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# Comprehension Strategies for Middle School Students with Learning Disabilities

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**Comprehension Strategies for Middle School Students with Learning Disabilities**

by

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## Table of Contents

	Page
List of Tables .....	3
Chapter	
1. Introduction.....	4
Research Question .....	9
Focus of Paper.....	9
Rationale .....	10
Definition of Terms.....	10
Review of the Literature .....	12
2. Reading Comprehension Studies .....	20
3. Conclusions and Recommendations .....	45
Conclusions.....	45
Recommendations for Future Research .....	46
Implications for Current Practice.....	47
Summary.....	48
References.....	49

**List of Tables**

Table	Page
1. Summary of Chapter 2 Findings .....	12
2. Outcomes for Reading Measures .....	28
3. Interventions for Comprehending Expository Texts.....	35

## Chapter 1: Introduction

Learning to read is an essential skill for all students. Typical progression of this skill starts in elementary school and builds as the student enters middle and high school. Although reading is a core instructional area covered by all teachers in every grade level, this skill continues to be challenging for many students (Gajria, Jitendra, Sood, & Sacks, 2007, as cited in Solis et al. 2011). U.S. Department of Education, 2007, as cited in Solis et al., 2011. Those students in middle school (grades 6-8) are no exception. The National Joint Committee for Learning Disabilities, 2008, as cited in Solis et al., 2011, indicated that 21% of secondary students with learning disabilities (LD) are estimated to be five grade levels or more below their peers in reading.

A student's inability to comprehend and understand what they are reading has lifelong consequences. For example, students with LD are three times more likely to drop out of high school than their average level peers (U.S. Department of Education, 2007). Without proper instruction, reading difficulties at this level can lead to disaster for these students both in their academic career and in adult life (Solis, Ciullo, Vaughn, Pyle, Hassaram, & Leroux, 2012, as cited in Solis et al., 2011).

**Historical background.** Throughout the first half of the twentieth century, educators used multiple approaches for teaching reading, including phonics. During the 1930's through the 1960's, publishers developed a variety of leveled readers that were being utilized to teach children to read. The leveled readers were developed by researchers such as (Thorndike, 1921, as cited in Vogt & Shearer 2010 and Dolch, 1942, as cited in Vogt & Shearer 2010) who helped identify the words that were being used most frequently in books. This led to publishers producing children's "readers" with stories written using these word lists.

During World War II, it was discovered that soldiers were unable to read well enough to comprehend their training manuals. This resulted in teaching children how to read informational and expository texts. During this time most were teaching phonics, but the best approach for teaching phonics remained unknown. As teachers started placing emphasis on teaching phonics they noticed that comprehension was lacking. This led to some of the skills that are used today such as: finding the main idea and supporting details, sequencing, drawing conclusions, making generalizations, comparing and contrasting, and identifying cause-and-effect.

Researchers spent the 1980s and 1990s trying to determine how readers think about text, how they are making connections, and how they comprehend what was read. During this time there was a decrease in phonics/decoding and comprehension. This shift was supported by the 1985 publication of *Becoming a Nation of Readers* (Anderson, Hiebert, Scott, & Wilkinson, 1985, as cited in as cited in Vogt & Shearer, 2010 and Dolch, 1942, as cited in Vogt & Shearer, 2010). This came under heavy scrutiny. This had a large impact on reading instruction toward the end of the 1990's.

At the time of the twenty first century many changes were being made. First, there were the works of the Rand Study Group (Snow, 2002, as cited in Vogt & Shearer, 2010), which outlined future work on reading comprehension, including assessment (Pearson & Hamm, 2005, as cited in Vogt & Shearer, 2010.). Second, the Carnegie Report, *Reading Next* (Biancarosa & Snow, 2006, as cited in Vogt & Shearer 2010), places an emphasis on older struggling readers, which, for this group, comprehension is an enormous problem. Third, recent actions have been promising for comprehension, which will challenge and excite students. In 2000, the NRP, as cited in Vogt and Shearer (2010), published findings and recommendations in the *Report of the National Reading Panel: Report of the Subgroups*. This report led the Reading First legislation

within Title I of the No Child Left Behind Act of 2001. Reading First requires schools be held accountable for all students being able to read by third grade. Funding of “scientific, research-based reading programs” backed the mandate. The program consisted of the essential components of reading, which includes: phonemic awareness, phonics, vocabulary development, reading fluency, and reading comprehension strategies.

**Reading instruction for students with LD.** The National Reading Panel (NRP) report (2000, as cited in Wexler, Edmonds, Vaughn, Morris, & Mather, 2008) acknowledged five areas essential to effective early reading instruction: (1) phonemic awareness, (2) phonics, (3) fluency, (4) vocabulary, and (5) comprehension. For older students, such as middle schoolers, NRP’s report included these five areas: (1) word study, (2) fluency, (3) vocabulary, (4) comprehension, and (5) motivation. These areas will be explored more in depth to determine their use and efficacy with students.

