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Reading Comprehension Instruction for Middle School Students with Reading Disabilities

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Chapter 1: Introduction

Approximately eight million young people between fourth and twelfth grade struggle to read at grade level (Biancarosa & Snow, 2006). Most struggling older readers are able to read accurately, but they do not comprehend what they are reading. According to the National Center for Education Statistics (NCES; 2013), eighth-grade students should be able to provide relevant information and summarize main ideas and themes. They should be able to make and support inferences about a text, connect parts of a text, and analyze text features. Middle school students need to possess the literacy skills necessary to keep up with increasingly more difficult text and be able to fully support judgments about the content.

Reading comprehension is fundamental to mastering the aforementioned skills. It is a skill that requires students to read, interact with text, and extract meaning from stories or passages (Honig, Diamond, Cole, & Gutlohn, 2008). To address deficits in comprehension skills, educators need to implement research-based interventions that help students understand the purpose of reading and equip them with the practical skills that are necessary to understand text (Honig et al., 2008). The purpose of this starred paper was to review the literature that evaluates the effectiveness of reading strategy instruction designed to help middle school students identified with reading disabilities.

Literacy and Reading Disabilities

The statistics are alarming for students who have inadequate literacy skills and struggle with comprehension. According to Carnevale (2001), incoming ninth-grade students who are performing in the lowest 25th class percentile are 20 times more likely to drop out of school than students who are performing at the highest levels. Some students may be just below grade level,

whereas other students will have significant deficits. Students identified with reading disabilities are at a significant disadvantage when it comes to academic, social, emotional, and economic success throughout their lives (National Joint Committee on Learning Disabilities [NJCLD], 2008).

The frustrations and failures of these students are more likely to lead to classroom behaviors and increasing truancy and dropout rates (Watson, Gable, Gear, & Hughes, 2012). High school dropouts account for over half of the adults in the lowest literacy level, whereas approximately 25% of high school graduates scored in the lowest literacy levels (Biancarosa & Snow, 2006; NCES, 2005). Students with identified disabilities have even more profound consequences. These students are even more unprepared for the challenges of a higher level of academics (NJCLD, 2008). Even with a high school diploma, students with low literacy skills have continued and ongoing problems trying to gain employment.

In an effort to enhance reading skills and bridge the gap between students, the Individuals with Disabilities Education Act improvement of 2004 (IDEA 2004) provided school districts with an option to use the Response-to-Intervention (RTI) framework to prevent and remediate reading disabilities. The RTI model provides universal screenings and interventions for all students by providing research-based reading instruction. When screening measures show students are not demonstrating proficiency, they are moved to the secondary level of the RTI model to receive more focused and targeted interventions either in individual or small-group formats (Prewett et al., 2012). If students still do not respond, students may be referred for Tier 3 intensive interventions that are often provided as a part of special education services (National Center on Response to Intervention [NCRTI], 2010).

As more middle schools begin to implement RTI, researchers have begun to question how this framework can serve adolescent students for their reading comprehension deficits. Educators are hopeful students will be responsive to intensive reading comprehension interventions.

Reading Comprehension

According to the National Reading Panel report (2000), there are five essential areas of early reading and each contributes to the reading process. Although phonemic awareness and phonics provide the foundation, fluency, vocabulary, and comprehension are also required for reading success. Some adolescents have mastered phonemic awareness and phonics but lack comprehension, which could be due to other factors such as fluency and vocabulary deficits (Biancarosa & Snow, 2006). The influence of a student's fluency and vocabulary skills need to be considered when a student is said to have inadequate comprehension. Thus, the challenges facing older students with reading difficulties are complex and multifaceted. Students who have difficulty with reading comprehension are one of the largest groups of struggling adolescent readers (National Governors Association for Best Practices, 2005).

Reading comprehension requires readers to decode words, access word meanings, and construct meaning from text (Honig et al., 2008). While all of these processes are occurring, readers also must make connections between this new information and prior knowledge. Successful readers continually monitor the meaning of the text (Denton et al., 2014). To demonstrate such a variety of skills, readers use a variety of advanced and specific strategies that enable them to understand more complex text (Moje, 2008). Most researchers agree that explicit instruction of these strategies is required in order for students to acquire the skills they need for

postschool education and employment (Kamil et al., 2008; National Governor's Association for Best Practices, 2005; Williams et al., 2005).

Reading Initiatives

In 1997, Congress asked the National Institute of Child Health and Human Development (NICHD) to form the National Reading Panel (NRP) for the purpose of evaluating reading instruction. Panel members reviewed over 100,000 studies over a 2-year period. The panel found that reading comprehension of text is taught most effectively by teaching students to use a variety of techniques and strategies (National Institute of Child Health and Human Development, 2000). These findings were used to develop *Reading First,* a federal initiative launched to ensure that every child could read at grade level by the third grade (U.S. Department of Education, 2004).

The *Reading First* Initiative of 2001 was designed to: (a) improve early literacy instruction, (b) ensure that children could read by the end of third grade, and (c) guide local education agencies in utilizing and implementing scientifically based reading instruction. In addition, the intent of the program was to significantly lower the amount of students who were referred for reading disabilities. Outcomes from the *Reading First* initiative included the recommendation that reading instruction must continue beyond third grade. In 2004, the Carnegie Corporation of New York and the Alliance for Excellent Education funded the *Reading Next* initiative to expand the efforts and focus of the *Reading First* initiative (Biancarosa & Snow, 2006).

Reading Next focused on reading instruction for students beyond third grade and presented 15 recommended components of an effective literacy program. Table 1 provides a summary of the Biancarosa and Snow (2006) recommendations.

Table 1: *Reading Next* **Literacy Recommendations**

INSTRUCTIONAL IMPROVEMENTS	DESCRIPTION
1. Direct, explicit comprehension instruction	Students should be explicitly taught strategies such as summarizing and questioning so readers independently monitor their own reading comprehension.
2. Effective instructional principles embedded in content	Language arts teachers and content teachers should provide instruction and practice opportunities specific to their subject area for reading and writing.
3. Motivation and self-directed learning	Students should be supported in their learning and build motivation to promote independent learning.
4. Text-based collaborative learning	Students need to interact with each other when working with a variety of texts.
5. Strategic tutoring	Opportunities should be provided for students to receive individual instruction on reading and writing skills as needed.
6. Diverse texts	Students should be given the opportunity to work with texts of different levels and topics.
7. Intensive writing	Instruction and practice should be given to students to work on writing skills.
8. A technology component	Technology should be used as a technology tool for literacy instruction.
9. Ongoing formative assessment of students	Formative assessments should be utilized to progress monitor student responsiveness.
INFRASTRUCTURE IMPROVEMENTS	DESCRIPTION
10. Extended time for literacy	Language arts and content classes should combine for two to four hours of literacy instruction and practice.
11. Professional development	Educators should be given access to long-term and ongoing professional development opportunities.
12. Ongoing summative assessment of students and programs	Summative assessments provide data that can be used for accountability and research purposes.
13. Teacher teams	Interdisciplinary teams that meet to discuss students and instruction.
14. Leadership	Teachers and principals with solid understanding of reading and writing instruction should provide leadership within the school.
15. A comprehensive and coordinated literacy program	Literacy programs should be interdisciplinary and interdepartmental as well as, include out-of-school organizations.

Biancarosa and Snow (2006) asserted it is unlikely that one or two of these elements will improve the achievement of many students. These elements should be considered as a foundation from which educators try a variety of combinations. They also cautioned that any combinations that are used should include three specific elements: professional development, formative assessment, and summative assessment.

The recommendations from reading initiatives and extensive research summaries provide us with valuable information from which the development of effective reading comprehension instruction can be formed. However, questions remain about reading comprehension instruction.

Research Question

Throughout this starred paper, I explore the components of effective reading comprehension instruction used with middle school students in order to guide the following question: What instructional interventions and strategies have a positive impact on reading comprehension outcomes for middle school students identified with reading disabilities?

Focus of Paper

I have identified 13 studies for inclusion in Chapter 2 that were published between 2010-2015. Studies were selected for review if the participants were middle school students with identified reading disabilities. For this paper, research that includes students in grades 6-8 was considered relevant. Each study chosen has a direct link with reading comprehension. Quantitative and qualitative data was provided in the studies in order to evaluate the effectiveness of reading instruction used with struggling middle school readers.

