

**RQ3**: Is there a statistically significant difference in CRCT reading domain scores between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction?

**RQ4**: Is there a statistically significant difference in metacognitive strategy awareness between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction?

**RQ5**: Is there a statistically significant difference in subscale scores of the Metacognitive Awareness of Reading Strategies Inventory between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction?

**Hypotheses**

The following are the research hypotheses:

**H1**: There is a statistically significant difference in QRI-5 expository reading comprehension scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

**H2**: There is a statistically significant difference in CRCT total reading comprehension scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

**H3**: There is a statistically significant difference in CRCT Information and Media Literacy domain scores between fifth grade students who receive CSR instruction three
times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

\textbf{H}_4: \text{There is a statistically significant difference in CRCT Literary Comprehension domain scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.}

\textbf{H}_5: \text{There is a statistically significant difference in CRCT Reading Skills and Vocabulary Acquisition domain scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.}

\textbf{H}_6: \text{There is a statistically significant difference in metacognitive awareness between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.}

\textbf{H}_7: \text{There is a statistically significant difference in Global Reading Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.}

\textbf{H}_8: \text{There is a statistically significant difference in Problem-Solving Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.}
H₀: There is a statistically significant difference in Support Reading Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.

Alternatively, the following are the null hypotheses:

H₀₁: There is no statistically significant difference in QRI-5 expository reading scores between fifth grade students who receive CSR instruction three times per week compared comprehension to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

H₀₂: There is no statistically significant difference in CRCT total reading comprehension scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

H₀₃: There is no statistically significant difference in CRCT Information and Media Literacy domain scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

H₀₄: There is no statistically significant difference in CRCT Literary Comprehension domain scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

H₀₅: There is no statistically significant difference in CRCT Reading Skills and Vocabulary Acquisition domain scores between fifth grade students who receive CSR
instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

\textbf{H}_{06}: There is no statistically significant difference in metacognitive awareness between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.

\textbf{H}_{07}: There is no statistically significant difference in Global Reading Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.

\textbf{H}_{08}: There is no statistically significant difference in Problem-Solving Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.

\textbf{H}_{09}: There is no statistically significant difference in Support Reading Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.

\textbf{Identification of Variables}

The independent variable in this study was method of reading comprehension instruction. The two levels of reading comprehension instruction were reading instruction with CSR strategies and reading instruction without CSR strategies (Klingner et al., 1998; Vaughn et al., 2001). A typical reading program in this school district
included the instruction of Common Core Reading Standards (Common Core State Standards Initiative, 2012a) supplemented with Scott Foresman’s “Reading Street” program (Pearson, 2012) and trade books. The CSR reading program also included Common Core Reading Standards with the use of the Reading Street textbooks and trade books; however CSR instruction incorporated four specific strategies to facilitate reading comprehension: Preview (activating prior knowledge and analyzing text structure before reading), Click and Clunk (self-monitoring during reading), Get the Gist (finding the main idea during reading), Wrap Up (generating questions and reviewing after reading; Klingner et al., 2004). Additionally, CSR strategies were also taught within the science/social studies content area classroom in the experimental school. The science/social studies teacher incorporated CSR strategies with the required Georgia Performance Science and Social Studies Standards (GaDOE, 2011) using the regular materials provided in the school district.

The first dependent variable in this study was reading comprehension scores on the QRI-5. The QRI-5 is an assessment used to determine independent, instructional, and frustration reading levels (Leslie & Caldwell, 2011). It has separate assessments for narrative and expository text. Scores from expository text passages were used as the first dependent variable in this study.

The next dependent variable in this study was reading scores from the Georgia’s CRCT. The CRCT is a standardized assessment given to all third through eighth grade students in the state of Georgia with subtests in reading, math, language arts, science, and social studies (Georgia Department of Education, 2012). For the purposes of this study, the total reading score and the linear combination of the three reading domain scores
were analyzed: *Literary Comprehension, Information and Media Literacy, and Reading Skills and Vocabulary Acquisition* (Georgia Department of Education, 2007).

The final dependent variable was scores on the MARSI. The MARSI is a self-report instrument for students with grade equivalents ranging from fifth grade through college (Mokhtari & Reichard, 2002). It contains 30 statements regarding reading strategy use to which students respond using a 5-point Likert-type scale from 1 (*I never do this*) to 5 (*I always do this*). The MARSI has three strategy subscores: Global Reading Strategies, Problem-Solving Strategies, and Support Reading Strategies (Mokhtari & Reichard, 2002).

There were two control variables in this study: student reading level and student subgroup. Students began this study at a wide variety of reading levels. Student reading level was controlled statistically using multivariate analysis of covariance (MANCOVA) based on pretest results. The students also belonged to a variety of subgroups (regular education, special education, ELs, gifted education, and Early Intervention Program) that were not proportional to the expected percentages based on the makeup of the experimental and control group schools (Georgia Department of Education, 2010-2011b). MANCOVA was used to statistically control for student subgroup. Initial levels of metacognition were also pretested but did not need to be controlled statistically.

**Definitions**

**Click.** A click refers to a section of text that makes sense to a reader (Klingner et al., 2012).

**Clunks.** A clunk is a word or concept students do not understand in a reading passage (Klingner et al., 2012b).
**Cognitive reading strategies.** These strategies are mental or behavioral activities which increase the efficiency of reading comprehension, such as activating prior knowledge and summarizing (Van Keer & Verhaeghe, 2005).

**Collaborative strategic reading (CSR).** CSR is a reading intervention designed to teach students to practice and assume responsibility for implementing reading strategies before, during, and after reading (Vaughn et al., 2000).

**Early intervention program (EIP).** EIP is a state-funded tutorial program for students struggling in reading and/or math (National Association of Elementary School Principals, 2012).

**English learner (EL).** An EL is a student whose native language is not English and is in the process of learning the English language. This designation is usually acquired through the school system (Klingner et al., 2012).

**Explicit questions.** Explicit questions are questions in which the answer can be found directly in the text (Leslie & Caldwell, 2011).

**Expository text.** Text that communicates information about the natural or social world with an expectation of durable factual content (Duke, 2000). It is also known as informational text.

**Implicit questions.** Implicit questions have answers that must be inferred from the passage (Leslie & Caldwell, 2011).

**Informational text.** Text that communicates information about the natural or social world with an expectation of durable factual content (Duke, 2000). It is also known as expository text.
**Metacognition.** Metacognition is being aware of and controlling one’s own thinking (Van Brummelen, 2002).

**Metacognitive strategies.** These strategies are readers’ self-regulated activities including planning, monitoring and self-evaluation (Paris & Oka, 1989).

**Regular reading program.** A regular reading program in this school district includes the instruction of Common Core Reading Standards (Common Core State Standards Initiative, 2012a) supplemented with Scott Foresman’s “Reading Street” program (Pearson, 2012) and trade books.

**Self-efficacy.** Self-efficacy is a person’s beliefs about his or her capability to exercise control over events affecting his or her life (Bandura, 1989).

**Self-regulation.** Self-regulation is a process oriented toward goal attainment that activates and sustains behaviors, cognitions, and affects (Schunk & Zimmerman, 1997).

**Research Summary**

This was a quantitative, quasi-experimental, pretest-posttest nonequivalent control-group design study. This design was chosen because an independent variable (CSR program) was manipulated and intact classes were used including an experimental and control group (Campbell & Stanley, 1963). It was the strongest research design possible since the subjects could not be randomly assigned to the experimental and control groups (Gall, Gall, & Borg, 2007). Moreover, the nonequivalent control-group design is the most commonly used quasi-experimental design in educational research (Gall et al., 2007). Data was analyzed using MANCOVA and multivariate analysis of variance (MANOVA) due to correlations between the dependent variables and the need
to use student reading level and student subgroup as covariates for the first five null hypotheses.

**Assumptions**

It was assumed that the teachers in the experimental treatment used CSR with fidelity. Lesson plans were collected documenting the instruction of CSR strategies. Additionally, experimental teachers were observed during CSR instruction. In terms of the QRI-5, it was assumed that the teachers in this study administered the inventory according to the manual’s specifications. For reliability purposes, two instructors and the researcher scored each assessment. It was also assumed that the QRI-5 measured what it purports to measure: students’ ability to comprehend text (Leslie & Caldwell, 2011). Regarding Georgia’s CRCT, it was assumed that students put forth their best effort and that the experimental and control group teachers administered the test according to the instructions in the CRCT Test Examiner’s Manual. Finally, it was assumed that the teachers in this study administered the MARSI with fidelity at pre- and posttest, and that the students answered the inventory honestly.
CHAPTER TWO: REVIEW OF THE LITERATURE

This chapter begins with a description of the theoretical framework for this study including both metacognitive theory and social cognitive theory with an emphasis on self-regulation and self-efficacy. This is followed by an in depth examination of research on reading comprehension with a focus on informational text. Reading comprehension for struggling readers is discussed with further elaboration on students with learning disabilities and ELs. Research on metacognitive and cognitive reading comprehension strategies is then discussed as these strategies are key components of CSR. CSR and its foundational research are described in detail, in addition to an in depth examination of each of the strategies used during CSR. Finally, a summary of the research is provided, as well as a description of the gap in the literature addressed by this study.

Theoretical Framework

Two theories form the theoretical framework in this study. The first is metacognitive theory which was developed in the 1970s (Flavell, 1979; Pressley & Wharton-McDonald, 2006). This theory is used in the theoretical framework because of the critical role metacognition plays in reading comprehension (Pressley & Wharton-McDonald, 2006). The second theory is social cognitive theory (Bandura, 2006) with an emphasis on self-regulation (Schunk & Zimmerman, 2007) and self-efficacy (Bandura, 1989), and how these components impact successful reading comprehension.

Metacognitive Theory

Metacognition is “knowledge and cognition about cognitive phenomena” (Flavell, 1979, p. 906). Its definition can be divided into two parts: (a) cognitive domain knowledge such as reading, memory, and learning, and (b) executive strategies (e.g.
planning and monitoring) that regulate thinking (Jacobs & Paris, 1987). Metacognition involves self-monitoring of memory and comprehension (Flavell, 1979), and this knowledge of cognitive processes can be shared with others (Jacobs & Paris, 1987). “It is reportable, conscious awareness about cognitive aspects of thinking” (Jacobs & Paris, 1987, p. 258).

Jacobs and Paris (1987) discussed two categories of metacognition: (a) self-appraisal of cognition, and (b) self-management of thinking. Self-appraisal of cognition includes declarative, procedural, and conditional knowledge. Declarative knowledge is what is known and can be proposed such as knowing that rereading improves comprehension. Procedural knowledge is an awareness of the process of thinking such as a student knowing how to skim or how to use context clues to aid in the process of reading. Conditional knowledge is an awareness of the conditions that impact learning such as knowing why and when to use certain reading strategies (Jacobs & Paris, 1987).

Self-management of thinking refers to the process of translating knowledge into action (Jacobs & Paris, 1987). This self-regulated thinking begins with planning and the cognitive means of achieving a goal. The second part of self-management is the ongoing process of evaluation such as when readers pause or summarize text evaluating their understanding. The third component is regulation in which individuals monitor their progress and revise plans and strategies depending on how well they are working (Jacobs & Paris, 1987).

Flavell (1979) described how metacognitive experiences can have two types of goals: cognitive or metacognitive. “Cognitive strategies are invoked to make cognitive progress, metacognitive strategies to monitor it” (Flavell, 1979, p. 909). To illustrate, the
metacognitive experience of knowing you do not know a text well enough for an exam causes you to use the cognitive strategy of reading the text again (Flavell, 1979).

Metacognition plays a critical role in reading comprehension. Long-term strategy use results from metacognitively embellished strategy instruction in which students are shown how certain strategies are useful (Pressley & Wharton-McDonald, 2006). Students must understand how strategies can help them better understand their world and have some control over it (Harvey & Goudvis, 2013). They must also know “when, why, and how to use them” (Harvey & Goudvis, 2013, p. 433).

Good readers are strategic throughout the reading process: before, during, and after reading (Pressley & Gaskins, 2006). Before reading, good readers make predictions and set purposes for reading. During reading, good readers self-monitor to determine if they understand text. If there are problems, they make adjustments by speeding up or slowing down, or they re-read text. After reading, good readers make interpretations and summarize text. Metacognitive knowledge involves knowing when and where to use reading strategies, and these strategies must be explicitly taught for comprehension to improve (Duffy et al., 1987; Pressley & Gaskins, 2006).

Social Cognitive Theory

Social cognitive theory states that individuals contribute to life’s circumstances, and they are self-organizing, self-regulating, and self-reflective (Bandura, 2006). Humans are agents who are intentional and establish action plans and strategies for achieving goals. They have forethought and visualize the future which motivates our behavior. Individuals are self-reactive and self-regulatory in constructing appropriate
courses of action and staying motivated to regulate their completion. Finally, people are self-reflective examining their own functioning and personal efficacy (Bandura, 2006).

**Self-regulation.** Self-regulation, a key component of social cognitive theory, involves “self-generated thoughts, feelings, and actions that are systematically designed to affect one’s learning of knowledge and skills” (Schunk & Zimmerman, 2007, p. 8). It consists of three phases: forethought (goal setting and monitoring), performance control (social comparisons and use of strategies), and self-reflection (goal progress evaluation and strategy adjustment; Schunk & Zimmerman, 2007). Academic self-regulation involves planning and managing time, attending to instruction, organizing information strategically, and using social sources successfully (Schunk & Zimmerman, 1997). Self-regulation goes beyond metacognition and involves a complex interaction between social, motivational, and behavioral factors (Zimmerman, 1995). Students need the motivation to exert effort, persist when difficulties arise, and set appropriate goals (Paris & Paris, 2001). Teachers can facilitate the use of self-regulation by discussing appropriate strategies, how they operate, and when they could be applied (Paris & Paris, 2001). For example, students who take notes, ask questions, and use their time and resources wisely are using self-regulation strategies (Paris & Paris, 2001).

Successful self-regulation has a critical influence on reading achievement (Schunk & Zimmerman, 2007). In their meta-analysis, Berkeley, Scruggs, and Mastropieri (2010) found higher mean effect sizes for studies incorporating self-regulation strategies to enhance reading comprehension for students with learning disabilities. These self-regulation strategies included explicit goal setting and self-monitoring (Manset-Williamson & Nelson, 2005), self-monitoring in combination with
main idea comprehension (Jitendra, Hoppes, & Xin, 2000) and self-regulated strategy development (SRSD) using story structure with narrative text (Johnson, Graham, & Harris, 1997). Miranda, Villascusa, & Vidal-Abarca (1997) found self-regulation procedures effective in increasing overall reading comprehension and increasing the use of reading comprehension strategies including text structure, activating prior knowledge, text preview, self-question, and clarify for students with learning disabilities. For older children with reading disabilities, the more specific the self-regulatory instruction and reading comprehension strategy instruction, the higher the likelihood the students will make significant improvement in reading comprehension (Manset-Williamson & Nelson, 2005).

**Self-efficacy.** Self-efficacy is a person’s beliefs about his or her capability to exercise control over events affecting his or her life (Bandura, 1989). It has a critical influence on reading achievement, in addition to self-regulation (Schunk & Zimmerman, 2007). Students with high self-efficacy for performing a task work harder, persist longer, participate more readily, and achieve at higher levels (Pajares, 1996; Schunk & Zimmerman, 2007). Successful readers with high self-efficacy expect to be challenged when reading texts, and they believe they will meet those challenges (Afflerbach, Cho, Kim, Crassas, & Doyle, 2013). Students with low self-efficacy may choose to only complete uncomplicated academic tasks, or they may not complete academic assignments at all (Mills, Pajares, & Herron, 2006). High self-efficacy is vitally important in academic domains because it becomes a causal factor in future academic success through motivating efforts in areas of perceived strength and avoidance in areas of perceived weakness (Pressley & Gaskins, 2006; Zimmerman, Bandura, & Martinez-Pons, 1992).
Self-efficacy is one component of student motivation, and student motivation levels have been found to predict comprehension levels (Guthrie et al., 2007). Fourth grade students with low interest had both lower memory and comprehension during their reading (Guthrie et al., 2007). Moreover, these students with low involvement, low efficacy, and low interest did not create literary opportunities that would help develop their comprehension (Guthrie et al., 2007).

Researchers have also found correlations between self-efficacy and the use of metacognitive and cognitive strategies (Pajares, 1996). A correlation has been found between global academic self-efficacy and cognitive strategy use and self-regulation through the use of metacognitive strategies (Pintrich & DeGroot, 1990). Pintrich and DeGroot (1990) found that teaching students cognitive and self-regulatory strategies is important for improving performance on academic tasks; additionally, improving students’ self-efficacy beliefs may lead to increased use of cognitive strategies. Students who believe they are able to accomplish certain academic tasks persist longer than those who do not, and they use more metacognitive and cognitive strategies (Pintrich & Garcia, 1991).

Students acquire self-efficacy through both peer and adult models (Schunk & Zimmerman, 2007). However, the best models of self-efficacy for children are their peers (Schunk & Zimmerman, 2007). Schunk and Zimmerman (2007) explain how students’ self-efficacy is raised when they observe a peer succeeding at a task. They begin to believe if their peers succeed, they can as well.
Reading Comprehension

Common Core State Reading Standards

Common Core State Standards were implemented in forty-six states and three U.S. territories during the 2012-2013 school-year with the desire to enable students to compete in a global society, (Common Core State Standards Initiative, 2012a). The standards were designed to prepare students for both college and careers. Because the standards are implemented in the majority of the United States, it is hoped students across our country will receive a consistently high quality education and educators will be able to share best practices across state boundaries. Part of the increased rigor with the Common Core Reading Standards is an increased emphasis on informational text instruction. Following the 2009 National Assessment of Educational Progress Reading Framework in balancing literary and informational text, there is a gradual shift from 50% informational text in fourth grade to 70% informational text in 12th grade (Common Core State Standards Initiative, 2012a). This has resulted in a greater emphasis on content area literacy in the upper elementary grades (Moss, 2005), and the requirement of all content area teachers to share the responsibility of literacy instruction (Common Core State Standards Initiative, 2012c). Content area literacy involves the cognitive and social practice of reading, comprehending, critiquing, and writing about informational text such as textbooks, tradebooks, magazines, and Internet materials (Moss, 2005; Swafford & Kallus, 2002). Thus, all teachers including those who teach content areas will need to be skilled in reading strategy instruction.
Informational Text

With the increased emphasis of informational text with Common Core State Standards, schools across our country are striving to increase students’ exposure to these texts (Driskill, 2012). Beyond the requirement of the standards, research shows the importance of increasing time students spend with informational text (Caswell & Duke, 1998; Duke, 2004). Informational text teaches about our natural and social world, and its comprehension is necessary for success in school as well as the workplace (Duke, 2004). With technological advancements, informational text literacy includes the digital world in which students must access, evaluate, and synthesize informational on the Internet (Benson, 2002; Schmar-Dobler, 2003). Additionally, 90% of the text adults encounter is informational making its comprehension essential (Smith, 2000).

Many students prefer informational text and are more motivated to read this type of text (Caswell & Duke, 1998; Ivey & Broaddus, 2001; Worthy, Moorman, & Turner, 1999). Self-selection of nonfiction texts can improve students’ motivation to read (Moss & Hendershot, 2002). The search for answers to questions about our world through informational text is motivating to students (Guthrie, 1996; Palmer & Stewart, 2005; Yopp & Yopp, 2000). Informational texts “capitalize on students’ interests and whet their appetite for more information” (Yopp & Yopp, 2000, p. 412).

Duke (2004) recommended creating opportunities for students to work with informational text for authentic reasons. When adults read informational text, they do so for a purpose (e.g., reading an instruction manual, reading a cooking magazine, or reading Scripture from the Bible; Duke, 2004). Conversely, students frequently read informational text to answer questions at the end of a chapter or on an assigned
worksheet (Duke, 2004). Duke, Purcell-Gates, Hall, and Tower (2007) found second and third grade students who read and wrote for more authentic reasons, particularly with how-to texts in science, showed higher growth in reading comprehension and writing. Informational text also blends well with inquiry in which students independently and collaboratively answer their questions and wonderings (Maloch & Horsey, 2013; Moss 2005).

Historically in this country, there has been a lack of informational text in elementary classrooms. In Duke’s (2000) landmark study of informational text in first grade classrooms, she found an average of 3.6 minutes per day spent with informational text. Informational text was limited in both classroom print environments and language activities (Duke, 2000). This scarcity of informational text was particularly evident in low-SES schools. High-SES classroom libraries contained a mean of 12.7% informational books while low-SES classroom libraries had only 6.9%. Displayed informational text was particularly low (1.5%) in low-SES classrooms (Duke, 2000). In a more recent study of second through fourth grade classrooms, Jeong, Gaffney, and Choi (2010) found third and fourth grade students averaged only 16 minutes per day with informational text.

An additional problem with informational text is the difficulty many students have with its comprehension (Williams et al., 2007). Research has shown informational text to be more difficult to comprehend than narrative text (Jitendra et al., 2011; Williams et al., 2007). Unlike the entertaining nature of narrative text, informational text’s primary purpose is to convey information thus making it less engaging for a reader (Jitendra et al., 2011). The content can be complex and the variety of text structures, such as cause-
effect, problem-solution, and compare-contrast, are a barrier to comprehension (Best, Floyd, & McNamara, 2008; Meyer & Poon, 2001). Informational text introduces many new concepts and ideas (Best et al., 2008). Students who lack related knowledge about these concepts and ideas struggle with comprehension because they have difficulty generating inferences (Beck & McKeown, 1992; Best et al., 2008).

In social studies instruction, the majority of content is derived from textbooks that are often dense with informational text and filled with irrelevant information which can distract readers from the most important concepts (Beck, McKeown, & Gromoli, 1989; Williams et al., 2007). The social studies texts incorrectly assume the level of background knowledge students bring to the texts, as well as their ability to make inferences from events and ideas without appropriate explanations (Beck et al., 1989). Many teachers primarily rely on textbooks in content area teaching (Kragler, Walker, & Martin, 2005). Myers and Savage (2005) found up to 90% of social studies content is structured around informational textbooks. These textbooks lack strategy instruction and do not explicitly state the connections between strategies and text (Kragler et al., 2005; Swanson, Edmonds, Hairrell, Vaughn, & Simmons, 2011).

Research has also shown the difficulty students have in reading scientific texts (Michalsky, Mevarech, & Haibi, 2009; Yore, Craig, & Maguire, 1998). For primary students, science textbooks present a challenge as they contain difficult technical vocabulary (Bryce, 2011; Yager, 1983). These textbooks also present topics superficially in an uninteresting manner (Tyson & Woodward, 1989), and they lack organization and a user-friendly style (Chambliss, 1994). Students have difficulty identifying scientific phenomena while reading science texts (Rop, 2003). They also struggle to specify
variables of interest and relations among variables when hypothesizing based on science
texts (Michalsky, Zion, & Mevarech, 2007). Researchers suggest the importance of
reading strategies (Bryce, 2011) and regulation of cognition when reading scientific texts
(Michalsky et al., 2009; Spence, Yore, & Williams, 1999; Yore, Bisanz, & Hand, 2003).