**Word study instruction.** For older students who are struggling at the word level, decoding multisyllabic words tends to be a real struggle (Archer, Gleason, & Vachon, 2003, as cited in Roberts, Torgesen, Boardman, & Scammaca, 2008). Intervention that focuses on word analysis and word recognition, opposed to recognizing and manipulating discrete letters and sounds, is sometimes referred to as advanced word study (Curtis, 2004, as cited in Roberts et al., 2008). Not all students with a learning disability will profit from advanced word study. This intervention might improve reading outcomes for struggling readers by teaching them to be adaptable decoders and to access word analysis and word recognition strategies (Scammaca et al., 2007, as cited in Roberts et al., 2008; Wexler, Edmonds, & Vaughn, 2008, as cited in Roberts et al. 2008).

**Fluency instruction.** A successful reader can usually read orally between 120 to 170 words correctly per minute (Roberts et al., 2008). Words are identified with ease, which allows the reader to focus on comprehension (Archer et al., 2003; Osborn, Lehr, & Hiebert, 2003, as cited in Roberts et al., (2008). In contrast, students with reading disabilities read slowly and with significant amounts of effort, placing their focus on new or unfamiliar words. Fluency may not directly cause comprehension but it does play a facilitative role.

**Vocabulary instruction.** Being able to fluently and accurately identify words in text is crucial to a student's reading success. Knowing and understanding the meaning of words is equally as important, especially in regards to reading comprehension and overall success in school (Baumann, Kame'enui, & Ash, 2003; NRP, 2000, as cited in Roberts et al, 2008). Students with learning disabilities are more likely to avoid independent reading, which limits their vocabulary exposure (Cunningham & Stanovich, 1998, as cited in Roberts et al., 2008). These difficulties transfer to classes that require a textbook such as science, and social studies. It is important to use frequent progress monitoring for vocabulary instruction.

**Reading comprehension instruction.** The whole point of everything mentioned above is intended to lead to comprehension. Reading well requires many skills. Struggling readers often fail to implement effective comprehension strategies such as adjusting reading rate or strategically rereading the passage. They either lack the necessary skills mentioned above or they do not monitor their comprehension. Few people would argue that comprehension strategies for struggling readers should be implemented throughout the school day. National policy reports addressing the literacy predicament (Biancarosa & Snow, 2004; National Association of State Boards of Education, 2006; National Governor's Association Center for



Best Practices, 2005; Kamil, 2003, as cited in Roberts et al., 2008) regularly emphasizes the importance of this instruction.

The Common Core Standards for English Language Arts focuses on the skills and knowledge students will need to be successful in college, career, and in life. Three areas of focus are; (1.) Regular practice with complex texts and their academic language (2.) Reading, writing, and speaking grounded in evidence from texts, both literary and informational, (3.) Building knowledge through content-rich nonfiction

**Domain and prior knowledge.** Secondary students with LD are often required to read a lot of informational and expository text, which results in poor comprehension due to a lack of prior knowledge to the texts' contents (Gajria et al., 2007, as cited in Moore & Smith, 2016). This process includes readers using what they already know and then using that knowledge to help understand a specific topic. Anticipatory activities such as previewing the text or discussing the key concepts before reading can be extremely advantageous. After reading, students can use review strategies such as paraphrasing and summarizing the text.

**Graphic organizers.** Graphic organizers can be beneficial throughout the reading process (Roberts et al., 2008, as cited in Moore, & Smith, 2016). Before reading, they help activate prior knowledge and aide in making predictions. During reading, this intervention helps students to make connections. After reading, they help facilitate and condense the text. There are many different types of graphic organizers that can be utilized.

**Cognitive strategies.** For middle school students with LD, it is important to have explicit direct instruction in determining importance and self-questioning strategies. (Edmonds et al., 2009, as cited in Moore & Smith, 2016). It is especially advantageous when applied before, during, and after reading. The best way for a teacher to effectively teach these strategies is

through the use of explicit modeling and an explanation of the strategy. After that, a gradual release to students for using the strategy independently (Torgesen et al., 2007, as cited in Moore & Smith, 2016).

**Motivation to read.** Reading comprehension involves being an active reader that should not require immense amounts of effort, especially for complex text. Motivation and engagement make reading more pleasurable, increase the use of strategies, and support comprehension (Guthrie & Wigfield, 2000, as cited in Roberts et al., 2008). The individuals that struggle to read tend to lack motivation (Morgan & Fuchs, 2007, as cited in Roberts et al., 2008), which reduces the opportunity to build vocabulary, increase comprehension, and develop successful reading strategies. Guthrie and Humenick, (2004), as cited in Roberts et al., (2008), identified four features that are critical to increasing and maintaining students' motivation to read: (1) providing interesting content goals for reading, (2) supporting students autonomy, (3) providing interesting texts, and (4) increasing social interactions between students. Motivating struggling readers should be a part of an effective reading program.