The Academic Search Premier, SAGE Journals, and PsycINFO databases were used as a base for my literature review of reading intervention studies related to middle school students

with reading disabilities. I used a variety of keywords in different combinations to locate

appropriate studies: *adolescents, middle school, reading interventions, reading comprehension,*

older students, and *reading disabilities.* In order to obtain the most current research, I also

conducted a search of the tables of contents of *Exceptional Children, Reading Research*

Quarterly, Learning Disability Quarterly, and the *Journal of Learning Disabilities.* This paper

consists of three different chapters. Chapter 1 focuses on the historical and theoretical aspects of

reading comprehension instruction. Chapter 2 is a comprehensive review of relevant literature.

In Chapter 3, I draw conclusions and discuss the possible implications.

Importance of the Topic

In the elementary years, students are learning to read in the classroom—which could be

one reason why research has focused on this population. In middle school students are no longer

learning to read, they are now expected to read to learn. At the middle school level, learners are

required to read complex text; unfortunately, they lack the comprehension skills necessary to be

successful readers (Boardman et al., 2008).

Results from the 2013 National Assessment of Educational Progress indicate that just

36% of eighth graders are reading at or above a proficient level (National Center for Education

Statistics, 2013). Middle school students encounter increasingly more numerous and complex

text of varying content, and they are expected to read greater amounts of information across

subject areas compared to students in upper elementary grades (Gajria, Jitendra, Sood, & Sacks,

2007). Students who struggle with reading comprehension will lack the ability to demonstrate

understanding in all core subjects.

As a special educator who works with middle school students who have been identified with reading disabilities, I experience firsthand how weaknesses in reading comprehension interfere with school success. I implement interventions and teach strategies that are designed to improve students' ability to comprehend what they read. This review of literature strengthens my ability to help my students gain the skills that are necessary to understand text.

Definitions

Close reading involves reading shorter pieces of text multiple times over multiple lessons. Students are led through class discussions that require deeper thinking. The goal is for students to develop various levels of understanding through a gradual release of responsibility model (Brown & Kappes, 2012).

Cognitive-oriented approach focuses on students' understanding of text through an active and constructive process. The reader plays an important role in the reading process (Liang, 2011).

Differentiated instruction recognizes students do not have the same background knowledge, readiness, preferences, and interests. Therefore, instruction is provided to students of different abilities within the same class (Hall, 2002).

Direct instruction involves the use of explicit explanations to present new information to students. Teachers guide students in their learning through explanations, modeling and guided practice (Rupley, Blair, & Nichols, 2009).

Effect size is the numerical way to express the strength of a relationship in an experimental study. Effect size is reported as a decimal. An effect size close to .00 means that the experimental group and the control group performed nearly the same. If the effect size is

larger, not typically over 1.00, the more effective the experimental group performed.

Additionally, a positive effect size means the experimental group performed better. Thus, a

negative effect size means the control group performed better (Gay, Mills, & Airasian, 2006).

Evidence-based practices are supported by studies that are high-quality in nature and

utilize research designs with positive student outcomes. Evidence-based practices are subjective

to criteria, often referred to as an evidence-based review (Cook & Cothren Cook, 2011).

Explicit instruction involves teaching specific skills and strategies through teacher

directed explanations and demonstrations. Teachers provide feedback to students as they

practice their new learning (Ritchey, 2011).

Expository provides the reader with authentic information through text structures that

present and explain information (Burke, 2000; Fisher & Frey 2008). Expository text structures

include the following: description, sequence, compare/contrast, cause/effect, and problem/

solution (Meyer, 1985).

Hierarchical linear modeling offers the statistical opportunity to simultaneously model

the impact of both individual and institutional variables on the dependent variable. HLM allows

for cross-level interactions between higher- and lower-level variables on the outcome of interest

(McCoach, 2010)

Intensive interventions can be provided to help remediate student deficits. Increasing the

amount of reading instruction, providing small group instruction, and increasing student

interactions are all ways educators can increase the intensity of interventions (Ritchey, 2011)

Intraclass correlation (ICC) measures the proportion of variance in the ratings of the same subject and the total variation across all ratings and subjects (Little, McCoach, & Reis, 2014).

Latent variable growth modeling (LGM) provides a framework for analyzing the effects of covariates and how they differ by group. LGM generates indices of overall model fit, providing greater flexibility for comparing groups (Wanzek, Vaughn, Roberts, & Fletcher, 2011).

MAZE is explained by Hosp and Hosp as reading tasks that are timed, fill-in-the-blank passages. The initial sentence is complete, however, every seventh word is missing throughout the rest of the passage (as cited in January & Ardoin, 2012).

Metacognitive processes require the reader to create an ongoing mental model of the text that is relies on the use of metacognitive process (Denton et al., 2014). The metacognitive processes include evaluating, monitoring, creating inferences, and integrating prior knowledge (Kendeou & van den Broek, 2007).

Narrative texts are texts that help students who are learning to read by telling a story (Akhondi, Malayeri, & Samad, 2011).

Reader-response approach focuses on students' individual responses such as through journals, illustrating, dramatizing, and imagining. It is most often associated with literature (Liang, 2011).

Reading comprehension is a complex set of processes where a reader must decode words, access word meanings, and construct meaning from text. While all of these processes are occurring, readers also must make connections between this new information and prior

knowledge. Readers must continually monitor their meaning and clear up any misunderstandings (Denton et al., 2014).

Response-to-Intervention is a tiered framework designed to improve overall student achievement. The RTI model relies on student data to identify students in need of academic interventions. Evidence-based interventions are provided to students considered at-risk. Within the RTI framework, educators continue to make decisions based on data to monitor and adjust the intensity of the interventions (National Center of Response to Intervention, 2010).

Scaffold is a term used to explain the support that is provided by the educator to help students reach the instructional goal (Rosenshine & Meister, 1992).

Scaffolding Reading Experience (SRE) is a framework that educators can use to help students with the reading process with in the content of the course. SRE consists of two instructional elements: strategies and techniques (Boling & Evans, 2008).

Struggling readers may have difficulties with decoding, fluency, or comprehension. Struggling readers can face a variety of literacy challenges (McLaughlin & Rasinski, 2015).

Chapter 2: Review of the Literature

Reading comprehension is a skill that requires students to read, interact with text, and extract meaning from stories or passages. Unfortunately, many students lack the comprehension skills they need to understand text. The purpose of this literature review was to examine the effectiveness of interventions on the comprehension skills of middle school readers. This review is presented in ascending chronological order and includes a total of 13 studies.

Instructional Interventions for Developing Reading Comprehension

Chambers Cantrell, Almasi, Carter, Rintamaa, and Madden (2010) studied the effects of the *Learning Strategies Curriculum* (LSC) on struggling middle school readers. The LSC is an intervention program focused on cognitive reading and was developed as part of the *Strategies Intervention Model* (SIM; Tralli, Colombo, Deshler, & Schumaker, 1996). The LSC focuses specifically with word identification, visual imagery, self-questioning, vocabulary, paraphrasing, and sentence writing.

The intervention included 302 sixth-graders who scored two grade levels below grade level on the pretest. A total of 171 were in the treatment group and 131 were in the control group. A total of 12 middle school teachers participated in the study in 12 middle schools. The study took place in a rural state. Experimental students received the intervention an extra 50-60 minutes of the LSC per day over the course of the school year in addition to their regular language arts curriculum.

LSC specialists provided training for the teachers, who also received instructional manuals detailing eight instructional procedures: pretest and make commitments, describe, model, verbal practice, controlled practice and feedback, advanced practice and feedback,

posttest and make commitments, and generalization. Observations were conducted to ensure

treatment fidelity. Pre-post scores on the *Group Reading Assessment and Diagnostic Evaluation*

(GRADE; Williams, 2001) were used to determine LSC treatment outcomes. The GRADE

provides standard Normal Curve Equivalents (NCE) scores and Growth Scale Value (GSV)

scores.

Data were analyzed using hierarchical linear models (HLMs). The NCE spring HLM-

adjusted mean for the treatment group was 30.0 and 27.2 for the control group, indicating an

impact of 2.76. The sixth-grade students in the targeted intervention significantly outperformed

the control group ($p = .034$). However, the effect size was small (0.218). Similar results were

found when analyzing the GSVs. The effect size was 0.215, with a p value of 0.037. Although

effect sizes were small, Chambers Cantrell et al. (2010) concluded the sixth-grade students

benefited from the LSC in reading comprehension. They contended the LSC helped younger

adolescents develop an awareness of strategies to help them compensate for their reading

difficulties. Study results of this study also indicated the program benefited general education

students.