An additional challenge with informational text is seen as students transition from
primary to intermediate grades where there is a shift from learning to read to reading to
learn (Chall & Jacobs, 2003). Chall and Jacobs (2003) refer to a fourth-grade slump in
which students, particularly low-income students, experience a decline in reading
achievement due to increased content area reading characterized by complex, dense,
informational text. Unfortunately, Chall and Jacobs (2003) follow-up study found those
low-income students reading scores continued to decline throughout middle and high
school.

One solution to the fourth-grade slump and the difficulty students have with
informational text is integrating reading and content area instruction (Moss, 2005).
Harvey and Goudvis (2007) suggest teaching comprehension throughout the entire school
day in all content areas focusing on understanding rather than memorization. Upper
elementary teachers must blend teaching the process of reading informational text with
teaching content (Moss, 2005). This includes teaching the variety of text structures and
features of informational text (Block & Pressley, 2007; Yopp & Yopp, 2000). Students
should also read two informational texts back-to-back on the same topic, and ask
themselves “why” questions as they read (e.g., Why does this new fact make sense based
on my prior knowledge; Block & Pressley, 2007). Another effective strategy when
reading informational text is to take notes while reading (Block & Pressley, 2007).
Comprehension Instruction

Reading comprehension is a process of extracting and constructing meaning simultaneously through involvement and interaction with written language (Snow, 2002). Three interactive processes are involved in reading comprehension: decoding, construction of a text base, and development of a situational model (Kintsch & Kintsch, 2005). A reader decodes using sound-symbol correspondences to identify written words resulting in propositions or idea units (Hollenbeck & Saternus, 2013; Kintsch & Kintsch, 2005). A reader then builds a coherent representation of a text known as a text base which involves relationships between ideas. Concurrently, a situational model is constructed by a reader integrating the text base with prior knowledge and experiences. This mental model allows higher level inferences and personal reactions (Kintsch & Kintsch, 2005).

Reading comprehension combines the elements of the reader, the text, and the activity of reading (Snow, 2002). The reader brings his or her cognitive abilities, motivation, knowledge, and experiences to the process of comprehension. The text and its features greatly impact comprehension through the wording of the text (surface code), the idea units representing meaning of the text (text base), and the way the information is processed (mental models; Snow, 2002). The activity or purpose of reading includes processing the text and the outcome of performing the activity (Snow, 2002). This interactive process shows the importance of cognitive strategies in the construction of meaning (Hollenbeck & Saternus, 2013).

Durkin’s (1978-1979) landmark study revealed a major deficit in reading instruction in third through sixth grade classrooms at that time—a lack of comprehension
instruction. Teachers assessed comprehension through interrogation focusing on the correctness of answers; however, comprehension instruction was rarely seen during both reading and social studies classes (Durkin, 1978-1979). In the social studies classrooms she observed, the teachers focused on content delivery, and they did not see the necessity of teaching comprehension within the content area (Durkin, 1978-1979). A later study by Taylor, Pearson, Clark, and Walpole (2000) found little comprehension instruction in first through third grade classrooms with only five of the 70 teachers in this study frequently providing comprehension strategy instruction.

Reading instruction in today’s schools still places a heavy emphasis on recall of text being read in class as opposed to a focus on strategies for understanding all text (Eilers & Pinkley, 2006). Students read a story from their reading books in whole or small group settings, teachers ask comprehension questions, and then the students take a test over the text at the end of the week (Eilers & Pinkley, 2006). Moreover, these reading textbooks often contain more skills and strategies than recommended in research which dilutes the emphasis on critical skills and strategies (Dewitz, Jones, & Leahy, 2009; Durkin, 1981). “Eighty percent of basal readers do not include elements that characterize highly effective comprehension instruction” (Block & Duffy, 2008, p. 24). They also neglect other key research-based components of comprehension instruction including stressing when and why to use particular strategies (Block & Duffy, 2008), gradually releasing use of strategies from teacher to students through guided practice, and receiving comprehension skill and strategy instruction for the appropriate amount of time (Dewitz et al., 2009). Thus, children receiving comprehension instruction with these reading textbooks may never see the relationship between what is done with their reading
in school and what they should do when they are reading text on their own (Durkin, 1981).

The recent trend in comprehension instruction is fewer rather than more strategies (Block & Duffy, 2008). The National Reading Panel (2000), a group of leading reading research scientists, college of education faculty, reading teachers, educational administrators and parents, found eight effective or promising reading comprehension strategies. Included in these strategies were predicting, monitoring, questioning, imaging, and rereading with fix-it strategies (Block & Duffy, 2008). Additionally, more recent comprehension research over the past 10 years supports strategy instruction in inferring, finding main ideas/summarizing, evaluating, and synthesizing (Block & Duffy, 2008). These strategies need to be used in “real-time” as students are reading text (Block & Pressley, 2007). The goal is to have students internalize these strategies, and “the key to internalization—owning active comprehension—is to experience several years of practicing comprehension processes in context every day” (Block & Pressley, 2007, p. 235).

Students need extended engaged reading, that is, reading that is strategic, knowledge driven, motivated, and socially interactive, to develop reading comprehension skills (Guthrie & Wigfield, 2000; Guthrie et al. 2007). This is the type of reading necessary to support the Common Core Reading Standards. For example, standard RI.5.2. requires students to, “Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text” (Common Core State Standards Initiative, 2012d). This is a rigorous fifth grade comprehension standard requiring both strategic and knowledge driven instruction. So the challenge for teachers
is to “meaningfully integrate explicit comprehension strategy instruction with the goals explicited by the Common Core” (Hollenbeck & Saternus, 2013, p. 566). To accomplish this task, teachers must not present comprehension standards and strategies as an end in themselves but as tools for independent meaning construction (Duffy, 1993; Hollenbeck & Saternus, 2013). Students need explicit instruction in reading comprehension strategies (Gajria, Jitendra, Sood, & Sacks, 2007) applied to everything they read to become effective readers (Duke, 2004; Eilers & Pinkley, 2006).

Explicit comprehension instruction in the form of reading and thinking strategies can provide a solid foundation for learning and understanding (Harvey & Goudvis, 2013). Students must be taught how, why, and when to use reading strategies independently (Block & Duffy, 2008; Paris, Lipson, & Wixson, 1983), in addition to learning self-regulatory comprehension processes as they read (Pressley et al., 1998). Harvey and Daniels’ (2009) comprehension continuum includes five comprehension practices: answering literal questions, retelling, merging thinking with content, acquiring knowledge, and actively using knowledge. Answering literal questions and summarization in the form of retelling are important foundational comprehension skills, but merging thinking with content in the form of questioning, determining importance, and synthesizing information is where comprehension begins (Harvey & Goudvis, 2013). Students acquire knowledge when they consciously merge their thinking with the content and make sense of the content using strategies thereby taking an active stance toward learning (Harvey & Goudvis, 2013). Finally, students can use this knowledge and apply what they have learned to their daily lives (Harvey & Goudvis, 2013).
Explicit strategy instruction is best taught through teacher modeling with a think aloud procedure (Duke & Pearson, 2008; Harvey & Goudvis, 2013). Teachers think aloud revealing their own reading processes which involve thinking and monitoring for understanding (Harvey & Goudvis, 2013). Houtveen and van de Grift (2007) presented a model of instructing comprehension strategies based on current research. The five stages of this model are as follows:

1. Explicitly describe the strategy and how and when it should be used.
2. Teachers and students model the strategy in action.
3. Teachers and students collaboratively use the strategy in action.
4. Students practice using the strategy with gradual release of responsibility.
5. Students independently use the strategy (Duke & Pearson, 2008; Houtveen & van de Grift, 2007).

Although strategies are taught independently, students must be taught to use a combination of strategies while they are reading (Houtveen & van de Grift, 2007). The instruction of these comprehension strategies is critical in today’s classrooms as schools shift to an increased emphasis on informational texts with Common Core State Standards (Common Core State Standards Initiative, 2012a).

**Struggling Readers**

Many elementary students struggle with reading and reading comprehension. These students come to a text without strong prior knowledge or interest (Fox, 2009). They may lack competent reading skills, strategies, and metacognitive knowledge (Fox, 2009). Additionally, they may fail to realize reading is an active search for meaning (Dermitzaki, Andreou, & Paraskeva, 2008; Horner & Shwery, 2002). Struggling readers
may not monitor their reading to ensure comprehension (Horner & Shwery, 2002). When there is a breakdown in comprehension, they fail to use strategic behaviors to derive meaning (Horner & Shwery, 2002). Finally, these students may not alter their strategy use with varying types of text (Horner & Shwery, 2002).

**Students with learning disabilities.** One group of struggling readers is students with learning disabilities. These students often struggle with reading comprehension (Antoniou & Souvignier, 2007). Unfortunately, reading comprehension is linked directly to their academic and professional success (Antoniou & Souvignier, 2007). Successful reading comprehension requires the ability to decode words, read fluently, and use active strategies (Palinscar & Brown, 1984). However, students with learning disabilities may fail to recall and implement comprehension strategies and monitor their progress (Antoniou & Souvignier, 2007). They also may not be aware of a text’s structure and how knowledge of this structure can aid in comprehension (Antoniou & Souvignier, 2007; Gajria & Salvia, 1992). These deficits lead to low levels of self-efficacy, reading interest, and motivation to read (Guthrie, Wigfield, Metsala, & Cox, 1999; Schiefele, 1996; Sideridis, 2003). Research has shown students with reading difficulties and disabilities who are provided with targeted reading comprehension interventions can improve their comprehension (Edmonds et al., 2009). Hence, the need for explicit instruction in reading comprehension for students with disabilities is clear (Manset-Williamson & Nelson, 2005; Sencibaugh, 2007).

However, research has shown a lack of this type of comprehension instruction by special education teachers (Berkeley et al., 2010; Klingner et al., 2010; Swanson, 2008). Klingner et al. (2010) found most of the special education teachers in their observational
study provided limited reading comprehension instruction to their students with learning disabilities, and this instruction was rarely connected to current research. For example, although the highest effect sizes in research are associated with monitoring and reflecting before, during, and after reading, none of the teachers in this study deliberately taught these strategies (Gajria et al., 2007; Klingner et al., 2010). “Comprehension instruction seemed to have progressed little in the 30 years since Durkin’s groundbreaking study (1978-1979)” (Klingner et al., 2010, p. 71).

Similarly, in a literature review of classroom observation studies examining reading instruction for students with learning disabilities (LD), Swanson (2008) found few studies with evidence of reading comprehension instruction, and the comprehension instruction she found was considered low-quality such as literal comprehension questions. Students with LD were frequently taught in whole groups as opposed to the research recommended method of small groups. Moreover, these students spent little time engaged in phonemic awareness, reading fluency, comprehension, and vocabulary instruction. “There is a disconnect between what occurs during reading instruction for students with LD and research-supported components of effective reading instruction” (Swanson, 2008, p. 130).

**English learners.** Another group of struggling students is ELs (Klingner et al., 2012a). ELs are the fastest growing segment among public school children (National Educational Association [NEA], 2008). There are nearly 5 million ELs in U.S. schools, a number that has doubled in the past 15 years (NEA, 2008). By the year 2025, approximately one in every four public school students will be an EL (NEA, 2008).
One area in which ELs struggle is in reading comprehension, particularly with content area text (Klingner et al., 2012a). The vocabulary and academic language form a barrier to comprehension (Taboada, 2009). Cummins (1981, 1991) described two types of language skills: Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP). BICS are part of everyday conversations and are context embedded; however, CALP language skills serve more cognitive and academic purposes and are usually decontextualized, as in reading science books or listening to social studies lectures (Taboada, 2009). Success in school depends on CALP and the ability of ELs to read and express abstract and complex ideas (Riches & Genesee, 2006; Taboada & Rutherford, 2011). Two key components of academic language skills are academic vocabulary and reading comprehension, and development of these components give ELs the support they need for complex texts and content knowledge development (Taboada, 2009).

Explicit vocabulary instruction is quite beneficial for ELs, especially when opportunities are provided for meaningful interactions with peers for reinforcement (August, Branum-Martin, & Cardenas-Hagan, 2009; Gersten & Baker, 2000). “Sheltering” techniques comprised of explicit instruction and modeling, teaching of strategies, and opportunities to practice oral language, have been very successful with ELs (Klingner et al., 2012a). One program that combines explicit vocabulary instruction, sheltering techniques, and metacognitive strategies is CSR (Klingner et al., 2012a).
Metacognitive Strategy Instruction

Metacognitive Strategies

“Comprehension strategies are the mental acts purposely engaged to facilitate meaning construction while reading” (Hollenbeck & Saternus, 2013, p. 562). Comprehension strategies can be divided into two types: metacognitive and cognitive. Metacognitive strategies are readers’ self-regulated activities including planning, monitoring and self-evaluation (Law, 2009; Paris & Oka, 1989; Sencibaugh, 2007). These strategies are rooted in Flavell’s (1977, 1979) concept of metacognition as cognition about cognition (i.e., thinking about thinking; Jacobs & Paris, 1987) involving memory and comprehension monitoring. The metacognitive skills of monitoring, evaluating, and regulating cognitive processes are important facilitators of learning (Dermitzaki et al., 2008). Good readers use a variety of metacognitive and cognitive strategies before, during, and after reading (Houtveen & van de Grift, 2007; Law, 2009; Pressley & Gaskins, 2006). Before reading, good readers preview text and set a purpose for reading. During reading, good readers find main ideas and monitor their understanding. When they are having problems, they adjust their reading by speeding up or slowing down. After reading, good readers continue thinking about text, possibly skimming back through text or rereading portions (Pressley & Gaskins, 2006). Thus, good readers employ deep cognitive and metacognitive strategic behaviors (Dermitzaki et al., 2008).

Poor readers who lack metacognitive skills benefit from explicit instruction of metacognitive strategies (Mastropieri, Scruggs, & Graetz, 2003; Pressley & Gaskins, 2006; Sencibaugh, 2007). These reading strategies are deliberate in their nature to
provide readers with the tools to overcome stumbling blocks to comprehension (Afflerbach, Pearson, & Paris, 2008; Hollenbeck & Saternus, 2013). Benchmark School in Media, Pennsylvania, a school for struggling readers who have failed in their previous schools, teaches their students before, during, and after reading metacognitive processes (Pressley & Gaskins, 2006). Students are encouraged to use these strategies (such as prediction, questioning, constructing images, summarizing, and background knowledge) across the curriculum. Instructional methods include modeling of strategies by teachers through think aloud, as if the teacher is talking to him or herself (Duffy et al., 1987; Harvey & Goudvis, 2013; Pressley & Gaskins, 2006). Students are praised when they make progress and offered assistance when they experience difficulty. Student motivation and its link to positive self-efficacy is of critical importance at Benchmark School (Pressley & Gaskins, 2006). Students often work collaboratively, reading and writing together. Their results are quite impressive: students who have attended their school from four to eight years return to regular education with higher test scores at the upper end of the distribution of achievement for same-age students (Pressley & Gaskins, 2006).

Research has shown students’ metacognitive awareness of reading strategies is directly related to their reading performance (Jacobs & Paris, 1987; Law, 2009; Mokhtari & Reichard, 2002). Similar to the students at Benchmark School, Houtveen and van de Grift (2007) found 10-year-old students in classrooms focusing on metacognitive strategy instruction made greater progress in metacognitive knowledge and significantly better results on reading comprehension than students in a control group. A follow-up study conducted during the next school year showed significantly better results on reading
comprehension than students who were in the former control group. Cross and Paris (1988) found significant gains in metacognition and use of reading strategies for third and fifth graders who used an experimental reading curriculum called Informed Strategies for Learning (ISL). They also found strong correlations among measure of metacognition and measures of reading comprehension. Cross and Paris (1988) concluded the benefits of ISL resulted from a direct explanation of reading strategies, group discussions about the use of these strategies, and the gradual release of control from teacher to students.

**Cognitive Strategies**

A cognitive strategy is a “heuristic or guide that serves to support or facilitate the learner as she or he develops the internal procedures that enable them to perform the higher level operations (such as reading comprehension)” (Jitendra et al., 2011, p. 136). These strategies are mental or behavioral actions readers use to process information including summarizing, questioning, and using graphic organizers (Law, 2009; Van Keer & Verhaeghe, 2005). The focus of cognitive strategies is teaching students how to learn rather than focusing on content mastery (Jitendra et al., 2011), and they are “indispensable avenues to conceptual knowledge” (Guthrie, 1996, p. 434).

Cognitive strategy instruction improves reading comprehension of expository text for upper elementary students with learning disabilities (LD; Jitendra et al., 2011). These strategies include finding the main idea, self-monitoring, CSR, and cognitive mapping (Jitendra et al., 2011). Along with the interventions, procedures are included for guiding the students through the strategic process of reading including developing vocabulary and building metacognitive awareness.
Specifically teaching K-12 students with learning disabilities how to use cognitive strategies has been shown to significantly improve reading comprehension (Berkeley et al., 2010; Sencibaugh, 2007). Sencibaugh’s meta-analysis found an effect size of 0.94 for visually dependent strategies such as the use of graphic organizers (Bos, Anders, Filip, & Jaffe, 1989) and visual attention therapy (Solan, Shelley-Tremblay, Ficarra, Silverman, & Larson, 2003). An even larger effect size of 1.18 was found for auditory/language dependent strategies including paragraph restatement and text structure analysis (Bakken, Mastropieri, & Scruggs, 1997), summarization strategies (Jitendra et al., 2000), and self-instructional strategies (Chan, 1991; Miranda et al., 1997). In summarizing their meta-analysis of reading comprehension research for students with learning disabilities, Berkeley et al. (2010) stated the common link between the studies they analyzed was the importance of teaching students to “attend more carefully or to think more systematically about text as it was being read (p. 434).”

**Single strategy.** Single cognitive strategy instruction has been effective in improving students’ reading comprehension (Katims & Harris, 1997; Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989). For example, students’ memory of text has been found to improve with instruction of individual comprehension strategies such as story grammar, constructing images of text, and summarization (Pressley et al., 1989; Pressley & Gaskins, 2006). Many single cognitive strategy studies have shown large effect sizes for expository text comprehension with students with learning disabilities (LD) including summarization, text structure, finding main ideas, and self-monitoring (Gajria et al., 2007; Gajria & Salvia, 1992; Smith & Friend, 1986). Smith and Friend (1986) and Bakken et al. (1997) found improved expository text comprehension with text structure
instruction for students with LD. Graves (1986) found fifth to eighth grade students with
LD improved on comprehension measures with direction instruction, modeling, and
guided practice of finding the main idea. Gajria and Salvia (1992) studied the
effectiveness of teaching students with LD to develop a summary or gist of a passage.
They found the experimental group outperformed the control group on comprehension
questions and even generalized the summarization skills to a standardized comprehension
test.

**Multiple strategies.** Students who struggle with reading comprehension benefit
greatly from multiple strategy instruction (Block & Duffy, 2008; Gajria et al., 2007).
Palinscar and Brown (1984) found success in combining prediction, questioning,
clarifying, and summarizing (self-review) through reciprocal teaching. In reciprocal
teaching, tutors/teachers and students take turns leading a discussion of important
features of the text. Palinscar and Brown (1984) found students improved in the quality
of their summaries, questions, and reading comprehension assessments.

Another successful multiple strategy approach with struggling readers combined
the use of main idea identification, strategy verbalization fading to inner speech, and
feedback linking strategy use to improved performance (Schunk & Rice, 1993). The
students who received all three components of the strategy program had higher posttest
scores on self-efficacy, comprehension, and self-reported strategy use. Houtveen and van
de Graaf (2007) trained teachers in metacognitive strategies including prior knowledge
activation and integration, text structure, making predictions, self-monitoring, and they
were trained in methods to maximize reading comprehension instruction time. Learning
gains were significantly greater for the experimental group than the control group (Houtveen & van de Grift, 2007).

In a literature review of qualitative studies, Almasi, Garas-York, and Shanahan (2006) found the importance of integrating instruction across curriculum using authentic literature and tasks when designing classroom environments fostering comprehension. More specifically, they stated classroom environments should include explicit instruction of multiple strategies such as comprehension monitoring, imagery, prior knowledge, questions, story structure, and summarization (Almasi et al., 2006). Students should be provided opportunities to verbalize cognitive processing in small group discussions or within cooperative learning groups (Almasi et al., 2006).

Several multiple strategy studies involving expository text have shown large effect sizes for students with learning disabilities (LD; Gajria et al., 2007; Graves 1986; Klingner et al., 2004). Graves (1986) combined the metacognitive strategy of self-monitoring with identifying the main idea and found the experimental group who received both strategies outperformed the control group who only received main idea instruction. Malone and Mastroperier (1992) also found positive support for implementation of multiple strategies. Self-monitoring was taught along with summarization, and the group who received both strategies successfully transferred those strategies to untrained social studies text. Klingner et al. (2004) found success using CSR with fourth grade students including 29 students with LD. Students were trained in the CSR strategies of Preview, Click and Clunk, Get the Gist, and Wrap Up while reading social studies text. The experimental group made greater gains than the control group with an effect size of 0.51.
Collaborative Strategic Reading

General Description

CSR is multiple strategy program designed to teach reading comprehension with informational text (Klingner & Vaughn, 1999). Its primary goal is “to teach students four specific comprehension strategies they can use with all informational and expository texts they read” and to help them develop routines for comprehending this text (Liang & Dole, 2006, p. 7).

CSR combines four metacognitive and cognitive strategies: Preview (activating prior knowledge and analyzing text structure before reading), Click and Clunk (self-monitoring during reading), Get the Gist (finding the main idea during reading), and Wrap Up (generate questions and review after reading) (Klingner & Vaughn, 1999). During Previewing, students learn about a passage, brainstorm about the topic, and make predictions about what they will learn (Klingner et al., 2012b). During Click and Clunk, students write down “clunks” which are words or concepts they do not understand. “Clicks” are portions of the text they understand. Students then apply fix-up strategies to find the meaning of their clunks including reading around the word and looking within the word (e.g., analyzing prefixes, suffixes, and root words; Klingner et al., 2012b). Students also have the opportunity to fix their clunks in a small, cooperative group.

During Get the Gist, students determine the main idea of a text by finding the most important “who or what” and then write a brief gist statement (i.e., a short statement of the main idea; Klingner et al., 2012b). Finally during Wrap Up, students formulate questions about the important ideas in the text. They ask these questions in a small,
cooperative group and answer their classmates’ questions as well. Their discussion ends with sharing important ideas from the text (Klingner et al., 2012b).