One limitation of this study is that intervention teachers were learning the curriculum and

how to implement it simultaneously. A more experienced teacher could implement the program

in less than 50 min a day, which would allow time for other instruction.

Spencer and Manis (2010) studied the effects of a fluency intervention program to

determine if it could have positive outcomes on student comprehension. The intervention took

place with 17 girls and 43 boys in sixth through eighth grade in two middle schools on the west

coast. All of the students were enrolled in self-contained special education classrooms due to

their disabilities, and were selected to participate based upon two standardized reading measures. Students were excluded from the study if they read fluently at the fifth-grade level or higher. Additional assessments were given after students were identified in order to gather more information about their individual reading levels.

The students who qualified for the study were randomly assigned to either the experimental or control group. The experimental group used the *Great Leaps Reading Program* (Campbell, 2005), which is a fluency intervention. The students participated in instruction for 10 min a day under the instruction of a trained paraprofessional. The control group participated in a similar paraprofessional-led one-on-one intervention using *Skills for School Success* (Archer & Gleason, 2002), a study skills program. Although this program was designed to enhance student skills, it was not designed to have any direct impact on their reading fluency.

Intervention outcomes were determined by pre-post performance on the Passage Comprehension subtest of the *Woodcock-Johnson III Tests of Cognitive Abilities* (Woodcock, McGrew, & Mather, 2001). Residualized gain scores (RGS) were used to calculate the differences between the control and experimental groups and *t* tests were used to compare mean RGS.

No significant differences were reported between the comprehension scores of experimental group and control group following implementation of the fluency program. In addition, no positive correlations were found between gains in any of the fluency reading measures and gains in comprehension. Even though other studies have reported a positive relationship between fluency and comprehension, the relationship was not found in this study.

The participants in this study were purposefully selected because of severe reading deficits. The authors suggest these deficits could be a factor in this study's results. Forty-eight out of 60 of the students in this study scored below the 10th percentile on the word identification assessment; 57 out of the 60 students scored below average on the vocabulary subtest; and more than two-thirds of them scored below average on the a similarities subtest. The students in this study were likely to have less developed vocabulary, which limited their ability to benefit from a fluency intervention.

Spencer and Manis (2010) recognized several limitations in their study. The authors suggested that more observations and formal documentation of treatment integrity could have ensured that paraprofessionals consistently implemented the intervention. Another limitation was the number of English language learners included in the study groups, even though the reading pretests indicated no significant differences from other students. A final limitation was the use of just one comprehension measure. The authors recommend the use of multiple comprehension assessments on further testing.

Liang, Watkins, Graves, and Hosp (2010) examined the effectiveness of post-reading questioning techniques on middle school students' comprehension of literature. Participants included 87 mixed-ability students from language arts classrooms in two urban middle schools and their three language arts teachers. Liang et al. specifically tested the effects of the original story map created by Beck and McKeown (1981) that provided a sequential order of questions to facilitate deeper understanding of the story. Materials included three short stories, anthology questions, story map questions, and a multiple-choice comprehension test for each story. The language arts teachers were provided with a brief workshop and direct instruction guides.

The first step of the original story map framework requires the teacher to read the story and list the major events and ideas in the order in which they occur. The next step requires the teacher to create a question for each major event and idea in the story. These questions should be both explicit and implicit questions that focus on central information. The last step in the story map process is asking the questions with the students. The teacher guided discussion of the answers and rereading relevant sections.

The study was 3 weeks long and included a three-treatment design. Students read a different short story and participated in one of three instructional activities each week. Following completion of each story, the students completed a 15-item multiple-choice comprehension test. In addition, the students complete a satisfaction survey. Table 2 outlines the study's design.

Table 2: Study Design

	STORY 1	STORY 2	STORY 3
Group 1	No post-reading questioning	Anthology questions	Story map
Group 2	Anthology questions	Story map	No post-reading questioning
Group 3	Story Map	No post-reading questioning	Anthology questions

Results were analyzed using a 3 x 3 repeated measures ANOVA Results of the study revealed no significant difference in the mean scores on the multiple-choice comprehension tests between the two different questioning conditions of story map and anthology. The story map treatment's mean score for the three groups was 9.17 ($SD = 2.78$), the anthology treatment's mean score was 9.15 ($SD = 2.57$), and the no post-reading treatment had a mean score of 8.61 ($SD = 2.82$).

Student survey data showed that when using the story map, they liked the story better (7% more). Additionally, more of the students reported liking the story better when using either of the two questioning treatments (17% more). The students also liked answering questions after reading, and story map questions were slightly more positive (3% more). The study suggested the study map framework could be more motivating for middle school students and provide teachers with a framework to improving comprehension in the classroom.

The researchers hypothesized the story map technique would have better outcomes. However, no significant differences were reported between the two questioning conditions of the story map and anthology question set. Significant differences between the two questioning treatments were found when compared to the no-postreading questioning treatment. The results support the idea that students' understanding can be improved through the use of a questioning technique.

The authors identified three reasons why means scores were similar between the two questioning techniques. First, the anthology questions used personal response questions that did not interfere with the student's understanding of the story. They also acknowledged they overestimated the lack of sequential order in the anthology questioning as being a problem. Finally, the anthology questions did move from lower-level questions to higher-level questions.

Calhoon, Sandow, and Hunter (2010) explored whether the method in which reading components were organized would increase the effects of reading instruction for middle school students. Participants included 90 middle school students (sixth to eighth grade) with reading disabilities and six special education language arts teachers. Graduate research assistants were also utilized to help with training and implementation. The study took place in nine classrooms

in the southeastern United States. The students selected to participate in the study were chosen

based on five criteria: an IQ of 75 or above, an IEP goal or goals in reading, a history of reading

difficulties, current placement in a special education classroom, no ESL support, and combined

average scores at or below the 3.5 grade level on the *Woodcock Johnson Test of Achievement-III*

(WJ-III; Woodcock, McGrew, & Mather, 2001) and the *Gray Silent Reading Test* (GSRT;

Wiederholt & Blalock, 2000). The remaining students were assigned to one of nine treatment

classes that were most conducive to their schedules. Each of the nine classrooms and the

corresponding teachers were randomly assigned to one of three treatment modules: Alternating,

Integrated, or Additive. Each treatment module was implemented in a total of three classrooms.

The *Reading Achievement Multi-Modular Program* (RAMP-UP; Calhoon, 2006) is a

peer-mediated remedial reading program that allows for the components of reading to be

organized for separate and stand-alone instruction. Instruction is delivered in small groups and

features strategies such as mediated verbal rehearsal, step-by-step feedback, frequent verbal and

written interaction, and reciprocity. It also includes directed questioning, guided practice,

explicit and direct instruction, practice, and task analysis. Peer-Assisted Learning Strategies

(PALS) was included in the treatment. The echo reading, paragraph summarizing, and

prediction relay components of PALS placed focused on comprehension.

The four main RAMP-UP components are linguistics skill, spelling, fluency, and

comprehension. The Alternating module served as the control in order to provide direct

comparisons to the other modules. In the Alternating module, linguistics skills were taught 3

days a week, and comprehension was taught 2 days a week. The Integrated module combined

the spelling and fluency instruction with the linguistics component and included 3 days of

linguistics-spelling-fluency and 2 days of comprehension. The Additive Module was delivered in four 7-week sessions. The first session was isolated linguistics skill instruction 5 days a week. The second session added spelling to the linguistics skill instruction. Fluency instruction was added the third session. During the fourth session, linguistics skill instruction was discontinued, and comprehension was added to spelling and fluency. Each module consisted of 45 min of instruction per day, 5 days a week, for 26 weeks.

All participants were administered reading tests 2 weeks before the treatment began and immediately following the final week. No significant differences were found among groups on pretest reading measures. Although other WJ-III were administered, only passage comprehension subtest findings are reported in this analysis, as well as the GSRT findings, which also measured comprehension.

Comprehension effects were analyzed using a 3 x 2 repeated measure ANOVA. All three modules significantly increased reading comprehension skills for middle school students. The Additive module statistically outperformed the Integrated module, and performed similarly to the Alternating module. However, effect sizes for students in the Additive module showed greater gains for students in the Alternating (ES = 0.45) and the Integrated (ES = .63) modules on reading comprehension. Alternating module and the Integrated module both provided approximately 39 hours of instruction in comprehension. The Additive module only provided 12 hours of comprehension instruction, yet showed higher gains.