When teachers first introduce CSR to their classrooms, they show students how to use each CSR strategy separately and explicitly using whole-class instruction (Klingner et al., 2012b). This explicit instruction primarily involves “thinking aloud” as teachers model the use of a particular strategy (Harvey & Goudvis, 2013; Klingner et al., 2012b). Students then practice the strategies several times with partners and in small groups. Once the students have learned all of the strategies, they use them in small cooperative groups of approximately four students (Klingner et al., 2012b). Thus, there is scaffolding with explicit instruction and guided practice followed by gradual release of responsibility from the teacher to the students (Cross & Paris, 1988; Duke & Pearson, 2008; Pearson & Gallagher, 1983; Stahl, 2004).

**Background**

CSR began as an extension of research on reciprocal teaching by Palinscar and Brown (1984) and research on cooperative learning by Johnson and Johnson (1989a). It was designed to address three issues in education: (a) meeting the needs of diverse learners (especially students with learning disabilities and ELs), (b) providing instructional practice to enhance reading comprehension and methods for students to learn from text, and (c) providing an environment for students to benefit from peer-mediated instruction (Vaughn et al., 2001). The first quasi-experimental study on CSR occurred in a heterogeneous fourth grade classroom in a school which was transitioning to an inclusive special education model (Klingner et al., 1998). The goal of the study was to provide students with a reading comprehension approach to enhance content learning.
and stimulate active engagement in reading comprehension (Klingner et al., 2012b). The researchers found that students who received CSR instruction made statistically significant greater gains on the Gates-MacGinitie Reading Test (effect size = .44) than students in the control group (Klingner et al., 2012b; Klingner et al., 1998). Klingner et al. (1998) also found that heterogeneous groups of fourth grade students can work cooperatively to learn social studies content without the teacher’s direct supervision. Finally, Klingner et al. (1998) was important because it resulted in several changes to reciprocal teaching:

- Students only predicted once during their assigned reading.
- Students generated teacher-like questions only once, after reading the passage.
- Students used Click and Clunk and Get the Gist multiple times throughout the reading.
- Students learned each strategy in a whole group and then applied the strategies in small cooperative groups using expository text.

**Reciprocal teaching.** Reciprocal teaching began with the research of Palinscar and Brown (1984). The purpose of their landmark study was to examine comprehension-fostering and comprehension-monitoring of seventh grade students who were poor comprehenders. They designed four activities within their study: summarizing (self-review), questioning, clarifying, and predicting (Palinscar & Brown, 1984). Each of these activities fosters comprehension and allows students to monitor their comprehension through cognitive processing (skills typically not employed by poor readers; Palinscar & Brown, 1984; Pressley & Wharton-McDonald, 2006). The training method for the strategies was reciprocal teaching in which tutors and students take turns
leading a discussion regarding main points in a text. Eventually, the students act as
dialogue leaders in discussions about assigned text. In their first study conducted by an
experimenter, Palinscar and Brown (1984) found students improved in the quality of their
summaries and questions and improved on comprehension tests. These results were
replicated in a second study with volunteer teachers and their preexisting reading groups
(Palinscar & Brown, 1984). This study by Palinscar and Brown was important because
it popularized the notion of internalization of comprehension strategies (Pressley &
Wharton-McDonald, 2006). Reciprocal teaching has been found to also improve reading
comprehension for students with learning disabilities when reading social studies text
(Lederer, 2000). Although reciprocal teaching has been referred to as a “metacognitive
curriculum,” one gap in the research is a direct measure of students’ level of
metacognition before and after this intervention (Jacobs & Paris, 1987).

Cooperative Learning and CSR

Cooperative learning is “the instructional use of small groups so that students
work together to maximize their own and each other’s learning” (Johnson & Johnson,
1999, p. 5). It was one of the eight recommended strategies from the National Reading
Panel (2000) in which students learn reading comprehension strategies together in groups
(National Reading Panel, 2000). When students are engaged with partners and teams in a
social literate environment, the depth of their reading and their self-determination
increase (Camahalan, 2006; Guthrie, 1996; Guthrie, Schafer, Wang, & Afflerbach, 1995).
Cooperative learning also supports self-regulation as peers model and discuss their
learning and motivational strategies that can then be internalized by all members of the
group (Boekaerts & Corno, 2005).
Cooperative learning is an essential element of CSR (Klingner et al., 2012b). CSR was developed to incorporate four foundational elements of cooperative learning: positive interdependence, promoting interaction, individual accountability, and social skills (Johnson & Johnson, 1999; Klingner et al., 2012b). Positive interdependence means that each member of the CSR group is valued and necessary for the group to function effectively (Klingner et al., 2012b). This positive interdependence is at the heart of cooperative learning as students learn to “sink or swim” together (Johnson & Johnson, 1999). Interaction is promoted through CSR groups as strategies are implemented and teacher feedback is provided. Individuals in CSR groups are individually accountable, produce their own work, and are required to participate in discussions (Klingner et al., 2012b). Social skills develop through interaction in CSR groups as students work together to learn (Johnson & Johnson, 1999). Teachers support this development through explicit instruction in sharing, listening attentively, giving feedback, and asking clarifying questions (Klingner et al., 2012b).

Cooperative learning in CSR classrooms is intentionally designed (Klingner et al., 2012b). Students are strategically placed in heterogeneous groups of mixed abilities. Grouping diverse students heterogeneously exposes the students to a variety of ideas and perspectives, generates cognitive disequilibrium stimulating learning and creativity, and engages them in more elaborate thinking deepening their understanding (Johnson & Johnson, 1999). Each member of the group has an assigned role: Leader, Clunk Expert, Gist Expert, and Question Expert (Klingner et al., 2012b). Their assigned task is very specific, and each individual is responsible for his or her own learning and group learning. With this design, students engage in higher-level thinking beyond which they
could have accomplished on their own, and they learn effective strategies from their peers as the strategy use is observable and relevant (Paris & Paris, 2001).

**CSR student roles.** The first CSR student role is the Leader (Klingner et al., 2012b). The Leader guides the group through each of the CSR steps, monitors time, and keeps the group focused and on task. The Clunk Expert ensures that each member of the group records their clunks in their learning log and then guides the group members through fix-up strategies to determine the meaning of unknown words or ideas. The Gist Expert makes sure students write down their gists in their learning logs and guides the group in sharing gists. Last, the Question Expert guides the group in creating teacher-like questions at a variety of levels that address important information from the text. He or she also ensures all students write the questions and answers in their learning logs (Klingner et al., 2012b). Each student is provided a cue card that specifies the role and its responsibilities.

**CSR learning logs.** To aid in individual accountability, learning logs are incorporated into CSR (Klingner et al., 2012b). They are used in each step of CSR and provide valuable information for teacher feedback and follow-up activities. During Preview, students record their brainstorms and predictions. During Click and Clunk, students record their clunks and later write the definitions. During Get the Gist, students write their gists stating the main idea. Finally during Wrap Up, students write their questions and review, incorporating the most important ideas from the passage. Learning log forms are available for both informational and narrative text (Klingner et al., 2012b).
Preview

Preview is a skill and cognitive strategy that can be used throughout the school day through all content instruction (Vaughn et al., 2001). Its purpose is to increase students’ interest, activate background knowledge, and assist students in making predictions (Vaughn & Klingner, 1999). It is always teacher led with active engagement by the students (Klingner et al., 2012b). Teachers preteach vocabulary, provide short video clips, and show pictures, charts, diagrams, etc. to help build background for the students (Harvey & Goudvis, 2007). Students preview the text prior to reading it by examining its text structure and features (Block & Pressley, 2007), such as the title, headings, bolded or highlighted words, and pictures, tables, and graphs (Harvey & Goudvis, 2007; Palmer & Stewart, 2005). Using learning logs, the students write down their brainstorms and predictions and share them with a partner or in a small group (Klingner et al., 2012b).

Activating prior knowledge. Prior knowledge has a direct impact on a student’s ability to comprehend text (Afflerbach, 1990; Almasi et al., 2006). Students bring their life experiences, prior knowledge, thoughts, passions, and insights into their classrooms (Harvey & Goudvis, 2013). Connecting this knowledge to new information is at the core of learning and understanding (Harvey & Goudvis, 2013). Harvey and Goudvis (2013) recommend that teachers spend five to ten minutes prior to reading text to introduce the text’s topic, foster engagement, and discuss prior knowledge. This is especially important for complex, informational text. Previewing this type of text to identify and discuss challenging words, and then teaching students strategies to connect this new knowledge to their prior knowledge aids in comprehension (Best et al., 2008).
Almasi et al. (2006) conducted a grounded theory study of the impact qualitative studies could have had on the National Reading Panel’s (NRP) 2000 report which only included quantitative studies. The researchers found that although the NRP did not include prior knowledge in their seven primary categories of ways to improve reading comprehension, eight of the 12 qualitative studies Almasi et al. (2006) analyzed had a direct connection to prior knowledge. Additionally, these qualitative studies were more recent than the majority of the quantitative studies used by the NRP (Almasi et al., 2006). One of these studies by Rowe and Rayford (1987) found the importance of purpose questions in the activation of background knowledge and predictions for students ranging from first through tenth grades. A case study by Hartman (1995) revealed how prior knowledge activation enhances the ability of students to make intertextual connections which improves their overall text comprehension.

Prior knowledge also facilitates construction of main ideas (Afflerbach, 1990). Afflerbach (1990) found prior knowledge of content facilitated automatic construction of main idea statements. Readers lacking this prior knowledge had a greater chance of inaccurate hypotheses and inferences, and they needed cognitive resources such as comprehension monitoring and fix-up strategies to comprehend text resulting in fewer resources to construct main ideas (Afflerbach, 1990). However, Afflerbach (1990) found these non-automatic, cognitive strategies were successful for the majority of situations.

**Text structure.** Text structure is the organizational pattern of text (Ciardiello, 2002). Teaching the structure of informational text improves the comprehension and recall of text (Duke & Pearson, 2008). When creating learning environments to enhance comprehension, teachers should include tools to help students identify text structure and
organize their thoughts (Almasi et al., 2006). This is in addition to explicit instruction in multiple strategies and provision of opportunities to verbalize cognitive processing (Almasi, et al., 2006). Text structures include description, sequence, causation, problem-solution, and comparison (Meyer & Poon, 2011). Specific instruction in compare and contrast text structure for expository text has been to improve comprehension for elementary students (Williams et al., 2005).

Cause and effect text structure can be particularly challenging and is quite prevalent in social studies’ textbooks (Ciardiello, 2002; Hare, Rabinowitz, & Schieble, 1989). Richgels, McGee, Lomax, and Sheard (1987) found the causation text structure to be the most challenging for sixth grade students in terms of recall and awareness. At-risk second graders improved in their ability to comprehend social studies text with a cause-effect text structure when taught to use clue words, questioning, and graphic organizers (Williams et al., 2007).

Text structure based strategies positively impact comprehension of content area text for all students, including students with disabilities (Bakken et al., 1997; Sencibaugh, 2007; Williams et al., 2007). Using social studies and science text, Bakken et al. (1997) found the text structure based strategy of identifying three types of passages (main idea, list, and order) and then applying passage-type specific strategies significantly impacted recall of central and incidental text information for eighth grade students with disabilities.

**Click and Clunk**

Click and Clunk is a self-monitoring, metacognitive strategy (Vaughn & Klingner, 1999). Its purpose is to teach students to monitor while they are reading and think about what is causing difficulties (Vaughn & Klingner, 1999). Clunks are words or
ideas students do not understand, while clicks are portions of the text that make sense (Klingner et al., 2012b). The clicks and clunks serve as triggers for the students to monitor their understanding. Students are taught to use fix-up strategies to fix their clunks. There are four fix-up strategies:

- **Fix-up strategy one**: Reread the sentence with the clunk and look for key ideas to help you figure out the word. Think about what makes sense.
- **Fix-up strategy two**: Reread the sentence with the clunk and the sentences before or after the clunk looking for clues.
- **Fix-up strategy three**: Break the word apart and look for a prefix, suffix, or a root word.
- **Fix-up strategy four**: Look for a cognate that makes sense. (Klingner et al., 2012b, p. 7)

When students gather in their cooperative groups, they write down their clunks and with the help of the Clunk Expert use the fix-up strategies to determine the meaning of their clunks. If they are still not able to find the meaning of the clunk, the Leader asks for teacher assistance.

**Self-monitoring.** Click and Clunk helps students in their development of metacognitive awareness, an important component of successful reading (Klingner et al., 2012b). “Awareness and monitoring of one’s comprehension processes are critically important aspects of skilled reading” (Mokhtari & Reichard, 2002, p. 249).

Metacognition during reading is critical and involves detecting breakdowns in comprehension alerting students to use an appropriate strategy (Hollenbeck & Saternus, 2013). When students monitor their reading and thinking, they are able to access
comprehension strategies that suit a variety of reading goals and purposes (Harvey & Goudvis, 2013).

Good readers interpret and evaluate text, and monitor their reading and comprehension processes (Dermitzaki et al., 2008). If they sense something is missing from their understanding, they may choose to read more slowly reflecting on the text or they may do additional reading (Dermitzaki et al., 2008). Hence, it is extremely important to train students to be more strategic readers, make them aware of potential strategies (like Click and Clunk), help them attribute success to these strategies, and guide them in choosing and then monitoring appropriate strategies (Paris & Paris, 2001). This is especially true as text becomes more complex (Malone & Mastropieri, 1992).

However, many struggling readers fail to properly monitor their understanding while reading (Klingner et al., 2012b). Dermitzaki et al. (2008) found low achieving third graders insufficiently employing the metacognitive and cognitive strategies necessary to regulate and monitor their efforts to comprehend text. A large difference existed between high and low readers in all of the metacognitive behaviors including planning, awareness and repair of errors, monitoring of efforts toward reaching a solution, and evaluation of outcome (Dermitzaki et al., 2008). Kolic-Vehovec and Bajsanski (2006) found comprehension monitoring significantly predicted reading comprehension in fifth through eighth grade students. Thus, it is important for all readers to understand the value of comprehension strategies so they are motivated to use them, and they must have the confidence and self-efficacy to believe they can use the strategies successfully (Hollenbeck & Saternus, 2013; Paris et al., 1983).
Get the Gist

The purpose of Get the Gist is to teach students to find and write the main idea of assigned text in their own words (Vaughn & Klingner, 1999). A restatement of the most important information in text is a good indicator of reading comprehension and promotes students’ memory (Klingner et al., 2012b). Get the Gist is incorporated immediately after Click and Clunk. Students first agree on the most important who or what from the text (Harvey & Goudvis, 2007). Then, they write their own gist statements in their learning logs and share them with the group. Students are encouraged to limit their gists to 12 or fewer words (Vaughn & Klingner, 1999). This encourages them to synthesize information and decide what is most important (Brown, Day, & Jones, 1983; Klingner et al., 2012b). Sometimes groups come up with a “super gist” which is a combination of the gists presented in the group.

Main idea. Finding and writing the main idea can be quite challenging for elementary students as these students often have difficulty distinguishing between important and unimportant information (Paris & Paris, 2001). Main idea skills can be effectively taught with direct and systematic instruction (Baumann, 1984; Bouleware-Goeden, Carreker, Thornhill, & Joshi, 2007; Jitendra et al., 2000). Of critical importance when teaching these main idea strategies is application and practice in which students compose main idea statements rather than simply recognizing correct answers (Baumann, 1984).

Teaching students to summarize text improves their reading comprehension (Duke & Pearson, 2008). In Cunningham (1982), students learned to create GIST (Generating Interactions between Schemata and Text) summary statements of 15 or fewer
words which were later joined into a summary paragraph. Like Get the Gist, students were first taught this strategy in a whole group and later practiced the strategy in cooperative groups (Duke & Pearson, 2008). This procedure is consistent with Kintsch and Van Dijk’s (1978) model of text comprehension which states that text is understood through a series of identifiable mental operations (Duke & Pearson, 2008).

Identifying and generating the main idea has also been found to be an effective cognitive comprehension strategy for students with learning disabilities (Gajria et al., 2007). Ellis and Graves (1990) found fifth- through seventh-grade students with learning disabilities who were trained to identify and paraphrase the main idea in their own words scored significantly higher than the control group. Graves and Levin (1989) found middle school students with learning disabilities outperformed their peers in main idea identification when taught to use a self-questioning strategy to monitor their progress while reading. Using strategies similar to Get the Gist, students with learning disabilities outperformed students receiving traditional instruction (Malone & Mastropieri, 1992). These students generated summary statements answering two questions: “(a) Who or what is the paragraph about? and (b) What is happening to them?” (Malone & Mastropieri, 1992, p. 273). Combining self-monitoring with main idea identification and generation is particularly effective for students with learning disabilities (Jitendra et al., 2000; Malone & Mastropieri, 1992).

Wrap Up

The purpose of Wrap Up is to teach students to identify the most important ideas from the passage they read (Vaughn et al., 2001). It contains two components: questions and review.
Questions/Questioning. To begin with, students create questions a good teacher would ask (Vaughn et al., 2001). Then, in their small groups they take turns asking and answering these questions. Students learn three types of question-answer relationships (QAR): *Right There, Think and Search, and Author and You* (Klingner et al., 2012b). Right There questions have answers in one place in the text. Think and Search questions have answers in multiple places in the text and require synthesis. Author and You questions require information found in both the text and the reader’s background knowledge. QAR reminds students that information from the text as well as their background knowledge should be used when formulating and answering questions (Raphael, 1986). QAR also helps students develop self-efficacy and confidence in in responding to and generating their own text questions (Duke & Pearson, 2008). Training in QAR is particularly beneficial for struggling and average readers (Raphael, 1984; Raphael & Pearson, 1985).

Student question generation is a comprehension fostering (Palinscar & Brown, 1984) and self-regulatory cognitive strategy (Rosenshine, Meister, & Chapman, 1996). It is a cognitive strategy as it does not directly lead to comprehension, but it is a tool for enabling students to search text, combine information, and in the process aids them in comprehending text (Rosenshine et al., 1996). Question generating has also been referred to as a metacognitive, comprehension monitoring strategy as the process makes students aware of their comprehension adequacy (Palinscar & Brown, 1984). When generating questions, students focus on the main ideas while checking their understanding of text content (Palinscar & Brown, 1984). Student question generation has resulted in gains and improvement in comprehension (Rosenshire et al., 1996; Yopp, 1988). It has also
been found to be especially effective as part of a larger and more comprehensive routine such as reciprocal teaching or CSR (Duke & Pearson, 2008). Duke and Pearson (2008) state that routines like CSR benefit students by giving them a better understanding of the text they are reading and helping them develop an infrastructure of processes they can apply to future texts.

**Review.** The final step in the CSR process is reviewing the most important information from the text (Klingner et al., 2012b). Students write down the most important information they have learned in their learning logs during Wrap Up. Then, they share these ideas together in their small groups. When the students have completed this task, the teacher then leads the class in a whole-class Wrap Up in which important information from the text is emphasized and essential questions discussed (Klingner et al., 2012b).

**Summarizing.** Summarizing is a powerful comprehension strategy (Block & Pressley, 2007; Duke & Pearson, 2008; Palmer & Stewart, 2005). It is used in CSR both during Get the Gist and Wrap Up. When students create a “super gist” during Get the Gist, they are essentially summarizing the main ideas of the text. Summarizing is also used during Wrap Up when students review the text and write the most important information they have learned.

Summarizing has the potential to significantly enhance student learning (Marzano, 1998); however, many students do not look back in the text to check their understanding or summarize (Paris & Paris, 2001). Harvey and Goudvis (2007) encourage students to summarize by getting the facts, ordering events, paraphrasing, and picking out what is important in order to synthesize information. Instruction and practice
in summarizing improves students’ ability to summarize (Palinscar & Brown, 1984), and it improves their overall text comprehension (Bouleware-Gooden et al., 2007; Duke & Pearson, 2008; Gajria & Salvia, 1992). Students with learning disabilities can be trained in summarization strategies, and research has shown this to be effective in fostering their comprehension, even with text-implicit questions (Gajria & Salvia, 1992).

Summary

The increased emphasis on informational text with the advent of Common Core State Standards creates the need for appropriate reading comprehension strategies with this type of text (Common Core State Standards Initiative, 2012a). Informational text has long been considered more difficult to comprehend than narrative text (Jitendra et al., 2011; Williams et al., 2007), and it is especially difficult for struggling readers and students with learning disabilities (Antoniou & Souvignier, 2007).

Two theories provide a strong foundation for enhancing reading comprehension of students: metacognitive theory (Pressley & Wharton-McDonald, 2006) and social cognitive theory (Schunk & Zimmerman, 2007). Metacognition is “cognition about cognitive phenomena” (Flavell, 1979, p. 906). Children who use metacognition monitor their own memory, comprehension, and other cognitive experiences (Flavell, 1979). Good readers use metacognition and metacognitive strategies naturally before, during, and after reading to aid their reading comprehension (Pressley & Gaskins, 2006). For struggling readers, long-term strategy use results from metacognitively embellished strategy instruction in which they are shown how certain strategies are useful (Pressley & Wharton-McDonald, 2006). Students must be explicitly taught these strategies and
provided opportunities to develop metacognition about their implementation (Harvey & Goudvis, 2013; Pressley & Wharton-McDonald, 2006).

Competent thinking includes four components: strategies, metacognition about strategies, world knowledge, and motivation (Pressley & Gaskins, 2006; Pressley with McCormick, 1995). Students must be taught the importance of world knowledge and encouraged to develop healthy motivational beliefs (Pressley & Gaskins, 2006). This is where social cognitive theory complements metacognitive theory. Social cognitive theory states that individuals contribute to life’s circumstances (Bandura, 2006). They are self-organizing, self-regulating, and self-reflective (Bandura, 2006). Within academic settings, individuals self-regulate through planning and managing time, attending to instruction, organizing information strategically, and using social sources successfully (Schunk & Zimmerman, 1997).

Self-regulation goes beyond metacognition and involves a complex interaction between social, motivational, and behavioral factors (Zimmerman, 1995). In terms of reading comprehension from a self-regulated learning perspective, there is an interaction of cognitive, metacognitive and motivational variables (Van Kraayenoord et al., 2012). “Getting currently failing students to realize they can become good students who eventually can play the roles in society played by good students could go far in motivating their efforts today” (Pressley & Gaskins, 2006, p. 106). These students need the self-efficacy to believe they can accomplish the task of reading (Bandura, 1997; Solheim, 2011). A self-efficacious student will participate and work harder, and they will persist longer when encountering difficulties (Solheim, 2011). Thus, reading
development is a combination of metacognition, motivation, engagement, and self-efficacy (Afflerbach, et al., 2013; Camahalan, 2006).

One key connection between motivation and reading comprehension is strategy use (Solheim, 2011). Research clearly shows the link between the explicit instruction of cognitive and metacognitive strategies and reading comprehension achievement (Bouleware-Gooden et al., 2007; Houtveen & van de Grift, 2007; Law, 2009; Pressley & Gaskins, 2006). Research also shows the benefits of multiple component strategy instruction (Ferguson, Currie, Paul, & Topping, 2011; Gajria et al., 2007; Palinscar and Brown, 1984; Pressley & Gaskins, 2006; Schunk & Rice, 1993). CSR is an intervention that combines a multiple component strategy approach with both metacognitive and cognitive strategies. CSR studies have shown the success of this intervention with diverse students from fourth grade through middle school (Jitendra et al., 2011; Klingner et al., 2012b; Klingner et al., 1998; Vaughn et al., 2001). Its components, Preview, Click and Clunk, Get the Gist, and Wrap Up, combine the research based strategies of “monitoring comprehension, reviewing and synthesizing information, asking and answering questions, and taking steps to improve understanding” (Klingner et al., 2012b, p. xiv), in addition to incorporating cooperative learning and peer discussion. These flexible strategies can be incorporated across the curriculum to enable readers, especially those who struggle, to be more thoughtful and purposeful in comprehending informational text (Klingner et al., 2012b).

In closing, a gap in the research exists in two areas. First, the majority of CSR studies have focused on the impact of CSR on students with learning disabilities and students with limited English proficiency (Jitendra et al., 2011; Klingner et al., 1998;
Vaughn et al., 2001). There have been no CSR studies specifically targeting heterogeneous, fifth grade students, as well as no studies examining the impact of CSR on students’ level of metacognitive awareness. Reading comprehension instruction is critical in this grade level as it is the last year of elementary school before students head to middle school and face an even greater emphasis on informational text. Sixth grade is the beginning of a focus on college and career readiness within the Common Core Standards with more standards focusing on literacy in science, social studies, and technical subjects (Common Core State Standards Initiative, 2012c). Hence, this study purposes to refine existing knowledge on CSR by examining its effectiveness with fifth grade students of all achievement levels, including fifth grade regular education students, gifted education students, special education students, and ELs.

The second gap found in the research is the gap between research and classroom practice. Classroom observations have shown limited use of metacognitive and cognitive strategies to improve reading comprehension even though research clearly supports their use (Pressley, 2006). Further, researchers have found little explicit comprehension instruction and a lack of instruction in self-regulation of comprehension processes while reading thus supporting the need for classroom practice of this research (Pressley et al., 1998). Swanson (2008) and Klingner et al. (2010) found few studies with evidence of reading comprehension instruction for students with learning disabilities, and the comprehension instruction found was considered low-quality. There is a clear gap between research on comprehension instruction and actual strategy instruction in the classroom (Klingner et al., 2010). This study aimed to bridge those gaps.
CHAPTER THREE: METHODOLOGY

This study investigates the effects of CSR on informational text comprehension and metacognitive awareness for fifth grade students at all academic levels including high, average, and low achievers. This chapter contains a description of the research design, research questions and hypotheses, participants, setting, instrumentation, procedures, and data analysis.

Design

A quasi-experimental pretest-posttest non-equivalent control group research design was used in this study to examine the effect of CSR on informational text comprehension and metacognitive awareness of fifth grade students. This study is considered quasi-experimental as intact classes were used and randomization was not possible (Campbell & Stanley, 1963). Group equivalence could not be assumed, so all participating students were pretested on reading level and metacognitive level, and, due to group differences, reading level was controlled through MANCOVA (Gall et al., 2007; Tabachnick & Fidell, 2007). Group differences were also analyzed using the Chi-square test for goodness of fit which found group differences were not proportional, so student subgroup was also controlled through MANCOVA (Rovai, Baker, & Ponton, 2013). This research design was chosen because the independent variable, CSR, was implemented with an experimental group while the control group received instruction without CSR (Gall et al., 2007). Two experimental group instructors each used CSR strategies in their intact fifth grade classes while two control group instructors used regular reading strategies without CSR in their intact fifth grade classes. The
experimental group and control group were located at different elementary schools to help eliminate the threat of experimental treatment diffusion (Gall et al., 2007).

Questions and Hypotheses

The research questions for this study are:

**RQ1**: Is there a statistically significant difference in QRI-5 expository reading comprehension scores between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction?

**RQ2**: Is there a statistically significant difference in CRCT total reading comprehension scores between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction?

**RQ3**: Is there a statistically significant difference in CRCT reading domain scores between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction?

**RQ4**: Is there a statistically significant difference in metacognitive strategy awareness between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction?

**RQ5**: Is there a statistically significant difference in subscale scores of the MARSI between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction?

The following are the research hypotheses:

**H1**: There is a statistically significant difference in QRI-5 expository reading comprehension scores between fifth grade students who receive CSR instruction three
times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

**H₂**: There is a statistically significant difference in CRCT total reading comprehension scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

**H₃**: There is a statistically significant difference in CRCT Information and Media Literacy domain scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

**H₄**: There is a statistically significant difference in CRCT Literary Comprehension domain scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

**H₅**: There is a statistically significant difference in CRCT Reading Skills and Vocabulary Acquisition domain scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

**H₆**: There is a statistically significant difference in metacognitive awareness between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.
\( H_7: \) There is a statistically significant difference in Global Reading Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.

\( H_8: \) There is a statistically significant difference in Problem-Solving Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.

\( H_9: \) There is a statistically significant difference in Support Reading Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.

Alternatively, the following are the null hypotheses:

\( H_{o1}: \) There is no statistically significant difference in QRI-5 expository reading comprehension scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

\( H_{o2}: \) There is no statistically significant difference in CRCT total reading comprehension scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

\( H_{o3}: \) There is no statistically significant difference in CRCT Information and Media Literacy domain scores between fifth grade students who receive CSR instruction
three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

$H_{04}$: There is no statistically significant difference in CRCT Literary Comprehension domain scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

$H_{05}$: There is no statistically significant difference in CRCT Reading Skills and Vocabulary Acquisition domain scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

$H_{06}$: There is no statistically significant difference in metacognitive awareness between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.

$H_{07}$: There is no statistically significant difference in Global Reading Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.

$H_{08}$: There is no statistically significant difference in Problem-Solving Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.
**H₀⁹**: There is no statistically significant difference in Support Reading Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition.

**Participants**

The population for this study was fifth grade students. The sampling frame was fifth grade students enrolled in the Georgia school district under study. The sample included students of all academic levels including regular education students, gifted students, special education students, and ELs. Table 1 shows demographic information for the experimental and control groups.
Table 1

Demographics for Participants in Experimental and Control Groups

<table>
<thead>
<tr>
<th>Demographic Title</th>
<th>Experimental Group (n=58)</th>
<th>Control Group (n=39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>32 (55%)</td>
<td>18 (46%)</td>
</tr>
<tr>
<td>Male</td>
<td>26 (45%)</td>
<td>21 (54%)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>1 (2%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Black</td>
<td>5 (9%)</td>
<td>5 (13%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>7 (12%)</td>
<td>8 (20%)</td>
</tr>
<tr>
<td>Indian</td>
<td>0 (0%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Multi-racial</td>
<td>3 (5%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>White</td>
<td>42 (72%)</td>
<td>25 (64%)</td>
</tr>
<tr>
<td>Enrollment in Selected Programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gifted</td>
<td>15 (26%)</td>
<td>4 (10%)</td>
</tr>
<tr>
<td>Compensatory Programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Education</td>
<td>0 (0%)</td>
<td>9 (23%)</td>
</tr>
<tr>
<td>English to Speakers of Other Languages</td>
<td>3 (5%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Early Intervention Program</td>
<td>11 (19%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

This study used single stage sampling. Non-random, convenience sampling was the sampling procedure as intact classes were readily accessible (Gall et al., 2007). The principals at both participating elementary schools provided two fifth grade teachers who were willing to participate in this study. The experimental group teachers included a
reading/language arts teacher (Teacher E1) and a science/social studies teacher (Teacher E2), and the control group teachers consisted of a reading/language arts (Teacher C1) and a science/social studies teacher (Teacher C2). Table 2 shows each teacher’s experience, highest level of education, certifications, and endorsements.
Table 2  
*Teacher Experience and Education*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Years of Experience</th>
<th>Highest Level of Education</th>
<th>Certifications</th>
<th>Endorsements</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>25</td>
<td>Master’s</td>
<td>Middle Grades 4-8: (All Subjects) Special Education</td>
<td>Gifted</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2</td>
<td>13</td>
<td>Master’s</td>
<td>Early Childhood Education (P-5) Health and PE (P-12)</td>
<td>Gifted InTech</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>4</td>
<td>Bachelor’s</td>
<td>Early Childhood Education (P-5) Special Education</td>
<td>Gifted</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2</td>
<td>18</td>
<td>Master’s</td>
<td>Early Childhood Education (P-5)</td>
<td>Teach 21</td>
</tr>
</tbody>
</table>

*Note.* E1 = Experimental group teacher 1; E2 = Experimental group teacher 2; C1 = Control group teacher 1; C2 = Control group teacher 2; PE = Physical education, P-5 = certification to teach kindergarten through grade 5. InTech and Teach 21 are both technology endorsements.

Parental consent letters (Appendix A) and student assent letters (Appendix B) were sent home with all students taught by these teachers. Only those students who returned these forms participated in the study. Follow-up letters were sent home to students from the control group school with an attachment stating one member of the control group would receive a $25.00 gift card which helped increase the size of the control group. The minimum sample size for this study is $N = 60, n = 30$ if MANOVA is used for analysis (Rovai et al., 2013; Tabachnick & Fidell, 2007). Gall et al. (2007) suggest at least 15 participants per group for experimental research. Since two intact classes in the experimental group and two intact classes for the control group were used,
the sample sizes exceeded the minimum. The sample size was \( N = 97 \) with 58 students in the experimental group and 39 students in the control group.

**Setting**

A suburban school district in north Georgia was the setting for this study. Total school enrollment during 2010-2011 was 38,313 students (Georgia Department of Education, 2010-2011b). Ethnic breakdown of the district during 2010-2011 was: 75% White, 7% Black, 13% Hispanic, 2% Asian, 3% Multi-Racial, 0% American Indian (Georgia Department of Education, 2010-2011b). The student subgroups were as follows: 10% Students with Disabilities, 4% Limited English Proficient, and 30% eligible for free/reduced meals (Georgia Department of Education, 2010-2011b). During the 2010-2011 school-year, 15 students were eligible to receive services through the Migrant Education Program (Georgia Department of Education, 2010-2011a). The average number of food stamp households during fiscal year 2011 was 4,368, and the average number of Temporary Assistance for Needy Families (TANF) cases was 93 (Georgia Department of Education, 2010-2011a).

Two elementary schools in this district with similar demographics, School E and School C, were chosen for this study allowing the experimental group to be located in one school and the control group in another school. Table 3 shows demographic information for School E (experimental school) and School C (control group school) during the 2010-2011 school year.
Table 3

Demographics for Elementary School E and Elementary School C

<table>
<thead>
<tr>
<th>Demographic Title</th>
<th>School E</th>
<th>School C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Enrollment</td>
<td>1,097</td>
<td>1,274</td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>6%</td>
<td>2%</td>
</tr>
<tr>
<td>Black</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>19%</td>
<td>16%</td>
</tr>
<tr>
<td>Multi-racial</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>White</td>
<td>62%</td>
<td>67%</td>
</tr>
<tr>
<td>Students by Other Subgroups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students with Disabilities</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>Limited English Proficient</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>Eligible for Free/Reduced Meals</td>
<td>25%</td>
<td>34%</td>
</tr>
<tr>
<td>Enrollment in Selected Programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gifted</td>
<td>10%</td>
<td>8%</td>
</tr>
<tr>
<td>Compensatory Programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Education</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>English to Speakers of Other Languages</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>Early Intervention Program</td>
<td>10%</td>
<td>12%</td>
</tr>
</tbody>
</table>


The experimental group students received reading, science, and social studies instruction with CSR strategies at least three times per week. CSR is multiple strategy program designed to teach reading comprehension with informational text (Klingner &
Vaughn, 1999). It combines four metacognitive and cognitive strategies: Preview (activating prior knowledge and analyzing text structure before reading), Click and Clunk (self-monitoring during reading), Get the Gist (finding the main idea during reading), and Wrap Up (generate questions and review after reading) (Klingner & Vaughn, 1999).

Students used CSR strategies to help comprehend informational text during reading, science, and social studies instruction. The control group did not use CSR strategies during reading, science, or social studies instruction; these students used their teacher’s traditional methods.

Four teachers were used in this study: two teachers at School E (a reading/language arts teacher and a science/social studies teacher) implemented CSR strategies to the experimental group while two teachers at School C (a reading/language arts teacher and a science/social studies teacher) used traditional reading instruction methods with the control group. The experimental and control groups were similar in all ways except for the CSR treatment. Both groups used the same curriculum, were taught the same standards, and were instructed in departmentalized grade levels, that is, they switched classes and were taught by multiple teachers who focused on one subject area (as opposed to some self-contained elementary school models in which students only have one teacher). This study was implemented from January 2013 until May 2013.

**Instrumentation**

The QRI-5 is a reading test designed to assess students’ ability to identify words and comprehend text, as well as inform instructors regarding unsuccessful word identification and/or comprehension (Leslie & Caldwell, 2011). The QRI-5 was chosen for this study because it enables researchers to evaluate intervention instruction and
document student growth over a certain time period as determined by the teacher (Leslie & Caldwell, 2011). Moreover, it provides the option of assessing comprehension of narrative or expository text; this study focused solely on expository text comprehension.

Students in the experimental and control groups were pretested using two Level 5 (fifth grade) expository passages, and then they were posttested on two different Level 5 expository passages to eliminate testing as a threat to internal validity (Gall et al., 2007). Readability levels of the passages were provided in the QRI-5 manual and were analyzed to determine which passages should be given at pre- and posttest. The pretest passages chosen for this study were “Farming on the Great Plains” and “Octopus,” while the posttest passages were “How Does Your Body Take in Oxygen” and “Margaret Mead” (Appendix C; Leslie & Caldwell, 2011). Table 4 shows the passages with two measures of their readability. The first score is an average of the following readability measures: The New Dale-Chall readability formula, the Fry Readability graph, and the Flesch Grade Level estimate (Leslie & Caldwell, 2011). The second score is a Lexile level. The Lexile scale is based on readability measure of word frequency and average sentence length (Leslie & Caldwell, 2011). This scale is used with Common Core State Standards to determine text complexity grade bands (Common Core State Standards Initiative, 2012b). Lexile levels are also used in the state of Georgia and are part of the information parents receive with their child’s CRCT reading scores.
Table 4

Readability of QRI-5 Passages Chosen for This Study

<table>
<thead>
<tr>
<th>QRI-5 Reading Passage</th>
<th>Average of Three(^a)</th>
<th>Lexile Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Farming on the Great Plains”</td>
<td>5.4</td>
<td>810</td>
</tr>
<tr>
<td>“The Octopus”</td>
<td>5.2</td>
<td>650</td>
</tr>
<tr>
<td>“Margaret Mead”</td>
<td>5.0</td>
<td>660</td>
</tr>
<tr>
<td>“How Does Your Body Take in Oxygen?”</td>
<td>5.6</td>
<td>900</td>
</tr>
</tbody>
</table>

Note. \(^a\)Average of New Dale-Chall readability formula, the Fry Readability graph, and the Flesch Grade Level estimates.

Two passages were given instead of one due to a larger standard error of measurement with only one passage (Leslie & Caldwell, 2011). Leslie and Caldwell (2011) state that using two passages gives a better estimate of a student’s true score for both total comprehension and comprehension of explicit v. implicit questions. Content and readability level were used to determine which passages to give at pre- and posttest. One passage at pre- and posttest contained social studies content (“Farming on the Great Plains” and “Margaret Mead”) while the other contained science content (“The Octopus” and “How Does Your Body Take in Oxygen”). Lower Lexile levels were paired with higher Lexile levels to balance the difficulty at pre- (“Octopus” Lexile 650, “Farming on the Great Plains” Lexile 810) and posttest (“Margaret Mead” Lexile 660, “How Does Your Body Take in Oxygen?” Lexile 900). With eight questions per passage, the maximum score is 16. A score of 15 to 16 on the comprehension questions indicates “independent” reading level, 12 to 14 indicates “instructional” reading level, and less than 12 indicates the “frustration” level (Leslie & Caldwell, 2011). Independent reading level refers to the level at which a student reads successfully without help, while
instructional level is the level where a student can read with help from the teacher.

Frustration level is the level at which a student cannot read material with adequate word identification or comprehension (i.e. word recognition is less than 90% and comprehension is less than 70%; Leslie & Caldwell, 2011).

There are two types of comprehension questions on both narrative and expository passages: explicit and implicit. The answers to explicit questions can be found directly in the text, while implicit answers must be inferred from the passage. QRI-5 passages may be read orally or silently, and they may be administered individually or as a whole group. For the purposes of this study, the passages were administered as a whole class and, therefore, read silently. Students were encouraged to look back in the passages to aid their comprehension as the pilot research for the QRI-5 found students with instructional levels at or above third grade increased their comprehension scores through this strategy (Leslie & Caldwell, 2011).

The QRI-5 has been found to be a reliable and valid assessment. In terms of inter-scorer reliability on comprehension questions, Leslie and Caldwell (1989) found reliability of 98% for both explicit and implicit questions. For this study, the intraclass correlation coefficient (ICC) for the QRI-5 pretest was ICC = .99 and the QRI-5 posttest was ICC = .99 showing a very high degree of inter-rater reliability (Rovai et al., 2013). Alternate-form reliability was found to be consistently above .80, and 75% were above .90 as long as students were assessed on the same genre (Leslie & Caldwell, 2011). Specifically for the fifth grade passages, the same instructional level was found 75% of the time (Leslie & Caldwell, 2011). Additionally, reliability of diagnostic judgments was found to be consistent 87% of the time (Leslie & Caldwell, 2011). The Cronbach’s alpha
value for the QRI-5 pretest in this study was $\alpha = .98$ and the value for the QRI posttest was $\alpha = .99$ showing very high reliability (Rovai et al., 2013). The QRI-5 has content validity as the reading passages were included in the QRI if readers at particular grade levels achieved instructional level scores in word identification and/or comprehension, and piloting showed that a passage was easier than the next higher level and more difficult than the next lower level (Leslie & Caldwell, 2011). In terms of concurrent validity, positive and statistically significant correlations were found between the QRI and norm-referenced measures such as the Iowa Test of Basic Skills and the Woodcock Reading Test (Leslie & Caldwell, 2011).

Georgia’s CRCT is given to third through eighth grade students in the state of Georgia every spring (Georgia Department of Education, 2012). Students are tested in reading, mathematics, language arts, science, and social studies. For the purpose of this study, the reading portion of the CRCT was used. Total reading scores are reported to parents and schools, as well as reading scores by domain. A total reading score of 799 or less means the student “does not meet the standard,” a score between 800 and 849 means the student “meets the standard,” and a score of 850 or higher means the student “exceeds the standard” (Georgia Department of Education, 2012).

There are three CRCT reading domains: Literary Comprehension, Information and Media Literacy, and Reading Skills and Vocabulary Acquisition. Literary comprehension for fifth graders involves comprehending and exploring literary works and identifying and analyzing their elements, such as characterization, setting, plot and conflict (Georgia Department of Education, 2007). The Information and Media Literacy domain requires students to read, recall, and analyze texts including informational essays,
articles, content-area texts, etc. Additionally, students must read and analyze workplace and media text (Georgia Department of Education, 2007). The Literary Comprehension domain consists of “skills required to read, interpret, and apply difficult text and new vocabulary in a variety of texts” (Georgia Department of Education, 2007, p. 14). The maximum score on the Literary Comprehension and Information and Media Literacy domains is 16 per domain, while the maximum score for the Reading Skills and Vocabulary Acquisition domain is 8. For data analysis purposes, the total reading score and each domain score from the 2013 Reading CRCT were used. These are appropriate measures to analyze informational text comprehension. In terms of reliability, a standard error of measurement is calculated for each of the CRCT tests, and an error band is reported with each student’s score to improve reliability (Georgia Department of Education, 2012). Finally, as Gall et al. (2007) explain, advantages of standardized tests like the CRCT include well-written test items and standard conditions of administration increasing the validity and reliability of findings.

The MARSI is used to determine adolescent and adult readers’ perceived use of reading strategies while reading academic text, as well as their metacognitive awareness (Mokhtari & Reichard, 2002). The MARSI (Appendix D) was designed for use with students of grade level equivalents ranging from fifth grade through college. It has been found to be a reliable and valid measure of reading strategy and metacognitive awareness (Mokhtari & Reichard, 2002). Cronbach’s alpha reliability of this instrument was .89 in a pilot study, which also found students who rated themselves as excellent readers tended to have significantly higher strategy use (Mokhtari & Reichard, 2002). Cronbach’s alpha
for the MARSI scores in this study were as follows: MARSI pretest $\alpha = .92$ and MARSI posttest $\alpha = .85$, both above the preferable level of .80 (Pallant, 2010; Rovai et al., 2013).

The MARSI contains 30 statements to which students respond using a 5-point Likert type scale ranging from 1 (I never do this) to 5 (I always do this; Mokhtari & Reichard, 2002). Students receive a total score and three subscale scores. The subscales are Global Reading Strategies, Problem-Solving Strategies, and Support Reading Strategies. Global Reading Strategies include strategies oriented toward a global analysis of text, such as “I think about what I know to help me understand what I read.” Problem-Solving Strategies are those focused on solving problems when the reading of text becomes difficult, such as “When the text becomes difficult, I reread to increase my understanding.” Support Reading Strategies relate to the use of outside reference materials or practical strategies while reading. For example, “I take notes while reading;” “I underline or circle information in the text to help me remember it” (Mokhtari & Reichard, 2002). A mean of 3.5 or higher indicates high strategy usage, a mean of 2.5 to 3.4 indicates medium strategy use, and a mean of 2.4 or lower indicates low strategy use (Henk & Melnick, 1995; Mokhtari & Reichard, 2002).

There were two covariates in this study: student reading level and student subgroup. The QRI-5 pretest and previous year’s total reading CRCT scores were analyzed to determine if there was a significant difference in student reading level between the experimental and control groups. A significant difference was found for the QRI-5, so MANCOVA was used to control for this difference. When analyzing students’ level of metacognitive awareness with the MARSI, the pretest showed there was not a significant difference in metacognitive awareness between the experimental and control
groups. Therefore, MANOVA was used in the MARSI analysis. Finally, the variable student subgroup was analyzed using a chi-square test for goodness of fit. A significant difference in the proportion of students in each subgroup was found; so student subgroup was used as a covariate for hypotheses one through five.

**Procedures**

Permission was first obtained from two elementary school principals to use their schools for the experimental and control groups, followed by permission from the school district to conduct this study. IRB approval was then applied for and given from Liberty University. Next, a fifth grade reading/language arts teacher and a fifth grade science/social studies teacher from each school were chosen based on their willingness to participate in the study. Teacher consent forms were signed by participating teachers (Appendix E). Recruitment letters were sent home with all students taught by the experimental and control group teachers (Appendix F). A few days later, parental consent (Appendix A) and student assent forms (Appendix B) were sent home to all students instructed by the experimental and control group teachers. Only the students who returned the signed consent forms participated in the study. The samples consisted of a diverse student population with a variety of academic levels, gender, and race (see Table 1). This helped control for selection threat to validity (Gall et al., 2007). Pretests given in this study helped explain the differences between the experimental and control groups (Gall et al., 2007). All participating students were assigned a number for anonymity purposes.