The results demonstrated that the foundation of linguistics, spelling, and fluency skills improved reading comprehension outcomes in the component organization of the Additive module. Specifically, Calhoon et al. (2010) reported the RAMP-UP program showed promise as

a multicomponent program. They suggested the organization of linguistics skills instruction is important for improving middle school student's reading comprehension. In addition, the results of this study indicate that the largest statistical gains in comprehension skills for middle school students occurred when linguistics skills were emphasized in isolation. The authors identified several limitations: lack of random assignment of teachers, unequal load assignment among the three teachers, and the use of graduate assistants to collect data.

Graves, Brandon, Duesbery, McIntosh, and Pyle (2011) used a quasi-experimental study to compare Tier 2 evidence-based instruction to normal instruction with sixth graders with and without learning disabilities (LD) from a large urban middle school. One hundred percent of the students received free or reduced lunch, and 90% of the students were considered English learners. The students selected for this study were the lowest performing sixth-grade students based on the *California English Language Development Test* (California State Department of Education, 2003). Of the 30 students randomly assigned to either a treatment or control group at the beginning of the study, 24 in the treatment group and 27 in the control group completed the study. Three students with LD were in the treatment condition, and four students were identified with LD in the control group.

Instruction was to be provided using a student-instructor ratio of 3:1 during three 1-hour weekly sessions for 10 weeks. Five graduate students who had completed a minimum of 20 prerequisite units in special education provided the instruction for the treatment groups. The control group received Tier 1 instruction in their language arts classes.

The *Daybook for Critical Reading and Writing* (Spandel, Nathan, & Robb, 2001) was used for comprehension and vocabulary instruction in the treatment group. The *Daybook* was

chosen because of its evidence-based lesson that target vocabulary and specific reading comprehension skills. Students in the treatment group were exposed to new vocabulary every day and comprehension skills for 20 min of their intervention hour. The other portions of the intervention hour included phonemic awareness, phonics, and fluency instruction.

Maze reading comprehension assessments were used for pre- and posttest measures of growth. The Maze measures a student's ability to complete sentences using appropriate words. Students were given 180 seconds to read quietly from a text. After the initial sentence, every seventh word had been replace by three choices. Students were asked to select the correct word. A reading comprehension score was obtained from the total words correctly chosen, minus the errors.

Means and standard deviations for all pre- and posttests were recorded. Overall, both the treatment and control groups made gains. Students with LD followed similar patterns as the other sixth-grade students.

The Maze comprehension probes revealed growth in both groups. The treatment group grew from a mean of 9.2 ($SD = 4.1$) to a mean of 12.0 ($SD = 5.4$) words per 180 seconds. The control group increased from a mean of 9.1 ($SD = 6.9$) to a mean of 11.6 ($SD = 6.8$) words. However, the ANOVA did not find these changes to be statistically significant, and the effect size was small.

The three students with LD in the treatment condition were able to read seven words per minute more than the four students in the control group. This small subgroup had an effect size of .52. This was larger than the other students in the intervention group. The standard deviation for students with LD was closer to normal, resulting in a larger effect size.

According to Graves et al. (2011), the Maze results suggest that a better reading comprehension measure or an improved intervention is needed. The results of the reading comprehension part of this study were less revealing than the other interventions implemented, indicating that a more sensitive measure may be needed, or a stronger intervention. Regardless, it can be stated that the three students with identified reading disabilities improved more than the control group. The authors indicated this result is consistent with the theory that students with LD might benefit more from intensive word and fluency work than other students in order to make comprehension gains.

The authors also contended the students in their study benefited from the bundle of interventions, even though the sample size of five was too small to make generalizations. Additionally, the range of reading levels resulted in large standard deviations and potential measurement flaws. Nonetheless, results from this study seem to indicate that Tier 2 instruction can have a significant impact on students with and without LD. However, more research is necessary to develop more effective Tier 2 instruction.

Liang (2011) conducted a study to examine the results of student comprehension when different approaches were implemented. Eighty-five sixth-grade students participated in the study. Thirty-six of the students were identified as being below the 35th percentile, and 19 of these students were below the 25th percentile on a regularly administered reading test. No significant differences were found between the two groups prior to implementation of the two interventions.

The two independent variables included a cognitive-oriented approach and a reader-response treatment plus two stories. Scores from pre- and posttests served as dependent

variables. Students were taught stories using a reader-response approach or a cognitive-oriented approach, and the Scaffolded Reading Experience (SRE) framework was used with each method. This framework consists of four different components to help educators to scaffold instruction for students and includes a planning phase and the implementation phase. The framework allowed teachers to change the purpose of the reading, but utilize the same narrative texts and the same group of students.

The study utilized two short stories over a 2-week period. During the control week of instruction prior to the experimental week, students were given a pretest and received 3 days of instruction (45 min per day). During the experimental week, students received 1 hour each day of instruction. After 3 days of instruction, students were given a posttest that consisted of multiple-choice quizzes and short-answer questions and responded to essay questions to determine the effects of the two different approaches in their open-ended responses. They also completed a student attitude survey and participated in interviews. Observation data were also collected.

Significant effects between the two treatment groups were reported on the multiple-choice quizzes ($F_{(1, 158)} = 13.98$, $p < .001$, ES = .08). Part 1 of the short-answer quizzes ($F_{(1, 158)} = 15.49$, $p < .001$, ES = .09) and Part 3 of the short answer quizzes ($F_{(1, 158)} = 310.34$, $p < .001$, ES = .66) were also significant, although Part 2 was not found to be significant. Essay responses were significant ($F_{(1, 158)} = 78.80$, $p < .001$, ES = .33). Each approach has positive results dependent on the type of assessment or desired outcome.

The cognitive group demonstrated 23% growth on Part 3 of the short-answer quiz, whereas the reader-response group fell 10% on mean scores. However, essay responses revealed

the reader-response group mean score had a 30% growth and the cognitive group mean score fell 4%. Overall, the cognitive method had a significant effect on the posttests ($F_{(1, 158)} = 490.00$, $p < .001$, ES = 0.76). The reader-response also had a significant effect on posttests ($F_{(1, 158)} = 711.36$, $p < .001$, ES = 0.82).

The information generated from interviews suggested the students liked the stories because of the content. Students spoke positively about the activities implemented in the cognitive-oriented group and found them helpful for their understanding of the stories. The reader-response group students who were interviewed also liked the activities and likewise found them helpful. The teachers also provided positive feedback regarding the instructional approaches and felt both were helpful to students. Additionally, they intended to share each approach with other colleagues.

Both the cognitive-oriented and the reader-response approaches had a positive effect on comprehension outcomes after reading short stories. These results suggest that different instructional methods should be used when teaching literature. The reader-response approach was most effective for the first set of tasks, whereas the cognitive-oriented approach was most effective on the end tasks. In addition, the study also suggests that the SRE can provide educators with a successful framework and students are motivated by stories that interest students. No one approach to teaching literature will cover all purposes.

Wanzek et al. (2011) studied the effects of a year-long reading intervention for students with LD. The study included sixth- to eighth-grade students from seven middle schools in three school districts. A total of 135 students with LD were randomly assigned to either a treatment group or the comparison group. Fifty-nine students were assigned to the comparison group and

76 students were assigned to receive a supplemental reading intervention in addition to their general and special education classes. Students included in the study were identified by the school district with learning disabilities and also performed poorly on the *Texas Assessment of Knowledge and Skills*. By the end of the study, a total of 46 students were included in the follow-up 4 months later.

All students received their typical content-area instruction. In order to improve the overall reading instruction for all students, all teachers participated in professional development training on evidence-based practices for teaching vocabulary and comprehension. The students with LD who were assigned to the treatment group were provided an additional reading intervention for one class a day. This class was in place of their elective class. The intervention included vocabulary and comprehension instruction, as well as explicit instruction in English phonology and phonics instruction. The students in the treatment group were in class sizes of 10 to 15 students. Fourteen intervention teachers were used to implement the instruction for the treatment group.

Three phases of instruction were implemented for the treatment group. Phase 1 of the intervention focused on word fluency, with the addition of vocabulary and comprehension instruction. Phase 2 of the intervention focused on vocabulary and comprehension, while applying word fluency and recognition from Phase 1. Phase 3 continued to focus on vocabulary and comprehension, although more time was spent on independent student skills introduced in the second phase.