The experimental group teachers were trained in CSR using the book *Now We Get It! Boosting Comprehension with Collaborative Strategic Reading* (Klingner et al.,
2012b) and the CSR Colorado website (CSR Colorado, 2013). The book was given to the experimental group teachers as resource material (Klingner et al., 2012b). Initial training took place over an afternoon session. The experimental group teachers were trained in the strategies of Preview, Click and Clunk, Get the Gist, and Wrap Up and given CSR posters (Appendix G) to display in their classroom with these strategies (Klingner et al., 2012b). They were trained in how to use the Learning Log for Informational Text with their students as they read informational text (Appendix G). They were given CSR Student Cue Cards as well as CSR Teacher Cue Cards (Appendix G) to assist with instruction and implementation of the strategies (Klingner et al., 2012b).

Both the experimental group teachers and control group teachers were trained in administering and scoring the QRI-5 and the MARSI; Leslie & Caldwell, 2011; Mokhtari & Reichard, 2002). The teachers were trained at their individual schools on both inventories for approximately one hour. The teachers were provided copies of everything needed to assess their students including copies of the MARSI (Appendix D) and the fifth grade QRI-5 expository passages (Appendix C).

Before beginning CSR instruction, all participating students in both groups were pretested using the QRI-5. Two fifth grade level expository passages entitled “Farming on the Great Plains” and “Octopus” (Leslie & Caldwell, 2011) were given to students as a whole group by their teacher. The students’ inventories were scored by three teachers (including the researcher) for inter-rater reliability purposes (Gall et al., 2007). Previous year’s CRCT scores were collected to be used as a possible covariate for hypotheses two through five. Four students in the experimental group were new to the state so they did
not have CRCT scores from fourth grade. Students were also pretested by their teacher with the MARSI for use as a possible covariate in hypotheses six through nine.

The experimental group teachers implemented CSR strategies at least three times per week for three months. Initially, the teachers modeled the strategies using think-aloud during instruction (Klingner et al., 2012b; Vaughn & Klingner, 1999; Vaughn et al., 2001). After the students clearly understood each of the CSR strategies, they began using the strategies in cooperative groups with assigned roles. The students also used learning logs (Klingner et al., 2012b). The experimental group teachers documented and highlighted CSR strategies in their lesson plans and turned them into me on a monthly basis for fidelity of treatment purposes. The teachers also turned in all completed student learning logs. I met with these teachers once a month to provide any needed support with CSR implementation (Klingner et al., 1999). One observation of each experimental teacher was also conducted for fidelity of treatment (Gall et al., 2007; Vaughn & Klingner, 1999).

In April 2013, all participating students took the Georgia’s CRCT. In May 2013, all participating students were posttested by their teacher using the QRI-5 and MARSI. Two different fifth grade expository passages entitled “How Does Your Body Take in Oxygen” and “Margaret Mead” (Appendix C; Leslie & Caldwell, 2011) were used for the QRI-5 posttest to help control for the internal threat of testing (Campbell & Stanley, 1963). The students’ inventories were scored by three teachers (including the researcher) for inter-rater reliability purposes (Gall et al., 2007). All participating students were treated to ice cream for their willingness to take extra assessments and participate in the
study, and the teachers were given gift cards. Finally, all of the data was collected and analyzed.

**Data Analysis**

Before the hypotheses could be tested, MANOVA was used to determine if a significant difference existed between the experimental and control groups in student reading level and level of metacognition. This method was chosen because there was one independent variable with two levels and three dependent variables (QRI-5 pretests, CRCT Total Reading pretests, and MARSI pretests). The following assumption tests were conducted prior to data analysis: level of measurement, independence of observations, sample size, normality (both univariate and multivariate), outliers, linearity, multicollinearity, singularity, homogeneity of variance-covariance matrices, equality of variances (Tabachnick & Fidell, 2007). Linearity of the dependent variables was checked using a scatterplot matrix in which each plot should have been oval-shaped (Tabachnick & Fidell, 2007). Univariate normality was checked by using histograms and and Normal Q-Q plots (Tabachnick & Fidell, 2007). Boxplots were analyzed to determine the presence of outliers (Rovai et al., 2013). Using SPSS and Mahalanobis Distance (Tabachnick & Fidell, 2007), multivariate normality was evaluated by examining residuals for the normality of errors, in addition to a Q-Q plot of the residuals in comparison to a normal distribution (Rovai et al, 2013). Box’s $M$ test was evaluated to determine homogeneity of variance-covariance matrices (Tabachnick & Fidell, 2007). Multicollinearity and singularity were tested using SPSS to ensure that the correlation between the variables was not too high or that the variables were redundant (Tabachnick
& Fidell, 2007). Levene’s Test of Equality of Error Variances was used to check the assumption of equality of variance (Rovai et al., 2013).

Results from the MANOVA showed a significant difference between the combined dependent variables. A separate analysis for each of the dependent variables using a Bonferroni adjusted alpha level of .017 (Tabachnick & Fidell, 2007) found the only difference to reach statistical significance was the QRI-5 pretest. Thus, the QRI-5 pretest was used as a covariate for hypotheses one through five which relate to reading comprehension.

A chi-square test for goodness of fit was then conducted on the variable student subgroup. This was conducted because the proportion of students in each subgroup compared to the expected value could not be assumed (Rovai et al., 2013). The chi-square test indicated a significant difference in the proportion of students in each subgroup, so student subgroup was used as a covariate for the first five hypotheses.

Correlations were then calculated between the QRI-5 posttests, CRCT posttests, and MARSI posttests using Pearson correlations (Gall et al., 2007). A strong correlation was found between the QRI-5 posttests and CRCT posttests. Correlations were also found between the QRI-5 posttests, CRCT posttests, and the three CRCT domain posttests. Due to these correlations and the need to use student reading level as a covariate, MANCOVA was used to analyze hypotheses one through five (Tabachnick & Fidell, 2007).

The first null hypothesis stated that there is no statistically significant difference in QRI-5 expository reading scores between fifth grade students who receive CSR instruction three times per week compared comprehension to students who do not receive
CSR instruction while controlling for student reading level and student subgroup. This hypothesis was tested using MANCOVA. This method was chosen because there was one independent variable with two levels, multiple dependent variables, and two covariates (student reading level and student subgroup; Tabachnick & Fidell, 2007). The following assumptions tests were conducted for this hypothesis and hypotheses two through five: level of measurement, independence of observations, sample size, normality (both univariate and multivariate), outliers, linearity, multicollinearity, singularity, homogeneity of variance-covariance matrices, equality of variances, influence of the covariate measurement, reliability of covariates, linearity between the dependent variables and covariate, and homogeneity of regression slopes (Tabachnick & Fidell, 2007). The minimum sample size for this study at the .05 significance level needed to be \( N = 60, n = 30 \). This would result in statistical power of .7 (Gall et al., 2007). With MANCOVA, there must be more cases than dependent variables in every cell (Tabachnick & Fidell, 2007). Reliability of the covariate was calculated using Cronbach’s alpha (Tabachnick & Fidell, 2007). SPSS was used to test the homogeneity of regression slopes assumption. An overall F-test examined the pattern of the dependent variables for the different groups formed by the independent variable (method of reading comprehension instruction; Rovai et al., 2013). Tests of group differences were then conducted. Multiple comparison tests of group differences were tested using a Bonferroni adjustment (Rovai et al., 2013). The significance level changed from .05 to .01 due to the requirement of dividing the error rate by the number of comparisons when using the Boneferroni test (Howell, 2011; Rovai et al., 2013). Effect size was calculated using the partial eta squared statistic and interpreted using Cohen’s \( d \) (1988).
The second null hypothesis stated that there is no statistically significant difference in total reading comprehension scores on the CRCT between students who receive CSR instruction compared to students who receive regular reading instruction while controlling for student reading level and student subgroup. This hypothesis was tested using MANCOVA. The QRI-5 pretest and student subgroup were used as the covariates for this hypothesis. This method was chosen because MANCOVA adjusts for differences associated with a covariate, which in this study would be student reading level and student subgroup, and there was one independent variable with two levels along with multiple dependent variables (Tabachnick & Fidell, 2007). Null hypotheses three, four, and five stated there is no statistically significant difference in each of the CRCT reading domain scores (Literary Comprehension, Information and Media Literacy, Reading Skills and Vocabulary Acquisition) between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup. These hypotheses were tested using MANCOVA. This method was chosen because there was one independent variable (method of reading comprehension instruction), multiple dependent variables (CRCT total posttest scores, CRCT reading domain posttest scores, and QRI-5 posttest scores), and two covariates (student reading level and student subgroup; Tabachnick & Fidell, 2007). After examining an overall $F$-test for the combined dependent variables, separate analyses were conducted to analyze between-subject effects and were reported for each of these hypotheses (Tabachnick & Fidell, 2007). Main effects and interaction effects were measured using partial eta squared (Rovai et al., 2013).
Null hypothesis six stated there is no statistically significant difference in metacognitive awareness between students who receive CSR instruction compared to students who receive regular reading instruction while controlling for student level of metacognition. Hypotheses seven, eight, and nine stated that there is no statistically significant difference in the subscale scores of the MARSI (Global Reading Strategies, Problem-Solving Strategies, and Support Reading Strategies) while controlling for student level of metacognition. The MANOVA for the QRI-5 pretest, CRCT pretest, and MARSI pretest found a significant difference between the combined dependent variables. A separate analysis for each of the dependent variables using a Bonferroni adjusted alpha level of .017 (Tabachnick & Fidell, 2007) did not find a significant difference between the experimental and control groups on the MARSI pretest. Therefore, student level of metacognition did not need to be used as a covariate since it did not need to be controlled in the analysis.

MANOVA was used to analyze hypotheses six through nine. MANOVA was chosen because there was one independent variable with two levels (method of reading comprehension instruction) and multiple dependent variables (total MARSI score and subscale scores; Gall et al., 2007). The following assumption tests were conducted prior to data analysis: level of measurement, independence of observations, sample size, normality (both univariate and multivariate), outliers, linearity, multicollinearity, singularity, homogeneity of variance-covariance matrices, equality of variances (Tabachnick & Fidell, 2007). Using MANOVA, an overall $F$-test for the combined dependent variables was evaluated. Main effects were measured using partial eta squared
(Rovai et al., 2013) and interpreted using Cohen’s $d$ (1988). If necessary, tests of group differences would have then been conducted (Rovai et al., 2013).
CHAPTER FOUR: FINDINGS

This chapter contains the results of the statistical analyses of each of the nine hypotheses in this quasi experimental pretest-posttest nonequivalent control group study. The purpose of the study was to test both the theories of metacognition (Pressley, 2006) and social cognition (Bandura 2006) by investigating the effects of CSR on informational reading comprehension and metacognitive strategy awareness of fifth grade students while controlling for student reading level. The two levels of the independent variable were a reading program with CSR and a reading program without CSR. The dependent variables were defined as informational reading comprehension scores and metacognitive strategy awareness scores. The control or intervening variables, student reading level and student subgroup, were controlled statistically in this study.

Testing for Covariates

Student Reading Level and Level of Metacognition

Before the hypotheses were tested, MANOVA was used to determine if a significant difference existed between the experimental and control groups in student reading level and level of metacognition. This was necessary because students were not randomly assigned to groups as intact classes were used (Gall et al., 2007). Assumption testing of Georgia’s CRCT pretest scores, MARSI pretest scores, and QRI-5 pretest scores showed the level of measurement assumption was met as all dependent variables were measured at the ratio level using a continuous scale (Tabachnick & Fidell, 2007). Independence of observations was met as each measurement was not influenced by another measurement. Examination of histograms and Normal Q-Q plots showed reasonably normal distributions. Boxplot analysis showed the presence of only one
extreme outlier for the experimental group with the MARSI pretest; however, the difference between the mean (3.13) and the 5% Trimmed mean (3.15) was only .02 so the outlier was included in the analysis (Pallant, 2010). Multivariate normality was checked using Mahalanobis distances (Tabachnick & Fidel, 2007). The maximum Mahalanobis distance was 20.87 which is greater than $\chi^2(3) = 16.27$ which indicates the presence of multivariate outliers (Tabachnick & Fidell, 2007). Upon further investigation, only one extreme outlier was found and it was kept as this was a low-performing EL student (Tabachnick & Fidell, 2007). Sample size was met as there were more cases in each cell than dependent variables (Tabachnick & Fidell, 2007; see Table 5).
Table 5

*Descriptive Statistics for CRCT Pretest, QRI-5 Pretest, and MARSI Pretest*

<table>
<thead>
<tr>
<th>Test</th>
<th>Group</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRCT Pretest</td>
<td>Experimental</td>
<td>54</td>
<td>847.54</td>
<td>35.72</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>39</td>
<td>856.46</td>
<td>28.22</td>
</tr>
<tr>
<td>QRI-5 Pretest</td>
<td>Experimental</td>
<td>54</td>
<td>10.99</td>
<td>3.22</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>39</td>
<td>12.75</td>
<td>1.99</td>
</tr>
<tr>
<td>MARSI Pretest</td>
<td>Experimental</td>
<td>54</td>
<td>3.09</td>
<td>.62</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>39</td>
<td>3.13</td>
<td>.64</td>
</tr>
</tbody>
</table>

Linearity was confirmed through matrix scatterplots. Singularity did not exist as the variables were not redundant. Multicollinearity was checked and the highest correlation found was between the CRCT Pretest and QRI-5 pretest ($r = .67$), a moderate correlation. The assumption of homogeneity of variance-covariance was met as Box’s Test of Equality of Covariance Matrices found $p = .08$. Levene’s Test of Equality of Error Variances found one value less than .05, the QRI-5 Pretest was $p = .01$; hence the assumption of equality of variances was not met for that variable so an alpha level of .025 was used for the univariate $F$-test (Tabachnick & Fidell, 2007). A one-way between-groups MANOVA found a statistically significant difference between the experimental and control groups on the combined dependent variables $F(3, 91) = .025; p = .025$, Wilks’ Lambda = .90; partial $\eta^2 = .10$, a medium effect size (Tabachnick & Fidell, 2007). When analyzing the results for the dependent variables separately using a Bonferroni adjusted alpha level of .017 (Pallant, 2010), the only difference to reach statistical significance was the QRI-5 pretest, $F(1, 91) = 9.09$, $p = .00$, partial $\eta^2 = .09$, a medium
effect size. Analysis of the mean scores (Table 5) indicated that the control group scored higher on the QRI-5 pretest \((M = 12.75, SD = 1.99)\) than the experimental group \((M = 10.99, SD = 3.22)\). Due to this significant difference in reading level between the groups, the QRI-5 pretest was used as a covariate in this study for hypotheses one through five. Hypotheses six through nine did not have a covariate as these relate to the MARSI, and there was not a significant difference in the students’ level of metacognition on the MARSI pretest, \(F(1, 91) = .09, p = .77: \) experimental group \((M = 3.09, SD = .62)\) and control group \((M = 3.13, SD = .64)\).

**Student Subgroup**

The next test to be conducted was the chi-square test for goodness of fit. This test was conducted because the proportion of students in each subgroup (regular education, special education, ELs, gifted education, and Early Intervention Program) compared to the expected value could not be assumed (Rovai et al., 2013). Prior to testing, assumptions were checked. The variables assumption was met as there was one categorical variable, student subgroup, and each value and category was mutually exclusive and exhaustive (Rovai et al., 2013). The assumption of sample size was met as the sample size was greater than 30 \((N = 97; \) Rovai et al., 2013). The expected values for this test were based on the actual subgroup demographics from the experimental and control group schools during the 2010-2011 school year (see Table 3; Georgia Department of Education, 2010-2011b). The chi-square goodness of fit test indicated that there was a significant difference in the proportion of students in each subgroup, \(\chi^2(4, N = 97) = 10.59, p = .03.\) In particular, there were fewer regular education students than
expected and more gifted education students than expected. Therefore, student subgroup was used as a covariate for hypotheses one through five.

**Hypothesis 1**

The first null hypothesis stated that there is no statistically significant difference in QRI-5 expository reading scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup. Before testing this hypothesis, correlations were calculated (see Table 6) for the QRI-5 posttests, CRCT posttests, and MARSI posttests.
As Table 6 shows, there was a strong correlation between the CRCT posttest and QRI-5 posttest ($r = .66$), a small correlation between the CRCT posttest and MARSI posttest ($r = .27$), and a small, non-significant correlation between the QRI-5 posttest and MARSI posttest ($r = .18$). Due to the strong, significant correlation between the CRCT posttest and QRI-5 posttest, further correlations were calculated between the QRI-5, CRCT posttest, and each of the three CRCT reading domains (Literary Comprehension, Information and Media Literacy, and Reading Skills and Vocabulary Acquisition; see Table 7).
### Table 7

**Correlations of CRCT Posttest, CRCT Reading Domain Posttests, and QRI Posttests**

<table>
<thead>
<tr>
<th>Assessment</th>
<th>CRCT Posttest</th>
<th>Lit Comp</th>
<th>Inform Media Lit</th>
<th>Read Skills Vocab</th>
<th>QRI Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRCT Posttest</td>
<td>Pearson</td>
<td>1</td>
<td>.87**</td>
<td>.89**</td>
<td>.68**</td>
</tr>
<tr>
<td></td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.00</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>97</td>
<td>97</td>
<td>97</td>
<td>97</td>
<td>97</td>
</tr>
<tr>
<td>Lit Comp</td>
<td>Pearson</td>
<td>.87**</td>
<td>1</td>
<td>.77**</td>
<td>.64**</td>
</tr>
<tr>
<td></td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.00</td>
<td>.000</td>
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</tr>
<tr>
<td>N</td>
<td>97</td>
<td>97</td>
<td>97</td>
<td>97</td>
<td>97</td>
</tr>
<tr>
<td>Inform Media Lit</td>
<td>Pearson</td>
<td>.89**</td>
<td>.77**</td>
<td>1</td>
<td>.69**</td>
</tr>
<tr>
<td></td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.00</td>
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<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>97</td>
<td>97</td>
<td>97</td>
<td>97</td>
<td>97</td>
</tr>
<tr>
<td>Read Skills Vocab</td>
<td>Pearson</td>
<td>.68**</td>
<td>.64**</td>
<td>.69**</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.00</td>
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<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>97</td>
<td>97</td>
<td>97</td>
<td>97</td>
<td>97</td>
</tr>
<tr>
<td>QRI Posttest</td>
<td>Pearson</td>
<td>.66**</td>
<td>.63**</td>
<td>.62**</td>
<td>.53**</td>
</tr>
<tr>
<td></td>
<td>Correlation</td>
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</tbody>
</table>

**Note.** CRCT Post = CRCT Total Reading Posttest scores, Lit Comp = CRCT Literary Comprehension Reading Domain scores, Inform Media Lit = CRCT Information and Media Literacy Reading Domain scores, Read Skills Vocab = CRCT Reading Skills and Vocabulary Acquisition Domain scores, QRI Posttest = QRI-5 Total Posttest scores. ** Correlation is significant at the 0.01 level (2-tailed).

This analysis found that the CRCT posttests, QRI-5 posttests, and each CRCT reading domain scores were moderately correlated; however, multicollinearity was found between CRCT Posttest and Literary Comprehension ($r = .87$) and CRCT Posttest and Information and Media Literacy ($r = .89$). This high correlation was due to singularity as these domain scores were embedded in the CRCT posttest scores. Correlations of .90 and
higher can cause statistical problems, but most programs including SPSS which was used in this study protect against multicollinearity and singularity (Tabachnick & Fidell, 2007). Due to the above correlations (see Table 6 and 7) and the need to use student reading level and student subgroup as covariates, one-way between groups MANCOVA was used to analyze hypotheses one through five which relate to the QRI-5 and CRCT.

Assumption testing was first conducted for the QRI-5 posttest scores, CRCT posttest scores, and the three CRCT reading domain scores. The assumption of sample size was met for these hypotheses as there were more cases in each cell than dependent variables (see Table 8).
Table 8

*Descriptive Statistics for QRI-Posttest, CRCT Posttest, and CRCT Reading Domains*

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Group</th>
<th>$M$</th>
<th>$SD$</th>
<th>$n$</th>
</tr>
</thead>
<tbody>
<tr>
<td>QRI Posttest</td>
<td>Control</td>
<td>7.41</td>
<td>2.50</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>8.34</td>
<td>2.96</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>7.97</td>
<td>2.81</td>
<td>97</td>
</tr>
<tr>
<td>CRCT Posttest</td>
<td>Control</td>
<td>839.05</td>
<td>23.65</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>839.50</td>
<td>33.86</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>839.32</td>
<td>30.04</td>
<td>97</td>
</tr>
<tr>
<td>Lit Comp</td>
<td>Control</td>
<td>11.74</td>
<td>2.83</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>11.41</td>
<td>3.46</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>11.55</td>
<td>3.21</td>
<td>97</td>
</tr>
<tr>
<td>Inform Media Lit</td>
<td>Control</td>
<td>11.36</td>
<td>3.13</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>11.05</td>
<td>3.67</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>11.18</td>
<td>3.45</td>
<td>97</td>
</tr>
<tr>
<td>Read Skills Vocab</td>
<td>Control</td>
<td>7.15</td>
<td>.98</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>6.83</td>
<td>1.35</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>6.96</td>
<td>1.22</td>
<td>97</td>
</tr>
</tbody>
</table>

*Note.* QRI Posttest = QRI-5 Total Posttest scores, CRCT Post = CRCT Total Reading Posttest scores, Lit Comp = CRCT Literary Comprehension Reading Domain scores, Inform Media Lit = CRCT Information and Media Literacy Reading Domain scores, Read Skills Vocab = CRCT Reading Skills and Vocabulary Acquisition Domain scores.

The assumption of level of measurement was met as all of the dependent variables were continuous and measured at a ratio level. Independence of observations was met as each measurement was not influenced by another measurement. Univariate and multivariate
normality were checked for the QRI-5 posttests, CRCT posttests, and CRCT reading domain posttests. Histograms and Normal Q-Q plots showed reasonably normal distributions for both the experimental and control groups. Boxplot analysis found no extreme outliers. Multivariate normality was checked using Mahalanobis distances (Tabachnick & Fidell, 2007). The maximum Mahalanobis distance was 18.74 which is greater than $\chi^2(5) = 20.52$ so there were no substantial multivariate outliers. A matrix of scatterplots confirmed linearity for each pair of dependent variables. Linearity of the covariates was confirmed through scatterplots of each dependent variable with the covariates, QRI-5 pretests and student subgroup. Homogeneity of regression slopes was checked for the first covariate, QRI-5 pretest: QRI-5 posttests ($p = .82$), CRCT posttests ($p = .58$), and the CRCT reading domain posttests (Literary comprehension $p = .39$, Information and Media Literacy $p = .71$, Reading Skills and Vocabulary Acquisition $p = .18$), and it was also checked for the second covariate, student subgroup: QRI-5 posttest ($p = .76$), CRCT posttests ($p = .68$), and the CRCT reading domain posttests (Literary comprehension $p = .94$, Information and Media Literacy $p = .69$, Reading Skills and Vocabulary Acquisition $p = .58$). Since all of the significance levels were above .05, this assumption was not violated (Pallant, 2010). The first covariate, student reading level, was measured before CSR implementation began for the experimental group. The assumption of homogeneity of variance-covariance matrices was violated as the Box’s M test was significant, $p = .000$. Therefore, Pillai’s criterion was used in this analysis instead of Wilks’ lambda (Tabachnick & Fidell, 2007). Equality of variances was met as Levene’s Test of Equality of Error Variances showed that each of the dependent variables was above the .05 level: QRI-5 $p = .71$, CRCT total $p = .49$, Literary Comprehension $p =$
.74, Informational and Media Literacy $p = .77$, Reading Skills and Vocabulary Acquisition $p = .49$.