All participants were assessed at the beginning of the school year, the end of the school year, and again in the fall of the next school year (follow-up). Participants were assessed in the

areas of word decoding, fluency, and comprehension. In order to measure comprehension, the

Passage Comprehension subtest of the *Woodcock-Johnson III Tests of Achievement* (WJ-III;

Woodcock, McGrew, & Mather, 2001) was used to assess a student's ability to choose the

correct word missing in a passage.

ANCOVAs and latent variable growth modeling (LGM) were used to analyze treatment

effects. Although fluency data were reported, these data are not reported because they are

beyond the scope of this paper. The difference on the Passage Comprehension was about 1.7

standard score points favoring the treatment group, which is not a statistically significant finding.

When participants were again tested 4 months after the intervention, findings again slightly

favored the treatment group. However, the results were not statistically significant.

Even though statistically significant effects were found in fluency, no statistically

significant results were reported for comprehension. Wanzek et al. (2011) commented that this

study provides additional evidence that not all intervention programs are going to meet the needs

of students with LD. Future research should consider providing the supplemental intervention

with smaller groups. The intervention should also be made more individualized and less

standardized.

Limitations of this study include the effects of the instruction the students were already

receiving. It is unknown if the instruction the students were already receiving resulted in some

of the improvements. Additionally, the measure of comprehension was limited. The authors

suggested that more complex measures of comprehension could be more sensitive to differences

between the groups.

Berkeley and Riccomini (2011) investigated the effectiveness of a comprehension monitoring strategy. The QRAC-the-Code strategy was taught to sixth- and seventh-grade students who were utilizing expository text in their social studies class. The participants were chosen from a newly formed, midsize, rural, southeastern middle school. Of the 319 students who participated in the study, 27 students were identified with LD and four students were identified with OHD. Students were randomly assigned to either an experimental group or a control group, which resulted in a total of 24 instructional groups. The experimental groups included 177 students, and the control groups included 142 students.

The experimental group was taught the steps of the mnemonic QRAC-the-Code strategy, which consisted of the following steps: (a) Question (Turn headings into questions), (b) Read (Read the section and STOP), (c) Answer (Ask yourself: Can I answer my question?), and (d) Check (Check to be sure your answer was correct or summarize the section). The experimental condition consisted of three scripted lessons over a period of 3 days. The comparison group used monitored independent reading in which they independently read the chapter and took notes without direct instruction on the content. Daily instruction was limited to 20 min for both groups. Students also completed a satisfaction survey at the end of the 3-day period.

The experiment utilized a pre-post design allowing for gain scores to be analyzed. Results from this study indicated the QRAC-the-Code comprehension monitoring strategy improved student understanding of expository text content. The comprehension strategy group outperformed the students in the monitored independent reading group, with mean scores of 2.81 versus 1.37 on the content test (ES = .48; a modest effect size). Content test gains scores were

analyzed in a two condition by a two program (general education and special education)

ANOVA. The ANOVAs revealed significant effects for the treatment condition ($F_{(1,293)} = 7.81$,

$p = .006$). Of the 177 students who were taught the QRAC-the-Code strategy, 115 (64.25%)

reported the strategy helped them understand and remember what they read. Conversely, 17

students out of 142 total (11.81%) in the monitored independent reading group reported that

taking notes helped them remember what they read.

Berkeley and Riccomini (2011) also analyzed the mean gains by program. Findings

indicated a moderate effect size of .73 for students with disabilities. The findings of this study

indicate that a comprehension monitoring strategy taught in a whole-class setting, can improve

the comprehension of students. The findings in this study are consistent with other content area

interventions.

The authors identified three limitations. The first limitation is that fidelity was not

assessed, and this has implications for future professional development. The second limitation

related to the use of a single textbook, which made it impossible to determine if students would

be able to generalize the QRAC-the-Code strategy to other subject areas. Finally, maintenance

was not assessed, and this is especially a concern for students identified as LD.

Vaughn et al. (2011) conducted a year-long study to examine the effects of an

intervention implemented with 182 seventh- and eighth-grade students who were not responsive

to an intervention studied the previous year. Students were from six middle schools in two urban

cities in the southwest. Students were randomly assigned to one of three groups: standardized

treatment, individualized treatment, and a comparison condition. Participants included, 71

individualized students, 69 students in the standardized condition, and 42 comparison students. Six interventionists were used in the study.

In both treatment conditions, students received 50 min of intervention instruction in small groups of 4-5 students during their elective periods. The standardized intervention consisted of three intervention phases: Phase I focused on word study and fluency, Phase II focused on vocabulary and comprehension, and Phase III allowed students to continue working on vocabulary and comprehension by applying the skills and strategies in expository texts. The individualized intervention consisted of instruction that was based on instructional needs of the students based on test scores and progress monitoring results. Motivational components were utilized in this protocol. Students in the comparison group received no researcher intervention.

The *Texas Assessment of Knowledge and Skills* (TAKS; Texas Education Agency, 2004), the WJ-III comprehension subtests, and the GRADE were used to assess pre- and post-comprehension outcomes. No significant differences were reported for pretest mean scores. Comprehension post-test scores on the WJ-III indicated that collectively the treatment groups outperformed the comparison group ($p < .01$). A comparison of the slope estimates revealed statistical significance: .00 in the standardized group, -.97 in the individualized group, and .45 in the comparison group. Effect sizes were moderate: 52 for the individualized group and .56 for the standardized group. In other words, students in both groups made significant gains in reading comprehension.

The majority of students in this study were from low-income homes in a large urban city. Vaughn et al. (2011) speculated that future studies in other settings could produce different results if more resources are available. They also suggested the findings could differ if only

students who had been identified with reading disabilities were chosen for the study, or if the study had used something other than the state accountability assessment. The findings of this study suggest the intensity—and related costs—of interventions for struggling readers should be addressed. Interventions for struggling readers are more likely to require small class sizes with intensive instruction for longer periods of time.

Vaughn et al. (2012) conducted another year-long, small-group, intensive reading intervention with eighth-grade students who had failed to respond to response to intervention (RTI) reading interventions in the sixth and seventh grades. This targeted group of eighth-graders began as a group of sixth-graders who had been identified with reading difficulties and who were randomly assigned to a control group or one of two treatment groups: a standardized or individualized treatment. Following the second year of treatments, students who were low responders were again identified. The findings for this study are based on the third year of this 3-year longitudinal study.

The study took place in two diverse middle schools in urban cities of the southwestern United States. A total of 28 total treatment students and 13 control students remained during in the final year of study. The treatment students had participated in both the Year 1 and Year 2 treatment groups and remained unresponsive. The control students were students who had been randomly assigned to the comparison group in Year 1. The teachers were two female intervention teachers with high levels of education and experience. They were also provided with 60 hours of professional development, participated in biweekly staff meetings, and were coached throughout the year.

Students in the treatment condition were provided with 50 min of reading instruction during an elective class period. Group sizes ranged from two to four students. The treatment group received instruction that was based on a clinical teaching model. Teachers met the needs of the students through instruction that was based on student's test scores and curriculum-based measures. Lessons were designed to address the areas of phonics, word reading, fluency, vocabulary and comprehension.

Teachers followed the scope and sequence of a research-based comprehension strategy. They taught scaffolded strategies to use before, during, and after reading. Time was spent focusing on essential vocabulary, definition discussion, and the relationship of words. Teachers instructed students on how to preview and making predictions. Students were also taught strategies for self-monitoring and repairing misunderstandings, and a motivational component was built into the lessons. In order to increase student motivation, purposeful and motivational texts were chosen as well as student and teacher goal setting, conferences, and positive phone calls home.

The TAKS was used as an initial screening method and also as a benchmark assessment. Additional assessments were used to measure comprehension: *AIMSweb Mazes,* the *Test of Silent Reading Efficiency and Comprehension* (TOSREC; Wagner, Torgesen, Rashotte, & Pearson, 2010), the Passage Comprehension subtest of the *Gates-MacGinitie Reading Test* (GMRT-4; MacGinitie, MacGinitie, Maria, Dreyer, & Hughes, 2000), and the Passage Comprehension subtest of the WJ-III. ANCOVAs were used to determine the significance of the findings.

Results revealed the treatment condition outperformed comparison students, although they did not close the gap with typically performing peers. The students in the treatment group did not fall further behind, nor did they demonstrate gains toward grade level. The eighth-grade students who were not responsive to 2 years of intervention prior to the study remained poor readers. Table 3 provides a summary of the results obtained from the various assessment measures used in this study.

Table 3: Assessment ANCOVA Results with Adjusted Posttest Means

YEAR 3 MEASURES	TIER IV (TREATMENT)	TIER I (COMPARISON)	F	P
AIMSweb Mazes	87.99	90.07	$F_{(1, 37)} = .707$	.406
TOSREC	76.48	70.88	$F_{(1, 37)} = 2.958$	.094
GMRT-4 Passage Comprehension	82.78	74.18	$F_{(1, 37)} = 12.475$	.001
WJ-III Passage Comprehension	88.85	85.66	$F_{(1, 37)} = 2.209$	.146

No statistically significant findings were reported on the *Gates-MacGinitie* Passage Comprehension, the TOSREC, AIMSweb Mazes, or the WJ-III Passage Comprehension. However, in all cases except for the AIMSweb Mazes, the effect sizes were in favor of the treatment condition and approached significance.

The findings of this study demonstrated the importance of providing more targeted interventions for students with serious reading difficulties. The treatment group demonstrated growth, whereas the comparison group's scores declined. The target group's intensive treatment had a strong, positive effect on reading comprehension. Vaughn et al. (2012) concluded it may

be necessary to provide interventions throughout secondary school in order to address the

increased vocabulary and comprehension instructional demands in content areas.

Fisher and Frey (2014) studied an after-school reading intervention for struggling middle

school readers. The 438 seventh- and eighth-grade students from three schools participants all

performed in the bottom 40% on a state test. From this group, 100 students were randomly

chosen to be in the experimental group; 75 remained at the end of the study. The control group

consisted of 247 students. The class sizes were limited to 20 students. The study was

implemented from October to May, and classes met for 90 min three times per week.

Participants were tested during the first weeks of school and at the end of the

study using the GMRT-4 and the *Analytic Reading Inventory* (Woods & Moe, 2010). The initial

assessments identified the participants as performing well below the grade expectations in

comprehension, vocabulary, and fluency. Experimental and control group scores were fairly

equivalent on these measures.

Researchers used the close reading approach as the instructional intervention.

The features of the close reading strategy include repeated readings, annotation, text-dependent

questions, and discussion. In the close reading experimental classrooms, students were involved

in the intervention instruction for 40-55 min. The remaining class time allowed for independent

reading and teaching conferencing. The control classrooms used the existing curriculum and a

combination of computerized interventions, teacher-led small-group instruction, and independent

reading.

At the end of the study, state assessment scores were compared and found to be

statistically significant ($X^2 = 61.2, p < .001$). Forty-eight of 75 students (64%) completed scored

at least one level higher on the state assessment. Twenty-six students (35%) scored the same score, and one student performed worse than the previous year. Of the 247 students who participated in the control group, 30 students (12%) improved at least one level. A total of 181 students (73%), performed the same as previous years, and 36 students (15%) performed worse.

The authors also used the *Reader Self-Perception Scale-2* (RSPS2; Melnick, Henk, & Marinak, 2009) to compare the two groups. The RSPS2 tool evaluates four factors: progress, observational comparisons, social feedback, and physiological states that contribute to effective reading. At the beginning of study, both groups had low scores in all four areas, and no significant differences were reported on any factor between the two groups. However, RSPS2 posttest scores revealed significant differences between the two groups. The biggest difference was in the area of progress; the treatment group averaged 4.02 and the control group averaged 2.31 on a scale of 5). The authors concluded the students found the close reading to be motivating.

According to the researchers, data reflecting significant differences in attendance ($X^2 = 46.76$, p < .01) might be expected, given the optional nature of the after-school program. The experimental group averaged 94% attendance, whereas the control group averaged 81% attendance. The fact that students attended the close reading program more regularly could have impacted the final outcomes.

The authors addressed the problems of middle school students who—even in good conditions—struggle to make progress in reading. The participants in this study averaged 5 to 6 months' progress for every year spent in school. The authors attributed this success to the close reading intervention. Exposing the students to complex, grade-level texts with supports helped

to increase their knowledge, critical thinking, and comprehension. The students in the treatment group spent a significant amount of time reading complex texts that challenged their comprehension and allowed for collaboration among their peers. They also had the opportunity to read what they wanted to read.

Little et al. (2014) studied the effects of different instructional approaches on middle school readers. The study was completed in four middle schools in a multi-site cluster-randomized design. Participants included 2,150 students in 47 sixth- to eighth-grade classrooms. Pre- and post-fluency and comprehension data were collected.

The *Schoolwide Enrichment Model-Reading Framework* (SEM-R), developed at the University of Connecticut, was designed to promote interest and enjoyment of reading, increase reading achievement, improve automaticity, encourage high-interest books above reading levels, and create lifelong readers. During a typical SEM-R class, students are exposed to a variety of reading materials and choose books they want to read independently. Teachers meet with students individually during conferences to provide instruction and promote higher thinking.

In three of four schools, researchers randomly assigned teachers to treatment and control conditions. One school chose to randomly assign the students to the teachers in order to accommodate their school schedules. Treatment teachers participated in a 1-day professional development session. Ongoing support was also provided throughout the study. Teachers were expected to implement SEM-R for a total of 40 to 45 min per day or 3 hours per week in their classrooms.

In the control groups, teachers used the district instructional approaches already designated. Phase 1 of the treatment instruction consisted of 10 to 15 min of book exposure,

reading strategies, and mini lessons. In Phase 2, students read independently in their self-selected books. While the students were reading, the teacher circulated and met with individual students for 5 to 7 min. The teacher also met with each student once every 1 to 2 weeks. Phase 3 involved project-based activities and is implemented later in the year. Teachers and students documented their activities throughout the study.

Students were assessed using a comprehension subtest of the GMRT. Classroom teachers administered the subtest, and the research team scored them twice to ensure accuracy.

ANOVAs were used to analyze the data from the four schools. No statistically significant results were identified, regardless of the reference school. This indicates that after controlling for all variables, the treatment and control groups performed similarly on the posttest for reading comprehension.

Even though SEM-R students did not outperform students who received traditional instruction, Little et al. (2014) suggested that SEM-R activities could be implemented in place of other instructional methods in order to allow students to have independent reading time with individualized support.

Due to the random assignment within school settings, a limitation to the study includes the possibility of treatment diffusion or the contamination of the control group. The research team monitored control classrooms, but did not note any diffusion. Additionally, treatment fidelity is another possible limitation. The consistency of the student conferences was not implemented equally among the schools. The authors noted that further research needs to be completed in order triangulate the results from observations, logs, and assessments. This would allow for researchers to determine if students' achievement is related to the consistency of

teacher-student conferences. The authors cautioned that interest and engagement beyond the school must be considered as factors in reading achievement and outcomes.

Sencibaugh and Sencibaugh (2015) studied the effects of a systematic explicit reading instruction of a questioning strategy for improving the comprehension of text with middle school students. Six eighth-grade students were selected to participate in the study because they were identified as struggling readers in comprehension. One middle school language arts teacher implemented the Question the Author (QtA) metacognitive strategy. The QtA uses discussion and queries to help students make sense of text structures and improve their comprehension of narrative and expository texts.

The Word Comprehension and Passage Comprehension subtests of the *Woodcock Reading Mastery Test* (Woodcock, 1988) were used to assess the students' reading comprehension before and after the 8-week study. The teacher provided direct instruction while modeling the steps of the strategy for 50 min a day, 5 days a week. The strategy was taught through systematic and explicit instruction.

Daily OtA lessons consisted of two parts: introduction and reading. Using the novel *The Giver*, a chapter was covered approximately every 2 days. The introduction part of the lesson included obtaining the students' attention, activating background knowledge, and creating and answering student questions. The teacher and the students chorally read assigned chapters during the reading of the novel. The teacher modeled the QtA strategy in the first few chapters and then scaffolded instruction for the students to practice the strategy.

Pre- and posttest score analyses indicated that the group improved significantly: comprehension results were $t_{(1, 5)} = 76.56$, $p < .001$, with an effect size of -.94 and passage

comprehension results were $t_{(1, 5)} = 4.58$, $p < .001$, with an effect size of 1.02. The Reading

Comprehension Cluster results overall were $t_{(1, 5)} = 6.32$, $p < .001$, with an effect size of .98.