The MANCOVA analysis found a statistically significant difference between the experimental and control groups on the combined dependent variables, $F(5, 90) = 3.84, p < .01$, Pillai’s Trace = .18, partial $\eta^2 = .18$ (a large effect size) with an observed power of .93. Using a Bonferroni adjustment at an alpha level of .01, the only statistically significant difference when examining the Tests of Between-Subjects Effects was the QRI-5 posttest, $F(1, 95) = 18.66, p = .000$, partial $\eta^2 = .17$ (a large effect size), with a power level of .99 (see Table 9).
Table 9

Tests of Between-Subjects Effects CRCT, CRCT Domains, and QRI-5

<table>
<thead>
<tr>
<th>Source</th>
<th>Dependent Variable</th>
<th>df</th>
<th>F</th>
<th>α</th>
<th>Partial η²</th>
<th>Observed Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>CRCT Post</td>
<td>1</td>
<td>3.54</td>
<td>.06</td>
<td>.04</td>
<td>.46</td>
</tr>
<tr>
<td></td>
<td>Lit Comp</td>
<td>1</td>
<td>2.54</td>
<td>.11</td>
<td>.03</td>
<td>.35</td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td>1</td>
<td>3.00</td>
<td>.09</td>
<td>.03</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td>Read Skills</td>
<td>1</td>
<td>.23</td>
<td>.64</td>
<td>.002</td>
<td>.08</td>
</tr>
<tr>
<td></td>
<td>QRI Post</td>
<td>1</td>
<td>18.66</td>
<td>.000</td>
<td>.17</td>
<td>.99</td>
</tr>
</tbody>
</table>

Note. CRCT Post = CRCT Total Reading Posttest scores, Lit Comp = CRCT Literary Comprehension Reading Domain scores, Inform Media Lit = CRCT Information and Media Literacy Reading Domain scores, Read Skills Vocab = CRCT Reading Skills and Vocabulary Acquisition Domain scores, QRI Posttest = QRI-5 Total Posttest scores.

An examination of the unadjusted mean scores (see Table 8) showed that the experimental group ($M = 8.34, SD = 2.96$) scored higher than the control group ($M = 7.41, SD = 2.50$) on the QRI-5 posttest. Table 10 shows the adjusted mean scores with the covariates, QRI-5 pretest scores and student subgroup removed. There was an even greater difference between the experimental ($M = 8.77, SD = 2.13$) and control groups ($M = 6.77, SD = 2.19$).
Table 10

Estimated Marginal Means with Covariates Removed

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Group</th>
<th>n</th>
<th>M</th>
<th>Std. Error</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>QRI Posttest</td>
<td>Control</td>
<td>39</td>
<td>6.77</td>
<td>.35</td>
<td>2.19</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>58</td>
<td>8.77</td>
<td>.28</td>
<td>2.13</td>
</tr>
<tr>
<td>CRCT Posttest</td>
<td>Control</td>
<td>39</td>
<td>832.17</td>
<td>4.08</td>
<td>25.48</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>58</td>
<td>843.45</td>
<td>3.29</td>
<td>25.06</td>
</tr>
<tr>
<td>Lit Comp</td>
<td>Control</td>
<td>39</td>
<td>10.99</td>
<td>.44</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>58</td>
<td>11.92</td>
<td>.35</td>
<td>2.67</td>
</tr>
<tr>
<td>Inform Media Lit</td>
<td>Control</td>
<td>39</td>
<td>10.53</td>
<td>.46</td>
<td>2.87</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>58</td>
<td>11.61</td>
<td>.37</td>
<td>2.82</td>
</tr>
<tr>
<td>Read Skills</td>
<td>Control</td>
<td>39</td>
<td>6.89</td>
<td>.18</td>
<td>1.12</td>
</tr>
<tr>
<td>Vocab</td>
<td>Experimental</td>
<td>58</td>
<td>7.00</td>
<td>.14</td>
<td>1.07</td>
</tr>
</tbody>
</table>

Note. QRI Posttest = QRI-5 Total Posttest scores, CRCT Post = CRCT Total Reading Posttest scores, Lit Comp = CRCT Literary Comprehension Reading Domain scores, Inform Media Lit = CRCT Information and Media Literacy Reading Domain scores, Read Skills Vocab = CRCT Reading Skills and Vocabulary Acquisition Domain scores. Covariates appearing in the model are evaluated at the following values: QRI Pretest = 11.76, Student subgroup = 2.22.

Hence, null Hypothesis 1 was rejected as there was a statistically significant difference in QRI-5 expository reading scores between fifth grade students who received CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level.

Additional Analysis

An additional analysis, a mixed between-within subjects analysis of covariance (Tabachnick & Fidell, 2007), was conducted to determine if there were main effects for
the independent variable groups and the QRI-5 pre- and posttests and whether the
interaction between the two was significant. Student subgroup was used as the covariate.
The only additional assumptions test for this analysis was homogeneity of
intercorrelations using Box’s M (Pallant, 2010), and this was met as $p = .03$ which was
greater than the alpha level of .001. Levene’s Test of Equality of Error Variances found a
significant result for the QRI-5 pretest, $p = .02$; therefore, a more stringent alpha level,
.01, was used in this analysis. As previously discussed, a statistically significant
difference between the QRI-5 pretest and QRI-5 posttest was found between the
experimental and control groups, with the experimental group scoring higher on the QRI-5
posttest than the control group. A significant main effect over time was found, Wilks’
Lambda = .44, $F(1, 94)$, $p = .000$, partial $\eta^2 = .56$, a very high effect size (Cohen, 1988).
There was also a significant interaction effect between the pre- and posttest over time,
Wilks’ Lambda = .79, $F(1, 94)$, $p = .000$, partial $\eta^2 = .21$. Inspection of the adjusted
marginal means showed that both the experimental and control group’s mean scores
decreased significantly from pre- to posttest; however, the experimental group’s mean
scores decreased by 2.82 while the control group’s mean scores decreased by 5.25. (see
Table 11).
Table 11

*Descriptive Statistics for Additional Analysis with Adjusted Marginal Means*

<table>
<thead>
<tr>
<th>Group</th>
<th>Time</th>
<th>n</th>
<th>M</th>
<th>Std. Error</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>1</td>
<td>39</td>
<td>12.62&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.46</td>
<td>2.87</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>39</td>
<td>7.37&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.47</td>
<td>2.94</td>
</tr>
<tr>
<td>Experimental</td>
<td>1</td>
<td>58</td>
<td>11.19&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.37</td>
<td>2.82</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>58</td>
<td>8.37&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.38</td>
<td>2.89</td>
</tr>
</tbody>
</table>

*Note.* Time 1 = QRI-5 Pretest, Time 2 = QRI-5 Posttest.
<sup>a</sup>Covariates appearing in this model are evaluated at the following values: Student Subgroup = 2.22.

**Hypothesis 2**

The second null hypothesis stated that there is no statistically significant difference in CRCT total reading comprehension scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup.

According to the MANCOVA analysis for the QRI-5 posttests, CRCT posttests, and CRCT reading domain posttests and the Test of Between-Subjects Effects, this null hypothesis could not be rejected (see Table 9), \( F(1, 95) = 3.54, p = .06, \) partial \( \eta^2 = .04 \) with an observed power of \(.46\). The significance level indicates that the difference between the experimental and control group on the total reading CRCT scores was close to being significant, but the effect size and power are small leading to little practical significance (Howell, 2011).

**Hypothesis 3**

This null hypothesis stated that there is no statistically significant difference in CRCT Information and Media Literacy domain scores between fifth grade students who...
receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup. According to the MANCOVA analysis for the QRI-5 posttests, CRCT posttests, and CRCT reading domain posttests and the Test of Between-Subjects Effects, this null hypothesis could not be rejected (see Table 9), $F(1, 95) = 3.00, p = .09$, partial $\eta^2 = .03$ with an observed power of .40. The significance level for this domain was closer to being significant than the other two CRCT domains; but there is little practical significance to these findings as the effect size of .03 is between small to moderate and power of .40 is less than the desired level of .80 (Rovai et al., 2013).

**Hypothesis 4**

This fourth null hypothesis stated that there is no statistically significant difference in CRCT Literary Comprehension domain scores between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup. This hypothesis could not be rejected due to the results of the MANCOVA analysis for the QRI-5 posttests, the CRCT posttests, and the CRCT reading domain posttests and the Test of Between-Subjects Effects (see Table 9), $F(1, 95) = 2.54, p = .11$, partial $\eta^2 = .03$ with an observed power of .35. These results show an extremely small effect size and little power (Howell, 2011); hence, there is no practical significance to differences found between the groups in Literary Comprehension (Rovai et al., 2013).

**Hypothesis 5**

This null hypothesis stated that there is no statistically significant difference in CRCT Reading Skills and Vocabulary Acquisition domain scores between fifth grade students who...
students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student reading level and student subgroup. The results of the MANCOVA analysis for the QRI-5 posttests, the CRCT posttests, and the CRCT reading domain posttests and the Test of Between-Subjects Effects showed that this null hypothesis could not be rejected (see Table 9), $F(1, 95) = .23, p = .64$, partial $\eta^2 < .01$ with an observed power of .08. With this hypothesis, there is an even smaller effect size and less power than hypothesis four indicating less magnitude of treatment on Reading Skills and Vocabulary Acquisition than Literary Comprehension (Rovai et al., 2013).

**Hypothesis 6**

The sixth null hypothesis stated there is no statistically significant difference in metacognitive awareness between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition. As previously stated, student level of metacognition did not need to be controlled in this study as there was not a statistically significant difference between the experimental and control groups on the MARSI pretest: $F(1, 91) = .09, p = .77$: experimental group ($M = 3.09, SD = .62$) and control group ($M = 3.13, SD = .64$).

Prior to testing this hypothesis, correlations and assumption tests were conducted. Correlations between the MARSI posttests and the MARSI subscales (Global Reading Strategies, Problem-Solving Strategies, and Support Reading Strategies) can be seen in Table 12.
Table 12

*Correlations of MARSI Posttests and MARSI Subscales*

<table>
<thead>
<tr>
<th>Assessment</th>
<th>MARSI Posttests</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall</td>
<td>Global</td>
<td>Problem</td>
<td>Support</td>
</tr>
<tr>
<td>MARSI Overall</td>
<td>Pearson $r$</td>
<td>1.00</td>
<td>.91**</td>
<td>.69**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>$N$</td>
<td>97</td>
<td>97</td>
<td>97</td>
</tr>
<tr>
<td>MARSI Global</td>
<td>Pearson $r$</td>
<td>.91**</td>
<td>1.00</td>
<td>.50**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>$N$</td>
<td>97</td>
<td>97</td>
<td>97</td>
</tr>
<tr>
<td>MARSI Problem</td>
<td>Pearson $r$</td>
<td>.69**</td>
<td>.50**</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>$N$</td>
<td>97</td>
<td>97</td>
<td>97</td>
</tr>
<tr>
<td>MARSI Support</td>
<td>Pearson $r$</td>
<td>.77**</td>
<td>.59**</td>
<td>.25*</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
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<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>$N$</td>
<td>97</td>
<td>97</td>
<td>97</td>
</tr>
</tbody>
</table>

*Note.* MARSI Overall = MARSI Overall Posttests, MARSI Global = MARSI Global Reading Strategies, MARSI Problem = MARSI Problem-Solving Strategies, MARSI Support = MARSI Support Reading Strategies.

*Correlation is significant at the 0.05 level (2-tailed).**Correlation is significant at the 0.01 level (2-tailed).

Most of the MARSI overall posttest and subscales were moderately correlated.

Multicollinearity was found between the MARSI overall posttest and the subscale of MARSI Global Reading Strategies ($r = .91$). This high correlation was due to singularity as the MARSI subscales were embedded in the MARSI overall score. The SPSS program
used in this study protects against multicollinearity and singularity (Tabachnick & Fidell, 2007). Because of these MARSI correlations (see Table 12), MANOVA was used to analyze hypotheses six through nine as each of these hypotheses relate to the MARSI (Tabachnick & Fidell, 2007).

The assumption of sample size was met as there were more cases in each cell than dependent variables (see Table 13).
Table 13

**Descriptive Statistics for MARSI posttests and MARSI Subscales**

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Group</th>
<th>M</th>
<th>SD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARSI Overall</td>
<td>Control</td>
<td>3.17</td>
<td>.66</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>3.15</td>
<td>.52</td>
<td>58</td>
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<tr>
<td></td>
<td>Total</td>
<td>3.16</td>
<td>.58</td>
<td>97</td>
</tr>
<tr>
<td>MARSI Global</td>
<td>Control</td>
<td>3.17</td>
<td>.77</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>3.06</td>
<td>.62</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3.10</td>
<td>.68</td>
<td>97</td>
</tr>
<tr>
<td>MARSI Problem</td>
<td>Control</td>
<td>3.84</td>
<td>.83</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>3.75</td>
<td>.69</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3.79</td>
<td>.75</td>
<td>97</td>
</tr>
<tr>
<td>MARSI Support</td>
<td>Control</td>
<td>2.57</td>
<td>.77</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Experimental</td>
<td>2.74</td>
<td>.70</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>2.67</td>
<td>.73</td>
<td>97</td>
</tr>
</tbody>
</table>

*Note.* MARSI Overall = MARSI Overall Posttests, MARSI Global = MARSI Global Reading Strategies, MARSI Problem = MARSI Problem-Solving Strategies, MARSI Support = MARSI Support Reading Strategies.

The level of measurement assumption was met as these dependent variables were continuous and measured at a ratio level. Because each measurement was not influenced by another measurement, the assumption of independence of observations was met. Both univariate and multivariate normality were checked for the MARSI overall posttests and each MARSI subscale. Inspection of the histograms and Normal Q-Q plots indicated normal distributions for the experimental and control groups. No extreme outliers were
found in the Boxplot analysis. Mahalanobis distance was used to check multivariate normality (Tabachnick & Fidell, 2007). One substantial multivariate outlier was found as the maximum Mahalanobis distance was 91.39 which was greater than \(\chi^2(4) = 18.47\). However, the difference between the means and 5% trimmed means was negligible, and the outlier was a student with disabilities so it was kept in the analysis (Tabachnick & Fidell, 2007). The assumption of linearity was confirmed using a scatterplot matrix for each pair of dependent variables. Homogeneity of variance-covariance matrices was violated as Box’s M test was significant, \(p = .00\), so Pillai’s criterion was used in this analysis instead of Wilks’ lambda (Tabachnick & Fidell, 2007). Levene’s Test of Equality of Error Variances did not have any values less than .05 so the assumption of equality of variances was not violated.

The MANOVA analysis did not find a statistically significant difference between the experimental (\(M = 3.15, SD = .52\)) and control groups (\(M = 3.17, SD = .66\)) for the MARSI posttests and MARSI subscales: \(F(4, 92) = 1.39, p = .24;\) Pillai’s Trace = .06; partial \(\eta^2 = .06\), power = .42 (see Figure 1). Therefore, the null hypothesis that there is no statistically significant difference in metacognitive awareness between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction could not be rejected.
Hypothesis 7

This null hypothesis stated that there is no statistically significant difference in Global Reading Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition. Student level of metacognition did not need to be controlled for this hypothesis as there was not a statistically significant difference between the experimental ($M = 3.06$, $SD = .62$) and control groups ($M = 3.17$, $SD = .77$) on the MARSI pretest. Since the MARSI MANOVA did not find a statistically significant...
significant difference between the experimental and control groups for the MARSI posttests and MARSI subscales: $F(4, 92) = 1.39, p = .24; \text{Pillai’s Trace} = .06; \text{partial } \eta^2 = .06, \text{power} = .42$, this null hypothesis could not be rejected. The Tests of Between-Subjects effects for Global Reading Strategies found $F(1, 95) = .61, p = .44, \text{partial } \eta^2 = .006$ with an observed power of .12. This extremely low effect size and power level showed there was no practical significance to any difference between the experimental and control group for this MARSI subscale (Rovai et al., 2013).

**Hypothesis 8**

The eighth null hypothesis in this study stated there is no statistically significant difference in Problem-Solving Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition. As with hypothesis 6 and 7, student level of metacognition did not need to be controlled when analyzing the data for this hypothesis. This hypothesis could not be rejected as the MARSI MANOVA did not find a statistically significant difference between the experimental ($M = 3.75, SD = .69$) and control groups ($M = 3.84, SD = .83$) for the MARSI posttests and MARSI subscales: $F(4, 92) = 1.39, p = .24; \text{Pillai’s Trace} = .06; \text{partial } \eta^2 = .06, \text{power} = .42$. The Tests of Between-Subjects effects for Problem Solving Strategies found $F(1, 95) = .37, p = .54, \text{partial } \eta^2 = .004$ with an observed power of .09. The effect size and power level for this MARSI subscale were even smaller than those for the Global Reading subscale indicating even less practical significance to any difference between the experimental and control group for Problem Solving Strategies (Rovai et al., 2013).
Hypothesis 9

The final null hypothesis in this study stated there is no statistically significant difference in Support Reading Strategies between fifth grade students who receive CSR instruction three times per week compared to students who do not receive CSR instruction while controlling for student level of metacognition. Once again, student level of metacognition did not need to be controlled when analyzing this hypothesis due to MARSI pretest results. Because the MARSI MANOVA did not find a statistically significant difference between the experimental \((M = 2.75, SD = .70)\) and control groups \((M = 2.57, SD = .77)\) for the MARSI posttests and MARSI subscales: \(F(4, 92) = 1.39, p = .24; \) Pillai’s Trace = .06; partial \(\eta^2 = .06\), power = .42, this null hypothesis could not be rejected. The Tests of Between-Subjects effects for Support Reading Strategies found \(F(1, 95) = 1.26, p = .27\), partial \(\eta^2 = .01\) with an observed power of .20. The effect size of .01 and power of .20 for this MARSI subscale were slightly higher than the other two subscales; however, they were still considered small indicating little magnitude of treatment (Howell, 2011).
CHAPTER FIVE: DISCUSSION

This chapter contains a summary of the findings from this study followed by a discussion. Limitations are then discussed along with how threats to internal and external validity were controlled in this study. An implications section follows with empirical, practical, and theoretical implications. Finally, recommendations for future research are discussed.

Summary of Findings

The purpose of this quantitative, quasi experimental pretest-posttest nonequivalent control group study was to test the theories of metacognition (Pressley, 2006) and social cognition (Bandura, 2006; Zimmerman, 1995) by examining the effects of CSR on informational reading comprehension scores and metacognitive strategy awareness. This study focused on a heterogeneous sample of fifth grade students ($N = 97$) including regular education students, gifted education students, students with learning disabilities, ELs, and Early Intervention Program students. Two experimental group teachers used CSR strategies with their students in reading, science, and social studies classes ($n = 58$) while two control group teachers used their traditional strategies in reading, science, and social studies ($n = 39$).

Two assessments were used in this study to measure reading comprehension: the QRI-5 and Georgia’s CRCT. The total reading CRCT score and the three reading domain scores (Literary Comprehension, Information and Media Literacy, Reading Skills and Vocabulary Acquisition) were analyzed. Metacognitive awareness was measured using the MARSI, a self-report measure (Mokhtari & Reichard, 2002).
Since intact classes were used in this study and randomization was not possible, pretests were given to determine if there was a significant difference in reading level and metacognitive level between the experimental and control groups prior to CSR implementation (Gall et al., 2007). MANOVA of the QRI-5, CRCT, and MARSI pretests found a significant difference between the experimental and control groups only with the QRI-5. The control group \((M = 12.75, SD = 1.99)\) had a higher mean score than the experimental group \((M = 10.99, SD = 3.22)\). Therefore, student reading level with QRI-5 pretest scores was used as a covariate.

The students also belonged to a variety of subgroups (regular education, special education, ELs, gifted education, and Early Intervention Program). It could not be assumed that the proportion of students in each subgroup was proportional to the expected percentages based on the makeup of the experimental and control group schools (Georgia Department of Education, 2010-2011b; Rovai et al., 2013). So a chi-square test for goodness of fit was conducted (Rovai et al., 2013), and it indicated that there was a significant difference in the proportion of students in each subgroup. Thus, student subgroup was also used as a covariate for hypotheses one through five.

To determine which type of analysis to use for the null hypotheses, correlations were calculated between the QRI-5, CRCT, and MARSI posttests. A strong correlation was found between the CRCT posttest and QRI-5 posttest \((r = .66)\), with smaller correlations between the CRCT posttest and MARSI posttest \((r = .27)\), and between the QRI-5 posttest and MARSI posttest \((r = .18)\). Correlations were then calculated between the QRI-5, CRCT, and CRCT reading domains. Each of these correlations was either moderate or high. Because of these correlations and the need to use student reading level
and student subgroup as covariates, MANCOVA was used to analyze hypotheses one through five which related to the QRI-5 and CRCT (Tabachnick & Fidell, 2007). Hypotheses six through nine which related to the MARSI and metacognition were analyzed with MANOVA as there were multiple dependent variables but no covariate as student level of metacognition was not significantly different between the experimental and control group.

The MANCOVA between the QRI-5, CRCT, and CRCT reading domains posttests yielded a significant overall difference, \( p < .01 \). Partial \( \eta^2 \) for this analysis was .18, a large effect size (Tabachnick & Fidell, 2007), with an observed power of .93. Further analysis of the between-subjects effects showed one statistically significant difference between the experimental and control groups, the QRI-5 posttest: \( p = .000 \), partial \( \eta^2 = .17 \) (a large effect size; Rovai et al., 2013), with a power level of .99. Examination of the groups means showed the experimental group (\( M = 8.34, SD = 2.96 \)) outperformed the control group (\( M = 7.41, SD = 2.50 \)). Therefore, the first null hypothesis was rejected because there was a statistically significant difference between the experimental and control groups on the QRI-5. The second null hypothesis could not be rejected because there was no significant difference between the experimental group and control group on the total CRCT reading posttest scores. The third, fourth, and fifth null hypotheses could not be rejected as there was no significant difference between the experimental and control groups on the three CRCT reading domains (Literary Comprehension, Information and Media Literacy, Reading Skills and Vocabulary Acquisition; see Table 9).
An additional analysis was conducted to determine if there were main effects for the independent variable groups and the QRI-5 pre- and posttests and whether the interaction between the two was significant. A mixed between-within subjects analysis of covariance using student subgroup as the covariate found a significant main effect over time, $p = .000$, partial $\eta^2 = .56$, a very high effect size (Cohen, 1988). There was also a significant interaction effect between the pre- and posttest over time, $p = .000$, partial $\eta^2 = .21$, also a high effect size (Cohen, 1988). Analysis of the adjusted marginal means showed a significant decrease for both the experimental and control group’s mean scores from pre- to posttest; however, the control group’s mean scores decreased by 5.25 while the experimental group’s mean scores only decreased by 2.82.