These results demonstrate that students who were taught to use self-questioning strategies

improved their reading comprehension. Sencibaugh and Sencibaugh (2015) recommended that

educators use the QtA strategy to help struggling readers in middle school.

Summary

I located 13 studies that evaluated reading comprehension outcomes for struggling

adolescent readers. Table 4 summarizes the findings of these studies, which are discussed in

Chapter 3.

Table 4: Summary of Chapter 2 Reading Comprehension Interventions

STUDY	SAMPLE SIZE	INTERVENTION	MEASUREMENT	RESULTS
Chambers et al. (2010)	302	Learning Strategies Curriculum (LSC)	GRADE	ES = .218
Spencer & Manis (2010)	60	Great Leaps (Campbell, 2005)	WRMT-R/NU	No measurable impact
Liang et al. (2010)	87	Story map	Multiple Choice	Story Map SD = 9.17 Anthology SD = 9.15 No Questioning SD = 8.61
Calhoon et al. (2010)	90	Reading Achievement Multi-modular (RAMP-UP)	WCJ-III, GSRT	Additive Module showed greatest gains Integrated ES = .63 Alternating ES = .45
Graves et al. (2011)	51	Daybook for Critical Reading and Writing	MAZE	No measurable impact *Small subgroup of LD; ES = .52

Table 4 (continued)

STUDY	SAMPLE SIZE	INTERVENTION	MEASUREMENT	RESULTS
Liang (2011)	85	Scaffolding Reading Experience (SRE)	Multiple Choice, Essay, Short Answer	Cognitive Orientated ES = .76 Reader Response ES = .82 (Approach related to outcome)
Wanzek et al. (2011)	120	Three phases of a supplemental reading intervention	WCJ-III	No measureable impact Passage Comprehension ES = .017
Berkeley & Riccomini (2011)	319	QRAC-the-CODE	Content Test	Overall ES = .48 Students w/ Disabilities ES = .73
Vaughn et al. (2011)	182	Individualized treatment, Standardized treatment, and control	WCJ-III, GRADE, TEKS, TAKS	Individualized ES = .52 Standardized ES = .56
Vaughn et al. (2012)	28	Individualized Intervention	WCJ-III, TEKS, TAKS, Gates-MacGinite	Gates-MacGinite Treatment M = 82.78 Control M = 74.18
Fisher & Frey (2014)	75	Close reading	Gates-MacGinite	$X2 = 61.2$ $p < .001$
Little et al. (2014)	2,150	Schoolwide Enrichment Model – Reading Framework (SEM-R)	GRMT	No statistically significant results
Sencibaugh & Sencibaugh (2015)	6	Question the Author (QtA)	WRMT-R/NU	Passage Comprehension ES = 1.02 Reading Comprehension ES = .98

Chapter 3: Conclusions and Recommendations

The purpose of this review was to determine what reading interventions resulted in

positive outcomes in reading comprehension for struggling middle school students. In the first

chapter, I reviewed important legislation and policies relating to reading comprehension.

Additionally, I reported information regarding national reading initiatives concerning adolescents

and reading comprehension. Chapter 2 includes a critical review of research that studied the

impact of numerous middle school reading interventions. This final chapter presents my

conclusions and recommendations for future research. I also identify interventions that support

the reading of struggling middle school students.

Conclusions

Older students' reading difficulties are complex and multifaceted. The *Reading Next*

initiative in 2006 was developed to address adolescents' reading problems, which are most likely

to be problems understanding what they have read. The studies I reviewed were conducted

subsequent to *Reading Next* and are focused specifically on improving the reading

comprehension skills of middle school students.

The 13 studies in Chapter 2 used quantitative research designs to evaluate reading

comprehension outcomes using a variety of strategies and interventions. Eight of these studies

reported statistically significant results for increasing reading comprehension (Berkeley &

Riccomini, 2011; Calhoon et al., 2010; Chambers et al., 2010; Fisher & Frey, 2014; Liang, 2011;

Liang et al., 2010; Sencibaugh & Sencibaugh, 2015; Vaughn et al., 2011). Five studies reported

no conclusive findings (Graves et al., 2011; Little et al., 2014; Spencer & Manis, 2010; Vaughn

et al., 2012; Wanzek et al., 2011). In the next two sections of this chapter, I identify "what worked" and "what did not work" in the studies I reviewed.

What worked. Four of the 13 studies I reviewed were directly related to RTI programming. The Vaughn et al. (2011) study was the only one RTI-related study that resulted in positive statistically significant outcomes. In fact, both individualized and standardized treatment groups resulted in gains for students who were low responders from their previous intervention(s). Three other RTI-related studies showed growth, but results were not statistically significant (Graves et al., 2011; Vaughn et al., 2012; Wanzek et al., 2011).

Calhoon et al. (2010) implemented the RAMP-UP program, and they found it produced statistically significant gains in reading comprehension. Although all RAMP-UP modules program showed gains, the Additive module reported the most significant gains. I found this interesting because this was the only multicomponent program that specifically isolated linguistics skills education that reported growth in comprehension.

The Fisher and Frey (2014) study was the most unique study because it was conducted as part of an after-school program. Participants were instructed using individualized close reading, and the treatment group significantly outperformed the control group in reading comprehension gains. This closely correlates to the results of the reader response treatment group of the Liang (2011) study, which implemented the Scaffolding Reading Experience (SRE) framework. In close reading and in the reader response group, students closely interact with the text. The reader response treatment group also had statistically significant positive results. Thus, further evidence suggests that students who utilize strategies that allow them to interact with text improve their comprehension of said text.

Six of the eight studies that reported statistically significant results for increasing reading comprehension contained strategies that involved self-questioning techniques and metacognitive thinking (Berkeley & Riccomini, 2011; Chambers et al., 2010; Fisher & Frey, 2014; Liang, 2011; Liang et al., 2010; Sencibaugh & Scencibaugh, 2015). Two studies investigated the QtA self-questioning strategy, which requires students to be active and constructive in their learning (Liang, 2011; Sencibaugh & Sencibaugh, 2015). The QtA strategy was also mentioned as a strategy in the cognitive treatment group of Liang's (2011) SRE framework. The QtA treatment group participants in both studies demonstrated significant comprehension gains, providing additional support for metacognitive thinking approaches.

Other self-questioning interventions reviewed in this paper include strategy instruction (Chambers et al., 2010), story map technique (Liang et al., 2010), QRAC-the-Code (Berkeley & Riccomini, 2011), and the close reading strategy (Fisher & Frey, 2014). All of these questioning techniques resulted in positive outcomes for students in reading comprehension.

What did not work. Even though some research suggests that fluency correlates with comprehension, no significant gains were reported when students used the *Great Leaps* supplemental fluency intervention (Spencer & Manis, 2010). The results of this study suggest that repeated reading does not always improve student comprehension. Students may require more developed decoding skills. In Little et al. (2014) study, students neither gained nor regressed when provided interest-based differentiated reading intervention as part a school-wide independent reading framework. Thus, independent had no effect on reading comprehension.

The need for stronger Tier 2 interventions became apparent in the studies that were implemented within the RTI framework. The use of the *Daybook for Critical Reading and*

Writing resulted in growth, but not significant growth (Graves et al., 2011). However, the few students with LD in this study did improve significantly compared to the control group. Wanzek et al. (2011) found significant effects on fluency using a three-phase supplemental RTI reading intervention, but not comprehension. Vaughn et al. (2012) also reported growth in the individualized intervention treatment group of inadequate responders of a RTI intervention, but not statistically.

At the end of Chapter 2, I provided a table to summarize research findings. Table 5 illustrates more clearly whether or not the specific intervention produced statistically significant effects, and it also allows a better comparison of the interventions based on the type and procedures. This table provides a reference for further recommendations.

Table 5: Type, Effectiveness, and Common Procedures of Chapter 2 Interventions

STUDY/INTERVENTION	STATISTICAL SIGNIFICANCE	OTHER IMPORTANT INFORMATION	STUDY LENGTH	CLASS SIZE	INSTRUCTION PROVIDER
Chambers et al. (2010) *Learning Strategies Curriculum* • Word Identification • Visual Imagery • Self-Questioning • Paraphrasing • Sentence Writing	Yes – small	Strategy-based	1 year	Whole Class	Teacher
Spencer & Manis (2010) *Great Leaps* (Campbell, 2005)	No	Fluency	6-7 months	1 to 1	Para-professional
Liang et al. (2010) Story map	Yes – between questioning and no questioning	Post-reading questioning technique	3 weeks	Whole Class	Teacher

Table 5 (continued)

STUDY/INTERVENTION	STATISTICAL SIGNIFICANCE	OTHER IMPORTANT INFORMATION	STUDY LENGTH	CLASS SIZE	INSTRUCTION PROVIDER
Calhoon et al. (2010) • Reading Achievement Multi-modular (RAMP-UP) • Alternating, Integrated, Additive Modules	Yes	Linguistics, Peer-Assisted Learning Strategies (PALS)	26 weeks	10	Teacher
Graves et al. (2011) *Daybook for Critical Reading and Writing*	No – but showed growth	Tier 2 Instruction	10 weeks	3-5	Grad Students
Liang (2011) *Scaffolding Reading Experience* (SRE)	Yes – approach to desired outcome	Reader Response Cognitive-Orientated	2 weeks	Whole Class	Teacher
Wanzek et al. (2011) Three phases of a supplemental reading intervention	No	Schoolwide RTI effort, Standardized	1 year	10-15	Teacher
Berkeley & Riccomini (2011) QRAC-the-CODE	Yes	Comprehension Monitoring Strategy	1 week	Whole Class	Teacher
Vaughn et al. (2011) Individualized treatment, standardized treatment, and control	Yes – both treatments combined had significant gains	RTI, Year 2 working with non-responders to Year 1	1 year	5	Interventionist
Vaughn et al. (2012) Individualized Intervention	No – not statistically significant, but had growth	RTI, Year 3 working with non-responders from prior 2 years	1 year	2-4	Interventionist
Fisher & Frey (2014) Close reading	Yes	After-school Program	7 months	20	Teacher
Little et al. (2014) *Schoolwide Enrichment Model – Reading Framework* (SEM-R)	No	Differentiated Reading Instruction	7-8 months	Whole Class	Teacher
Sencibaugh & Sencibaugh (2015) Question the Author (QtA)	Yes	Systematic, Explicit Self-Questioning	1 month	6	Teacher

Based upon the studies I reviewed, there is strong evidence in support of questioning strategies and metacognitive thinking to improve reading comprehension in struggling readers. According to the National Reading Panel report (2000), a good strategy user will employ strategies as appropriate. Strategy users need to constantly adjust and shift strategies until they construct meaning. It appears it would be beneficial for educators to teach students multiple strategies to students interact with text. This could lead to increased learning and understanding of new text. Teaching students the process of metacognitive thinking could enhance their ability to apply questioning strategies.

Recommendations for Future Research

The amount of research available that specifically targets struggling middle school students is growing, but it is still limited. Continued research is necessary to find more effective interventions that yield positive outcomes in reading comprehension. Ultimately, the goal of reading is to have students understand and learn from print. Reading programs must support students in reaching this goal. Middle schools are challenged to create classroom environments that support student interest and motivate students to engage in school-based reading tasks (Boardman, et al., 2008).

Liang et al. (2010) noted that the story map questioning technique was well received by the participants. This suggests the story map framework could be more motivating for post-reading questioning with narrative text, but further research is needed to determine the effectiveness when working with expository text. Educators could benefit from recognizing how student motivation affects students' employment of reading strategies. Students who are motivated in the learning will engage more deeply.

Chambers et al. (2010) recommended that future research is needed to better understand how adolescents learn and employ cognitive strategies in their reading comprehension. Based upon the success of both treatment groups in Liang's (2011) study of the SRE framework, future research would be beneficial in examining different approaches on both procedural and declarative knowledge. Both reader response and cognitive interventions were successful in improving overall comprehension. Additional research could provide insights into what method should be used when teaching literature and informational text. If our students can employ these strategies, they will be more likely to connect to the text.

Utilizing strategy interventions to increase reading comprehension show promise. However, additional research should also include the effects of class size, teacher fidelity, generalization, and maintenance (Berkeley & Riccomini, 2011). It is also necessary for continued research to explore how adolescents learn to use cognitive strategies to improve reading comprehension. Strategies can be more complex because it requires readers to use more than one skill. Research can help provide information on how educators can assist students before, during, and after reading.

Further research also needs to be conducted to determine the effects of independent reading experience. Even though the treatment group of the SEM-R framework did not demonstrate significant results, students did not regress in their reading comprehension (Little et al., 2014). Therefore, additional research could validate students engaging in independent reading as part of their reading instruction. I feel independent reading for enjoyment is important in creating lifelong readers. This voluntary reading could significantly impact life-long skill and success.

The RAMP-UP reading program showed promise for a multi-component reading program for middle school students. However, the amount of research available that compares different organizations of the reading components is limited. Therefore, more research is necessary to determine what or if the organization of reading components can improve remedial reading programs for struggling middle school readers (Calhoon et al., 2010). Also, the reading comprehension part of this study used PALS. More research in this area would be beneficial in recognizing the effects of this strategy.

Even though the results of the *Great Leaps* study were not significant, looking more closely at the students involved in the study could benefit future implementation. Identifying the characteristics of non-responders versus responders could help inform educators regarding which interventions should be implemented (Spencer & Manis, 2010). Continued research is necessary in this area to determine the impact fluency can provide on reading comprehension outcomes.

As the implementation of RTI in middle schools increases, further research is necessary in finding intensive interventions that are successful for struggling middle school readers. Future research needs to also consider how to maintain student levels and prevent regression.

Implications for Practice

As a teacher of reading in the special education field, I experience the struggles of my middle school readers all too often. These struggles are apparent not only in my room but, in content classes as well. I feel my literacy instruction will improve after this review of 13 studies that incorporated different approaches to improve reading comprehension. Teaching my students effective reading comprehension strategies could help prevent academic failure and unforeseen negative events as they progress into their high school years.

The studies related to metacognitive thinking and strategy use had particular appeal for me. I am motivated to utilize these methods in my own classroom as well as sharing them with my colleagues in other content areas. Most interesting to me, the QRAC-the-Code and the QtA strategies resulted in large effect sizes for students with disabilities.

Professional development of teachers is necessary. As a member of my district's Staff Development Committee, I feel I can utilize my findings to recommend the use of these strategies within our district. These strategies could be motivating to content area teachers, as they are effective and quick to implement. As noted in Table 5, both the QRAC-the-Code and QtA studies were conducted in less than a month. Additionally, QRAC-the-Code and QtA strategies are capable of being implemented by the classroom teacher in a whole class environment.

Currently, I have the opportunity to use the *Leveled Literacy Intervention System* (LLI; Fountas & Pinnell, 2013). The LLI is a multicomponent program that combines reading, writing, and phonics, and is intended to be a supplementary system for use with small groups. It also provides opportunities for teaching comprehension strategies. Students are exposed to close reading to help improve their understanding, and they use explicit strategies for expanding vocabulary and fluency. The leveled reading books included in the system have proven to be quite motivating for my students as well. The topics have engaged my students, especially the nonfiction books.

In addition to my LLI instructional hours, I have a second supplementary English class period to work with some of my students who struggle the most. During this class period, I utilize the *Fundamentals of Sentence Writing* from the Learning Strategies Curriculum from the

University of Kansas (Schumaker & Sheldon, 1985). In addition to this instruction, I utilize digital individualized lessons through the *SRA Flex Literacy Program* (Fisher et al., 2014). I also incorporate independent reading and the use of reader response journals. I feel validated in the curriculum that I currently use. Many of the components I use have been shown to be successful. However, I feel like now I can enhance student learning even more with my expanded knowledge base.

Summary

Biancarosa and Snow (2006) identified 15 recommendations in *Reading Next* to help improve the literacy program for students beyond third grade. These are recommendations for which educators can build a foundation for literacy instruction. Educators should utilize a combination of instructional components for optimal success. The *Reading Next* initiative as well as additional research can provide educators with the information necessary to improve outcomes for our struggling adolescent readers.

Recent research suggests that literacy instruction for reading comprehension should include cognitive processes and strategies proven through research. Students will benefit from interacting closely with the text. If readers learn how to monitor their thinking, they will be able to resolve problems that arise. Questioning strategies can help students to think actively, as well as monitor their comprehension. Educators should provide opportunities to model strategies, allow for guided practice, and give students time to practice. Instruction should be explicit and provided through direct explanation. For our most struggling readers, educators may need to increase the intensity of the intervention.

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