The MANOVA of the MARSI and MARSI subscales Global Reading Strategies, Problem-Solving Strategies, and Support Reading Strategies did not find a statistically significant difference between the experimental ($M = 3.15$, $SD = .52$) and control groups ($M = 3.17$, $SD = .66$). Therefore, the sixth, seventh, eighth, and ninth null hypotheses could not be rejected as there was not a significant difference on the MARSI and MARSI subscales between the experimental and control groups.

**Discussion of Findings**

**Research Question One**

The first research question in this study asked if there is a statistically significant difference in QRI-5 expository reading comprehension scores between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction. This study found a significant difference. These results are similar to the results from Klingner et al. (1998). These researchers examined the impact of CSR on
reading comprehension for a heterogeneous group of fourth grade students. In comparison to a control group, students in the CSR classrooms made greater gains on the Gates-MacGinitie Reading Test, particularly the low-achieving students (Klingner et al., 1998). Similarly, Klingner et al. (2004), a quasi-experimental study of intact fourth grade classes randomly assigned to a condition (CSR or typical), found a significant difference in reading comprehension as measured by the Gates-MacGinitie Reading Test favoring the CSR group. Effect sizes showed a small effect for the CSR group as a whole; however, there were larger effect sizes for the low-achieving students including those with learning disabilities (Klingner et al., 2004).

The QRI-5 was chosen for this study because it is a valid and reliable reading test designed to assess students’ comprehension, and it allows researchers to evaluate intervention instruction (e.g., CSR) and document student growth (Leslie & Caldwell, 2011). Four fifth grade informational reading passages were chosen for pre- and posttest purposes with Lexile levels ranging from 650 to 900 (see Table 4). The difference in the QRI-5 pretest mean scores was 1.75 points with the control group scoring significantly higher. This significant difference was the reason the QRI-5 pretest was used as a covariate in this study. In contrast, the difference between the QRI-5 posttest adjusted mean scores (experimental group $M = 8.77$ and control group $M = 6.77$) was 2.00 points with the experimental group scoring higher. The experimental group clearly outperformed the control group at posttest. It is interesting to note that both groups scored lower on the QRI-5 posttest than the pretest. The results of the between-within analysis of covariance, showed a decrease of 5.25 points in the mean posttest scores of the control group compared to a decrease of 2.82 for the experimental group. This is
probably due to the difficulty of the posttest passages, particularly “How Does Your Body Take in Oxygen?” with a Lexile level of 900, although this is well within the Text Complexity Grade Band range required by the Common Core State Standards for grades four and five (Lexile 770 to 980; Common Core State Standards Initiative, 2012b). The experimental group handled the challenge presented to them with the QRI-5 posttest better than the control group.

What components of CSR could have helped the experimental group with the QRI-5? The students were explicitly trained (Duffy et al., 1987; Pressley & Gaskins, 2006) in the CSR strategies of Preview, Click and Clunk, Get the Gist, and Wrap Up for three months with a minimum of three lessons per week focusing on CSR strategies. Research clearly shows the benefits of explicit strategy instruction (Harvey & Goudvis, 2013; Houtveen & van de Grift, 2007; Palinscar & Brown, 1984), and each of the four CSR strategies are research based (Klingner et al., 2012b). Using learning logs while reading informational text, the students worked in cooperative groups brainstorming and predicting with Preview, targeting difficult vocabulary with Click and Clunk, writing main ideas with Get the Gist, and summarizing and questioning with Wrap Up (Klingner et al., 2012b). These cognitive and metacognitive strategies were intended to help students self-regulate their learning and enhance their self-efficacy to believe they could accomplish the task of reading comprehension (Schunk & Zimmerman, 2007), with the hope of transferring the strategies from CSR practice sessions to independent work time and test taking (Klingner et al., 2012b).

The QRI-5 reading assessments are more similar to the reading experience with CSR than a standardized testing situation. At QRI-5 pre- and posttest, the students read
two passages and answered 16 open-ended, short response questions. These questions were both implicit and explicit (Leslie & Caldwell, 2011). Some of the implicit questions asked the students to provide the main idea and others asked what the passage was mostly about (Leslie & Caldwell, 2011). This is very similar to the task of Get the Gist where students wrote the main idea of reading passages in their learning logs (Klingner et al., 2012b). The learning logs themselves are two page, open response forms as are the QRI-5 forms. Moreover, with CSR, the experimental group students practiced the task of producing questions with question-answer relationships (QAR) during Wrap Up. These relationships included Right There, Think and Search, and Author and You (Klingner et al., 2012b). Right There questions are very similar to the explicit questions on the QRI-5 as the answers are found in one place in the text. Think and Search as well as Author and You questions are analogous to the QRI-5 implicit questions as students must make inferences, synthesize information, and use their background knowledge (Klingner et al., 2012b). As Duke and Pearson (2008) discussed, QAR helps students develop self-efficacy and confidence in responding to text questions as they practice generating their own questions (Raphael & Pearson, 1985). This process of learning to create questions for text improves students’ overall comprehension (Yopp, 1988) and could have aided the experimental group students’ comprehension of the QRI-5 passages.

**Research Question Two**

The second research question asked if there is a statistically significant difference in CRCT total reading comprehension scores between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction. This study did not find a significant difference. However, the difference was close to being
significant, $p = .06$. The adjusted mean scores excluding the covariates were as follows: experimental group ($M = 843.45$); control group ($M = 832.17$). A score of 800 or higher “meets the standard” on the CRCT while a score of 850 or higher “exceeds the standard” (Georgia Department of Education, 2012). So although the difference between the groups was not significant, the experimental group did score higher than the control group with the adjusted means and unadjusted means (see Table 8), and the adjusted mean score for the experimental group was at the higher range of “meeting the standard.”

For CSR to impact reading comprehension and student achievement in testing situations, it must be taught with fidelity. Research by Klingner et al. (2004) found students in CSR classrooms with teachers who taught CSR the most often and with the greatest fidelity outperformed students in other CSR classrooms with less exposure to CSR strategies and less fidelity of instruction. Vaughn et al. (2001) learned in their research that teachers need support, coaching, and modeling in addition to time to perfect the strategy instruction required of CSR. Implementing CSR is complicated and time consuming (Klingner et al., 2004). With increased teacher support and more time to implement CSR than the three months in this study, perhaps CSR would have made a greater impact on the experimental group’s CRCT scores.

Another consideration regarding CSR and its ability to make a difference in students’ reading comprehension performance on the CRCT is the internalization and transfer of CSR strategies to a standardized testing situation which is very different from the practice they received with CSR instruction in the classroom. CSR practice is done in small cooperative groups, while standardized tests are obviously done independently. CRCT test questions are multiple-choice as opposed to the open-ended responses on the
CSR learning logs. The CSR strategies needed to become entrenched in the students’ repertoire of test taking strategies to make a difference in CRCT test performance. Social cognitive theory suggests the importance of self-regulation in this process (Bandura, 2006). Self-regulatory competence develops in four levels: learning of skills (observation), using the skills (imitation), internalizing the skills (self-control), and employing them adaptively (self-regulation; Schunk & Zimmerman, 1997). Teachers facilitate the use of self-regulation by discussing appropriate strategies, how they work, and when they can be applied (Paris & Paris, 2001). This could be the key missing piece explaining why CSR did not impact the CRCT scores significantly. Perhaps the students never reached the level of self-control and self-regulation with CSR strategies because of a lack of internalization (Block & Pressley, 2007) and a lack of instruction in how to apply these strategies to novel situations, such as standardized tests which students only take once or twice a year. Some of the experimental group students may have internalized the CSR strategies as their teachers discussed the applicability of the CSR strategies in test-taking situations and then been able to self-regulate their use which could explain why the experimental group students in scored higher than the control group on the CRCT reading section. However, since the results were not significantly different, it is clear that some of the experimental group students did not internalize the strategies or know how to apply the strategies to the CRCT to significantly impact their performance.

Research Question Three

The third research question in this study was, “Is there a statistically significant difference in CRCT reading domain scores between fifth grade students who receive CSR
instruction compared to students who do not receive CSR instruction?" Analysis for this question was embedded in the MANCOVA with the QRI-5 and total CRCT reading scores due to correlations between the assessments. The MANCOVA did not find a significant difference between the experimental and control groups on the CRCT reading domains (see Table 9). Without the use of the covariates, the unadjusted mean scores showed that the control group’s domain scores were slightly better than the experimental group (see Table 8). However, when the covariates were included in the analysis, the adjusted mean scores showed that the experimental group performed slightly better than the control group in each domain. The greatest difference between the experimental and control group means was the domain Information and Media Literacy with a difference of 1.08. The total points possible in this domain was 16 points.

The Information and Media Literacy domain focuses on having students read, recall, and analyze texts including informational essays, articles, content-area texts, as well as workplace and media text (Georgia Department of Education, 2007). This is the exact type of texts the experimental group students used to learn and practice CSR strategies within their reading, science, and social studies classes. CSR was designed to facilitate the use of text comprehension strategies with expository text (Klingner et al., 2004); so, of the three CRCT reading domains, this is the one for which CSR strategies should have had the greatest impact. From a metacognitive theoretical perspective, the strategy of Click and Clunk with its focus on self-monitoring and the use of fix-up strategies when comprehension breakdowns occur should have benefitted students reading difficult, informational text (Klingner et al., 2012b; Vaughn & Klingner, 1999). Dermitzaki et al. (2008) found the metacognitive skills of monitoring, evaluating, and
regulating cognitive processes are important facilitators of learning; however, upper elementary students have difficulty in metacognitively performing and regulating comprehension processes. This could be one reason why the experimental group did not significantly score higher in this domain than the control group.

Skilled reading requires a combination of both metacognitive awareness and monitoring of one’s comprehension processes (Mokhtari & Reichard, 2002). Click and Clunk helps students develop both metacognitive awareness and self-monitoring skills (Klingner et al., 2012b); however, students must understand the value of comprehension strategies like Click and Clunk so they are motivated to use them. Guthrie et al. (2007) found that motivation predicted growth in reading comprehension. Additionally, students must possess the confidence and self-efficacy to believe they can use the strategies successfully (Hollenbeck & Saternus, 2013; Paris et al., 1983). Improving students’ self-efficacy then leads to an increased use of cognitive strategies (Pintrich & DeGroot, 1990). In this study, some of the experimental group students may have had the motivation and self-efficacy to use CSR strategies such as Click and Clunk to aid them with the text on the CRCT, particularly the informational text, but not to the extent of making a significant difference on each of the three CRCT reading domains.

**Research Question Four**

The fourth research question in this study asked if there is a statistically significant difference in metacognitive strategy awareness between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction. Metacognitive awareness was measured in this study using the MARSI. This 30-question self-report inventory was designed to determine adolescent and adult readers’ perceived
use of reading strategies while reading academic text, as well as their metacognitive awareness (Mokhtari & Reichard, 2002). It contains 30 statements to which students respond using a 5-point Likert type scale ranging from 1 (I never do this) to 5 (I always do this; Mokhtari & Reichard, 2002). Students receive a total score and three subscale scores.

MANOVA of the MARSI and MARSI subscales did not find a significant difference between the experimental and control groups. At the beginning of the study, the experimental MARSI overall pretest mean was 3.09 and the control MARSI overall pretest mean was 3.13 with a difference of .04. At the end of the study, the difference between the experimental MARSI overall posttest mean ($M = 3.15$) and the control MARSI overall posttest mean ($M = 3.17$) was only .02. Both groups had slightly higher scores from pre- to posttest, but there was not a significant difference between the groups. It is also interesting to note that both groups mean scores fell in the “medium” strategy use range (medium range is 2.5-3.4; Mokhtari & Reichard, 2002). High strategy use is 3.5 and higher (Mokhtari & Reichard, 2002). These results were similar to the results from a study by Berkowitz and Cicchelli (2004) which found a nonsignificant difference in overall MARSI scores between middle school gifted overachievers and underachievers. These students also rated themselves in the medium strategy range (Berkowitz & Cicchelli, 2004).

CSR is designed to improve students’ metacognitive awareness (Klingner et al., 2012b) and to increase their use of reading strategies. Previewing benefits students as they glance over the text prior to reading by examining its text structure and features (Block & Pressley, 2007) focusing on titles, headings, bolded or highlighted words,
pictures, tables, and graphs (Harvey & Goudvis, 2007; Palmer & Stewart, 2005). Metacognition develops with Click and Clunk as students actively monitoring their understanding while reading (Klingner et al., 2012b). Get the Gist teaches students to form main ideas during the reading process (Vaughn & Klingner, 1999). Finally, Wrap Up helps students learn to review and summarize text which leads to improved comprehension (Bouleware-Gooden et al., 2007; Duke & Pearson, 2008; Gajria & Salvia, 1992).

If this is the case, the question is why didn’t the experimental group have significantly higher scores on the MARSI than the control group? One reason could be that although the MARSI targets adolescents and adults with a fifth grade reading level or higher (Mokhtari & Reichard, 2002), the terminology on the MARSI could have been a barrier to complete understanding of the statements for students with below grade level reading skills. For example, statement number 22 states, “I use typographical aids like boldface and italics to identify key information” (Mokhtari & Reichard, 2002, p. 258; see Appendix D). Perhaps the students were unsure of the meaning of “typographical aids”, “boldface”, or “italics.” Another reason could be that the students were not completely honest on this self-report assessment, that is, their actual strategy use may have differed from their responses on the MARSI. The length of this study could be another problem as the experimental group students learned and practiced CSR strategies for only three months. Researchers have found it may take one year or longer for students to become strategic readers (Block & Pressley, 2007; Pressley, Beard El-Dinary, & Brown, 1992). A final reason could be that CSR and fifth grade Common Core State Reading Standards do not address all 30 statements on the MARSI. For instance, statement 15 on the
Marsi states, “I use reference material such as a dictionary to help me understand what I read” (Mokhtari & Reichard, 2002, p. 258; see Appendix D). With the CSR strategy of Click and Clunk, students are encouraged to brainstorm together using fix-up strategies to determine word meanings (Klingner et al., 2012b), as opposed to using a dictionary. Fifth grade Common Core reading standard CCSS.ELA-Literacy.RI.5.4 states, “Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area” (Common Core State Standards Initiative, 2012d). Classroom teachers decide how to interpret and teach each standard so some teachers may encourage their fifth grade students to use dictionaries while other teachers may encourage the use of context clues and fix-up strategies.

Research Question 5

The final research question in this study asked if there is a statistically significant difference in subscale scores of the MARSI between fifth grade students who receive CSR instruction compared to students who do not receive CSR instruction. The three MARSI subscales are Global Reading Strategies, Problem-Solving Strategies, and Support Reading Strategies. Global Reading Strategies are oriented toward a global analysis of text, such as “I have a purpose in mind when I read.” Problem-Solving Strategies focus on solving problems when the reading of text becomes difficult, such as “When the text becomes difficult, I pay closer attention to what I’m reading.” Support Reading Strategies relate to the use of outside reference materials or practical strategies while reading. Examples include, “I summarize what I read to reflect on important information in the text; I underline or circle information in the text to help me remember it” (Mokhtari & Reichard, 2002). A mean of 3.5 or higher indicates high strategy usage,
a mean of 2.5 to 3.4 indicates medium strategy use, and a mean of 2.4 or lower indicates low strategy use (Henk & Melnick, 1995; Mokhtari & Reichard, 2002).

The MARSI MANOVA did not find a statistically significant difference between the experimental and control groups on any of the three MARSI subscales. The control group rated themselves higher than the experimental group on both the Global Reading Strategies subscale and the Problem-Solving Strategies subscale; however, the experimental group scored themselves higher than the control group on the Support Reading Strategies subscale. In looking over the 30 MARSI statements, CSR strategies are embedded in each of the three subscales. This is particularly the case with Support Reading Strategies. Of the nine Support Reading Strategy statements, eight directly relate to CSR strategies and practices. The Support strategies include taking notes while reading, reading text aloud, summarizing text, discussing text with others, paraphrasing text, finding relationships among ideas in text, and asking questions (Mokhtari & Reichard, 2002). During CSR sessions when students are working in their cooperative groups, they are taking notes on their learning logs while they are reading, reading the text aloud with the students in their groups, and discussing the text with others. Paraphrasing of text, summarization, and finding relationships among ideas are key components of Get the Gist and Wrap Up. Asking questions is the first part of Wrap Up. This explains why the experimental group scored themselves higher in this domain than the control group, but the difference was not significant. There was a lack of connection for the experimental group students from these CSR strategies to the MARSI Support Strategy statements. From a metacognitive perspective, systematic, direct instruction can enhance students’ awareness of their own reading comprehension processes (Paris &
Winograd, 1990) and could have improved the link between the CSR strategies and the students’ perceived use of Support Strategies.

The MARSI is designed to inform both instructors and students of reading strategy usage (Mokhtari & Reichard, 2002). The mean scores of both the experimental and control groups showed that Problem-Solving Strategies were high for both groups, Global Reading Strategies were medium, and Support Reading Strategies were at the lower end of the medium range. It would be interesting to see if CSR instruction over a longer period of time would make a greater impact on students’ perceived use of these strategies, particularly the Support Reading Strategies as the majority of these strategies are already a part of CSR. Global Reading Strategies include setting a purpose for reading, activating prior knowledge, checking to see if text content matches purpose for reading, predicting text content and confirming these predictions, previewing text, skimming for text characteristics, deciding what to read closely, using content clues and text structure, and using text features such as tables and figures to increase comprehension (Mokhtari & Reichard, 2002). CSR instruction did not significantly impact this subscale as it minimally addresses setting a purpose for reading, checking text content to see if it matches the purpose for reading, and deciding what to read closely. Moreover, Preview is teacher led during CSR sessions (Klingner et al., 2012) so perhaps the students see activating prior knowledge and previewing as teacher responsibilities instead of strategies to improve their own comprehension.

**Limitations**

Limitations in this study impacted both the internal and external validity. The internal validity of this study was threatened due to a lack of randomization. The quasi-
experimental pretest-posttest non-equivalent control group research design of this study was not as strong as a true experimental design with random assignment (Campbell & Stanley, 1963; Gall et al., 2007). There was a lack of equivalence between the experimental and control groups. To help control for this threat, pretests were used to determine if statistical covariance was necessary to equate the experimental and control groups (Gall et al., 2007). The pretests showed statistical covariance was needed to control for the difference in reading level between the experimental and control group. The chi-square test for goodness of fit was used to determine if student subgroup was also necessary as a covariate due to differences in the proportion of students in the subgroups. Since a significant difference was found, student subgroup was used as an additional covariate. Another threat to internal validity was the threat of experimental treatment diffusion (Gall et al., 2007), but this was controlled by the use of two different schools which minimized contact between the groups. History was another potential threat to internal validity as this study took place over three months. This was controlled by using two similar elementary schools in terms of demographics and curriculum from the same school district (Gall et al., 2007). Maturation, another threat to internal validity, existed as students may have made cognitive growth as they aged throughout the study (Gall et al., 2007). A control group was used to help reduce this threat (Gall et al., 2007). Experimental mortality did not have a major impact on internal validity as only one student in the study dropped out as she moved out of the school district (Gall et al., 2007). Instrumentation was a limitation to the internal validity of this study for several reasons. First, the MARSI is a self-report measure. Students were encouraged to answer each question honestly to control for this threat, and the assessment used a standard set of
instructions (Rovai et al., 2013); however, the students may not have been completely truthful in their responses. Second, the QRI-5 was scored by two instructors and the researcher so bias could have existed, and subjectively could have affected the validity of the scores on open-response items. This threat to internal validity was controlled by having three certified teachers score each assessment, and the reliability of those scores was evaluated using the intraclass correlation coefficient (ICC) which found high inter-rater reliability (Rovai et al., 2013). Another threat to the internal validity is the difference in teaching experience and level of education between the experimental and control group teachers. One of the control group teachers had a Bachelor’s degree and four years of teaching experience in comparison to the other teachers in the study who all had Master’s degrees and an average of 18.66 years of experience. However, this control group teacher did have two extra endorsements, gifted and special education. Finally, the CRCT pretest mean scores for the experimental group were a limitation as four students were new to the school district and did not have CRCT reading scores from fourth grade so the pretest analysis was completed without them.

Fidelity of treatment was of utmost importance with the implementation of CSR (Gall et al., 2007). The teachers administering the experimental treatment were carefully trained using resources from Now We Get It!  Boosting Comprehension with Collaborative Strategic Reading (Klingner et al., 2012b) and the CSR Colorado website (CSR Colorado, 2013). Experimental group teachers turned in copies of lesson plans documenting CSR strategies at least three times per week, and they were also observed by the researcher during CSR lessons. Additionally, each learning log completed by the experimental group students was turned in and kept by the researcher. Nevertheless, this
was the first time these teachers used CSR in their classrooms, and the quality of their instruction could be a limitation (Klingner et al., 2004).

Limitations in this study impacted the external validity of this study as well. Population validity was limited by the representativeness of the sample and the geographical location of this study (Gall et al., 2007). The district under study contained a large percentage of white students (75% of the student population; Georgia Department of Education, 2010-2011b) compared to other ethnicities which hinders generalizability of the results. To control for this threat to external validity, the schools chosen for this study had fewer white students than the district average (between 62 and 67%; Georgia Department of Education 2010-2011b), and heterogeneous classrooms were targeted for the study. The actual experimental group in this study contained 72% white students and the control group had 64%. Due to the makeup of the sample, it was impossible to compare subgroups within the sample. For instance, the experimental group had 15 gifted students while the control group only had four. The control group had nine students with learning disabilities while the experimental group had zero; however, the experimental group had twelve students in an Early Intervention Program while the control group had no students in this program. The number of ELs in this study was also very small: three in the experimental group and one in the control group. Measurement of the dependent variables was a potential limitation and threat to external validity (Gall et al., 2007); however, two precise instruments for measuring informational text comprehension, the QRI-5 and CRCT, were used in this study so it can be replicated.
Implications

Theoretical Implications

Two theories formed the theoretical framework in this study: metacognitive theory and social cognitive theory. Metacognitive theory was chosen because of the critical role metacognition plays in reading comprehension (Jacobs & Paris, 1987; Pressley & Gaskins, 2006; Pressley & Wharton-McDonald, 2006). This study supports previous metacognitive research as the metacognitive and cognitive strategies of CSR significantly impacted reading comprehension as measured by the QRI-5. However, the nonsignificant results on the CRCT showed that knowledge of the CSR strategies did not lead to the level of metacognition necessary to make a significant difference for the experimental group in a standardized testing situation. Moreover, results from the MARSI showed that exposure to metacognitive strategies did not necessarily lead to increased perceived use of the strategies.

Social cognitive theory (Bandura, 2006) with an emphasis on self-regulation (Schunk & Zimmerman, 2007) and self-efficacy (Bandura, 1989) was chosen for this study because of how these constructs impact successful reading comprehension. This study supports previous research on self-regulation and self-efficacy in that the experimental group students had the self-efficacy and were able to self-regulate their strategy use on the QRI-5 to outperform the control group. However, the CRCT results lead one to wonder if the experimental group students used self-regulation while taking this assessment. Teachers need to facilitate the use of self-regulation by discussing appropriate strategies (e.g., CSR strategies), how they work, and when they can be
applied (Paris & Paris, 2001), especially in novel situations like those of standardized tests which only occur once or twice per year.

**Empirical Implications**

Previous research shows the effectiveness of CSR in improving reading comprehension for students ranging from fourth grade students in culturally diverse classrooms (Klingner et al., 1998) to middle school students with learning disabilities (Kim et al., 2006). This study was unique to CSR research in that it targeted mostly average to above average learners, that is, 76% of the experimental group and 74% of the control group were regular or gifted education students. So this study’s unique contribution to CSR research is that at the fifth grade level, CSR can significantly improve reading comprehension of informational text for a heterogeneous group of students including regular and gifted education students as evidenced by the QRI-5 results.

**Practical Implications**

Currently, Denver Public Schools are partnering with CSR researchers at the University of Colorado Boulder bringing CSR to Denver’s middle schools, specifically language arts, science, and social studies classrooms (CSR Colorado, 2013). This study showed the benefit of using CSR strategies with targeted instruction in reading, science, and social studies classes. With Common Core State standards and increased emphasis on informational text (Common Core State Standards Initiative, 2012c), reading strategy instruction cannot be limited to language arts classrooms. The authors of the State Standards assert that the instruction of reading, writing, speaking, listening, and language should be a shared responsibility within a school (Common Core State Standards
This shared responsibility of literacy instruction is a problem as many content area teachers are not trained in the instruction of those skills (Gilles, Wang, Smith & Johnson, 2013). This study and partnerships like those between Denver Public Schools and the University of Colorado Boulder show how CSR can bring research-based reading strategies into content area classrooms.

Professional development is one of the keys to successful implementation of CSR (Klingner et al., 2004). Although the experimental group teachers were trained by the researcher with fidelity and provided excellent resources, perhaps more significant results would have been found in this study with increased training throughout the study. One of the goals of this study was to see if CSR strategy instruction impacted students’ metacognitive awareness. The nonsignificant MARSI results showed that the students did not necessarily connect CSR strategies with metacognitive reading strategies. Professional development could have provided the teachers with the tools to help the students make the connection. The students needed explicit instruction in the reading strategies that support the four CSR strategies, or at least they needed to understand the link between the reading strategies and CSR terminology. For example, did the experimental group students understand that when they skim the text noting text characteristics (part of MARSI statement 10) they are using the CSR strategy of Preview, and did their teachers use the terminology of “skimming” prior to reading when they taught the Preview strategy? Another important element of professional development with CSR needs to be the importance of transfer of strategies, that is, using CSR strategies outside of CSR work sessions (Klingner et al., 2012b). For successful comprehension, students need to Click and Clunk in every reading situation, not just
while they are working on CSR learning logs. CSR teachers need to explicitly teach students when and why to use CSR strategies, not just how to use the strategies (Klingner et al., 2004).

**Recommendations for Future Research**

As evidenced in this study, CSR strategies can significantly impact reading comprehension of informational text. However, in this study, CSR did not significantly improve the standardized test scores of the experimental group in comparison with the control group. Future CSR research, like the University of Colorado Boulder research in Denver public schools, should occur over an extended period of time, at least one school year, but preferably over several consecutive years (CSR Colorado, 2013). With the importance of and increased focus on high stakes testing with initiatives like Race to the Top and Common Core State Standards (Tienken, 2012), future research should examine how long-term use of CSR strategies impacts student achievement on standardized tests like the CRCT in state of Georgia.

More research also needs to be conducted in the effectiveness of CSR in improving literacy in content area classes at the upper elementary and secondary levels. The literacy expectations of the Common Core standards for content area teachers create the need for effective professional development for these teachers who are not literacy experts (Schoenbach, Greenleaf, & Hale, 2010). Some researchers suggest using a Reading Apprenticeship approach in content area classrooms (Schoenbach et al., 2010), while others suggest “disciplined literacy” in math, science, and social studies classrooms (Gilles et al., 2013; Shanahan & Shanahan, 2008). Is CSR a better approach than these alternatives or could it be used in conjunction with these approaches?
Finally, more research needs to focus on the potential effects of CSR on metacognition, self-regulation, and self-efficacy of learners and the ways professional development can enhance their development. This was the first study to examine the impact of CSR on metacognitive awareness. The nonsignificant MARSI results show that this is an area needing improvement and increased focus. The ultimate goal of CSR is “to teach students four specific comprehension strategies they can use with all informational and expository texts they read” and to help them develop routines for comprehension (Liang & Dole, 2006, p. 7). Students need the metacognitive awareness (Pressley & Wharton-McDonald, 2006) and self-efficacy (Pajares, 1996; Schunk & Zimmerman, 2007) to consistently use these CSR routines any time they are trying to comprehend text. Successful self-regulation strategies, such as explicit goal setting and self-monitoring (Manzett-Williamson & Nelson, 2005), have a critical influence on reading achievement (Berkeley et al., 2010; Schunk & Zimmerman, 2007). Therefore, future research needs to focus on how teachers can encourage students to self-regulate and think metacognitively while using CSR strategies.
REFERENCES


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APPENDIX

Appendix A

Parent Consent Form (experimental group)

January 25, 2013

Dear Parents:

I am a student at Liberty University working on a doctoral degree in Curriculum and Instruction, as well as a teacher in School District GA. I would like to include your child in a research study at Elementary School E from February 2013 until May 2013. Your child was selected as a possible participant because this study focuses on fifth grade students of all academic levels. The study is designed to help children in the area of reading comprehension and has been approved by School District GA and Liberty University.

The purpose of this study is to investigate the impact of Collaborative Strategic Reading (CSR) on informational text comprehension of fifth grade students. Informational text is nonfiction text such as science and social studies text which is being stressed more with Common Core State Standards used here in the state of Georgia and across the country. Your child’s teacher will be using CSR strategies including Preview, Click and Clunk, Get the Gist, and Wrap Up at least three times per week to give your child tools to use when trying to comprehend difficult, informational text.

A quantitative study will be used for this research. The data collection will consist of a reading assessment called the Qualitative Reading Inventory-5 (QRI-5), CRCT reading scores, and a reading strategies inventory called the Metacognitive Awareness of Reading Strategies Inventory (Marsi). These assessments will be used to determine the effect of CSR on children’s ability to comprehend informational text. All of the students who participate in the study will take the QRI-5 and Marsi as pre- and posttests. Each test takes approximately 20 minutes.

By allowing your child to participate in this study, you will be contributing to research that will assist teachers in helping students who struggle with reading comprehension. Benefits to your child include a toolbox of comprehension strategies he or she will be able to use throughout his or her life. There are no known risks associated with this study other than those typically experienced in a school day.

The records of this study will be kept private. Your child will be assigned a number so his or her identity will remain completely confidential. In any report I publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only I will have access to the records. Three years after this study, all records will be shredded.
Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University or Elementary School E. If you decide to have your child participate, he or she is free to not answer any question or withdraw at any time without affecting those relationships.

If you are willing to have your child participate in this study, please sign and return this consent form to your child’s teacher. Your signature below indicates that you have read and understand the information provided above, you permit your child to participate in this study, and you allow me to access data from the above assessments. You may withdraw your child from this study at any time without penalty. A copy of this consent form will be given to you to keep. The students in this study will not be compensated; however, they will be treated to an ice cream sundae party at the end of the study.

If you have any questions regarding this study, please contact me at mmccown2@liberty.edu. My advisor’s name is Dr. Connie McDonald, and she may be reached at cmcdonald2@liberty.edu. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, Dr. Fernando Garzon, Chair, 1971 University Blvd, Suite 1837, Lynchburg, VA 24515 or email at fgarzon@liberty.edu.

Sincerely,

Margy McCown, Ed. S.
Doctoral Candidate, Liberty University

Statement of Consent:

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

Parent Signature: _________________________________ Date: ____________________

Student Name: _________________________________

Signature of Investigator: _________________________________ Date: ____________________

IRB Code Numbers: 1504.011813

IRB Expiration Date: 1/18/2014
January 25, 2013

Dear Parents:

I am a student at Liberty University working on a doctoral degree in Curriculum and Instruction, as well as a teacher in School District GA. I would like to include your child in a research study at Elementary School C from February 2013 until May 2013. Your child was selected as a possible participant because this study focuses on fifth grade students of all academic levels. This study is designed to help children in the area of reading comprehension and has been approved by School District GA and Liberty University.

The purpose of this study is to investigate the impact of Collaborative Strategic Reading (CSR) on informational text comprehension of fifth grade students. Informational text is nonfiction text such as science and social studies text which is being stressed more with Common Core State Standards used here in the state of Georgia and across the country. Your child’s teacher will be teaching my control group, so your child will not be using CSR strategies. If I find that CSR significantly improves informational text comprehension, I have offered to train the reading teachers at Elementary School C in CSR strategies.

A quantitative study will be used for this research. The data collection will consist of a reading assessment called the Qualitative Reading Inventory-5 (QRI-5), CRCT reading scores, and a reading strategies inventory called the Metacognitive Awareness of Reading Strategies Inventory (MARSI). These assessments will be used to determine the effect of CSR on children’s ability to comprehend informational text. All of the students who participate in the study will take the QRI-5 and MARSI as pre- and posttests. Each test takes approximately 20 minutes.

By allowing your child to participate in this study, you will be contributing to research that will assist teachers in helping students who struggle with reading comprehension. There are no known risks associated with this study other than those typically experienced in a school day.

The records of this study will be kept private. Your child will be assigned a number so his or her identity will remain completely confidential. In any report I publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only I will have access to the records. Three years after this study, all records will be shredded.

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University or Elementary School C. If you decide to have your child participate, he or she is free to not answer any question or withdraw at any time without affecting those relationships.
If you are willing to have your child participate in this study, please sign and return this consent form to your child’s teacher. Your signature below indicates that you have read and understand the information provided above, you permit your child to participate in this study, and you allow me to access data from the above assessments. You may withdraw your child from this study at any time without penalty. A copy of this consent form will be given to you to keep. The students in this study will not be compensated; however, they will be treated to an ice cream sundae party at the end of the study.

If you have any questions regarding this study, please contact me at mmccown2@liberty.edu. My advisor’s name is Dr. Connie McDonald, and she may be reached at cmcdonald2@liberty.edu. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, Dr. Fernando Garzon, Chair, 1971 University Blvd, Suite 1837, Lynchburg, VA 24515 or email at fgarzon@liberty.edu.

Sincerely,

Margy McCown, Ed. S.
Doctoral Candidate, Liberty University

Statement of Consent:

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

Parent Signature: _________________________________ Date: __________________________

Student Name: ____________________________________________

Signature of Investigator: _______________________________ Date: ________________________

IRB Code Numbers: 1504.011813

IRB Expiration Date: 1/18/2014
Appendix B

Assent of Child to Participate in a Research Study (experimental group)

What is the name of the study and who is doing the study?
This study is called “The Effects of Collaborative Strategic Reading on Informational Text Comprehension of Fifth Grade Students” and is being conducted by Mrs. Margy McCown (County C teacher and Liberty University doctoral student).

Why am I doing this study?
I am interested in studying whether Collaborative Strategic Reading (CSR) strategies can help students improve their reading comprehension, especially with informational (nonfiction) text. I am hoping these strategies can help you understand what you read even better.

Why am I asking you to be in this study?
You are being asked to be in this research study because you are a fifth grade student, and your teacher will be teaching you CSR strategies.

If you agree, what will happen?
If you participate in this study, you will be learning CSR strategies and using them in your classroom. You will also take two assessments: the QRI-5 and the MARSI at the beginning and end of my study. With the QRI-5, you will read a passage and answer some questions. With the MARSI, you will be answering some questions about strategies you use while you read. They will both only take you about 20 minutes each. I am also going to be using your CRCT reading scores. As a thank you for all of your work, I am going to give you an ice cream sundae party at the end of the study.

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

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

Signing your name below means that you want to be in the study.
Signature of Child ________________________________ Date ________________________________

Margy McCown, Ed. S., County C Teacher, Liberty University Doctoral Student, email at mmccown2@liberty.edu
Connie McDonald, Ph. D., Program Director, Program Specialist, Liberty University, email at cmcdonald2@liberty.edu
Liberty University Institutional Review Board, 1971 University Blvd, Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.
Assent of Child to Participate in a Research Study (control group)

What is the name of the study and who is doing the study?
This study is called “The Effects of Collaborative Strategic Reading on Informational Text Comprehension of Fifth Grade Students” and is being conducted by Mrs. Margy McCown (County C teacher and Liberty University doctoral student).

Why am I doing this study?
I am interested in studying whether Collaborative Strategic Reading (CSR) strategies can help students improve their reading comprehension, especially with informational (nonfiction) text. I am hoping these strategies can help students understand what they have read even better.

Why am I asking you to be in this study?
You are being asked to be in this research study because you are a fifth grade student, and your teacher will be teaching my control group. That means I am going to use CSR strategies with one school (my experimental group) and compare them to your school (my control group) which will not be using CSR strategies and see if the CSR strategies make a difference. If they do make a difference, I will train the teachers at your school in CSR strategies so they can use them with their students.

If you agree, what will happen?
If you participate in this study, you will be taking take two assessments: the QRI-5 and the MARSI at the beginning and end of my study. With the QRI-5, you will read a passage and answer some questions. With the MARSI, you will be answering some questions about strategies you use while you read. They will both only take you about 20 minutes each. I am also going to be using your CRCT reading scores. As a thank you for all of your work, I am going to give you an ice cream sundae party at the end of the study.

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

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

Signing your name below means that you want to be in the study.
Margy McCown, Ed. S., County C Teacher, Liberty University Doctoral Student, email at mmccown2@liberty.edu
Connie McDonald, Ph. D., Program Director, Program Specialist, Liberty University, email at cmcdonald2@liberty.edu

Liberty University Institutional Review Board, 1971 University Blvd, Suite 1837, Lynchburg, VA 24502
or email at irb@liberty.edu.
APPENDIX C

QRI-5 Expository Passages (5th Grade Pre- and Posttest) (Leslie & Caldwell, 2011)

Omitted for Publication
Appendix D

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

Omitted for Publication
Appendix E

Teacher Consent Form (experimental group)

January 25, 2013

Dear ____________:

I am a student at Liberty University working on a doctoral degree in Curriculum and Instruction, as well as a teacher in School District GA. I would like to include you and your students in a research study at Elementary School C and Elementary School E from January 2013 until May 2013. This study is designed to help children in the area of reading comprehension. Elementary School E is the experimental school while Elementary School C is the control school.

The purpose of this study is to investigate the impact of Collaborative Strategic Reading (CSR) on informational text comprehension of fifth grade students. Since you are a fifth grade reading and language arts instructor teaching Common Core State Standards with a heterogeneous mixture of students, you are well suited for this study. I greatly appreciate your willingness to participate in this study.

A quantitative study will be used for this research. The data collection will consist of a reading assessment called the Qualitative Reading Inventory-5 (QRI-5), CRCT reading scores (both total reading score and each reading domain score), and a reading strategies inventory called the Metacognitive Awareness of Reading Strategies Inventory (MARSI). These assessments will be used as pre- and posttests to determine the effect of CSR on student’s ability to comprehend informational text. I will be training you in how to assess students with the QRI-5 and the MARSI. In terms of the CRCT, I will need your assistance in accessing your students’ 2011-2012 reading scores which will be used as a covariate. When the 2012-2013 CRCT results come in, I will need your assistance in accessing those reading scores as well.

By participating in this study, you will be contributing to research that will assist other teachers in helping students who struggle with reading comprehension. You and your students will be assigned pseudonyms and numbers so your identity will remain completely confidential. I realize this study gives you additional responsibilities, and I will support you in every way I can by providing you with all needed copies, materials, and necessary training. You will also receive a $100 gift card at the end of this study.

If you are willing to participate in this study, please sign below and return this letter to me. Your signature below indicates that you have read and understand the information provided above, and you are consenting to participate in this study. You may withdraw from this study at any time without penalty. A copy of this consent form will be given to you to keep.
If you have any questions, please feel free to contact me at mmccown2@liberty.edu or 678-677-6242. My advisor’s name is Dr. Connie McDonald, and she may be reached at cmcdonald2@liberty.edu. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, Dr. Fernando Garzon, Chair, 1971 University Blvd, Suite 1837, Lynchburg, VA 24515 or email at fgarzon@liberty.edu.

Sincerely,

Margy McCown, Ed. S.
Doctoral Candidate, Liberty University

Signature: ______________________________ Date: ______________________________

IRB Code Numbers: 1504.011813

IRB Expiration Date: 1/18/2014
Teacher Consent Form (control group)

January 25, 2013

Dear ____________:

I am a student at Liberty University working on a doctoral degree in Curriculum and Instruction, as well as a teacher in School District GA. I would like to include you and your students in a research study at Elementary School C and Elementary School E from January 2013 until May 2013. This study is designed to help children in the area of reading comprehension. Elementary School E is the experimental school while Elementary School C is the control school.

The purpose of this study is to investigate the impact of Collaborative Strategic Reading (CSR) on informational text comprehension of fifth grade students. Since you are a fifth grade reading and language arts instructor teaching Common Core State Standards with a heterogeneous mixture of students, you are well suited for this study. I greatly appreciate your willingness to participate in this study.

A quantitative study will be used for this research. The data collection will consist of a reading assessment called the Qualitative Reading Inventory-5 (QRI-5), CRCT reading scores (both total reading score and each reading domain score), and a reading strategies inventory called the Metacognitive Awareness of Reading Strategies Inventory (MARSI). These assessments will be used as pre- and posttests to determine the effect of CSR on student’s ability to comprehend informational text. I will be training you in how to assess students with the QRI-5 and the MARSI. In terms of the CRCT, I will need your assistance in accessing your students’ 2011-2012 reading scores which will be used as a covariate. When the 2012-2013 CRCT results come in, I will need your assistance in accessing those reading scores as well.

By participating in this study, you will be contributing to research that will assist other teachers in helping students who struggle with reading comprehension. You and your students will be assigned pseudonyms and numbers so your identity will remain completely confidential. I realize this study gives you additional responsibilities, and I will support you in every way I can by providing you with all needed copies, materials, and necessary training. You will also receive a $50 gift card at the end of this study.

If you are willing to participate in this study, please sign below and return this letter to me. Your signature below indicates that you have read and understand the information provided above, and you are consenting to participate in this study. You may withdraw from this study at any time without penalty. A copy of this consent form will be given to you to keep.

If you have any questions, please feel free to contact me at mmccown2@liberty.edu or 678-677-6242. My advisor’s name is Dr. Connie McDonald, and she may be reached at cmcdonald2@liberty.edu. If you have any questions or concerns regarding this study and
would like to talk to someone other than the researcher, you are encouraged to contact the Institutional Review Board, Dr. Fernando Garzon, Chair, 1971 University Blvd, Suite 1837, Lynchburg, VA 24515 or email at fgarzon@liberty.edu.

Sincerely,

Margy McCown, Ed. S.  
Doctoral Candidate, Liberty University

_________________________________________  Date:

____________________

IRB Code Numbers:  1504.011813

IRB Expiration Date:  1/18/2014
APPENDIX F
Experimental Group Recruitment Letter

January 24, 2013

Dear Parents,

My name is Margy McCown, and I am a doctoral student at Liberty University as well as a teacher in the School District GA. I am currently working on my doctoral dissertation titled “The Effects of Collaborative Strategic Reading on Informational Text Comprehension and Metacognitive Awareness of Fifth Grade Students.”

I have been researching reading comprehension for two years and am excited to bring a research-based reading comprehension program to your school. Collaborative Strategic Reading (CSR) is a research-based approach to reading instruction in which students are taught strategies to improve their reading comprehension. These strategies are used in cooperative groups before, during, and after reading. The strategies are called Preview, Click and Clunk, Get the Gist, and Wrap Up, each of which are based in educational research. If you would like to learn more about CSR, I encourage you to browse through the CSR Colorado website at http://www.csrdolorado.org/en/. There is a tab especially for parents.

I would greatly appreciate your child’s participation in my study. Consent letters will be coming home soon for you and your child to sign. If you choose not to participate in the study, your child will still be taught the strategies, but I will not include his or her data in my study. The more students I have participating in my study, the more valid my results will be.

If you have any questions about this study, please contact me at mmccown2@liberty.edu. Thank you for your consideration!

Sincerely,

Margy McCown, Ed. S.
Doctoral Candidate, Liberty University
Control Group Recruitment Letter

January 24, 2013

Dear Parents,

My name is Margy McCown, and I am a doctoral student at Liberty University as well as a teacher in School District GA. I am currently working on my doctoral dissertation titled “The Effects of Collaborative Strategic Reading on Informational Text Comprehension and Metacognitive Awareness of Fifth Grade Students.”

I have been researching reading comprehension for two years and am excited to bring a research-based reading comprehension program to our school district. Collaborative Strategic Reading (CSR) is a research-based approach to reading instruction in which students are taught strategies to improve their reading comprehension. These strategies are used in cooperative groups before, during, and after reading. The strategies are called Preview, Click and Clunk, Get the Gist, and Wrap Up, each of which are based in educational research. If you would like to learn more about CSR, I encourage you to browse through the CSR Colorado website at http://www.csrcolorado.org/en/. There is a tab especially for parents.

I would greatly appreciate your child’s participation in my study. Elementary School C is serving as my control group school so the children will not be taught the strategies yet. If I find that CSR makes a significant difference in reading comprehension in my experimental school, I have volunteered to train the Elementary School C teachers in this program.

Consent letters will be coming home soon for you and your child to sign. If you choose not to participate in the study, your child will still be taking two short assessments, but I will not include his or her data in my study. The more students I have participating in my study, the more valid my results will be.

If you have any questions about this study, please contact me at mmccown2@liberty.edu. Thank you for your consideration!

Sincerely,

Margy McCown, Ed. S.
Doctoral Candidate, Liberty University
APPENDIX G

Collaborative Strategic Reading Materials (Klingner et al., 2012b)

Omitted for Publication