### **Research Question**

This review of literature focuses on one research question: What strategies improve reading comprehension for middle school students with learning disabilities?

### **Focus of Paper**

I included literature from 1999 to 2016 that included quantitative data about reading comprehension strategies for middle school students with learning disabilities.

Several sources were used to conduct my research including Academic Search Premier, EBSCO Host, and PsychINFO. A number of search terms were used including *middle school*,

*reading strategies, reading comprehension, response to intervention, learning disabilities, reading disabilities, and history of reading.*

### **Rationale**

As a middle school teacher for students with learning disabilities, I know the impact reading has on a student's academic success in all subjects. Reading comprehension is a huge concern for students with learning disabilities. According to Mastropieri, Scruggs, and Graetz (2003), as cited in Sencibaugh, (2005), reading is the major problem area for the majority of students who are learning disabled. Research shows that 90% of students with learning disabilities display serious difficulties learning to read. As I mentioned earlier, 21% of secondary students with LD are roughly five or more grade levels below their peers in reading (National Joint Committee for Learning Disabilities, 2008, as cited in Sencibaugh, 2005). Over the past three years I have been working with students who have struggled with reading due to their learning disabilities.

I have taught 6<sup>th</sup> and 7<sup>th</sup> grade special education resource room English classes, as well as a 6<sup>th</sup> and 7<sup>th</sup> grade Reading Plus class that focuses on comprehension and fluency. I am always striving to meet my students reading needs. I am constantly trying to figure out the best path for them, I specifically look for methods that are backed by research. That is why I decided to focus my literature review on reading comprehension strategies for middle school students with learning disabilities.

### **Definition of Terms**

*Cognitive strategy-* A guide that supports the learner as they develop the internal procedures that allow them to perform higher-level skills (such as comprehension) (Rosenshine, 1995, p. 266, as cited in Jitendra, Burgess, & Gajria, 2011).

*Expository text*- Is a nonfiction text meant to inform, analyze, or provide additional detail about a topic. The main focus is to communicate information so that the reader might learn something (Weaver & Kintsch, 1991/1996, p. 230, as cited in Jitendra et al., (2011).

*Fluency*- The ability to recognize words easily, read with greater speed, accuracy, and expression, and to understand what is read. For secondary students, fluency is identified as one of the critical variables to successful reading (Archer et al., 2003; Schatschneider, 2004, as cited in Spencer, & Manis, 2010).

*Graphic Organizers*- Visual and spatial displays designed to facilitate the teaching and learning of textual material through the use of lines, arrows, and a spatial arrangement that describe text content, structure, and key conceptual relationships” (Darch & Eaves, 1986, p. 310, as cited in Kim, Vaughn, Wanzek, & Wei, 2004)

*Metacognition*- According to Bender (2004, as cited in Sencibaugh, 2005), metacognition consists of the overall planning of a cognitive task, self-instructions to complete the task, and self-monitoring, or checking to see that each phase of the task is completed appropriately and in the proper order.

*Reading Comprehension*-Intentional thinking that involves acquiring meaning through interactions made between the reader and text. (Durkin, 1993, as cited in Solis et al., 2011).

*Reciprocal teaching*- An instructional practice identified as a way of improving reading comprehension through explicit teaching of skills needed for metacognition. It is recognized as an example of an inclusive practice (Alton-Lee, Westera & Pulegatoa-Diggins, 2012, as cited in McCallum 2014, Palincsar & Brown, 1984, as cited in McCallum, 2014, Rosenshine & Meister, 1994, as cited in McCallum, 2014, Westera, 2002, as cited in McCallum, 2014).

*Self-Monitoring*- Involves the active participation of students in learning and continuous engagement in activities (Torgesen, 1982, as cited in Kim, Linan-Thompson, & Misquitta, 2012).

*Story Maps*- Visual tools that delineate the most important ideas and reflect the linkage of concepts or facts within a passage (Reutzel, 1985, as cited in Gardhill, & Jitendra, 1999) and help students generate questions about narrative stories.

### **Review of Literature**

I located 13 studies that evaluated reading comprehension instruction for middle school students. The purpose of this literature review was to determine the effectiveness of intervention strategies on reading comprehension skills for middle school students with learning disabilities.

Table 1 summarizes the findings of these studies, which are presented in chronological order from oldest to most recent.

**Table 1: Summary of Chapter 2 Findings**

Authors	Design	Participants	Procedure	Results
Gardill, & Jitendra (1999)	Quantitative	Six sixth grade and eighth grade students with LD	- Baseline data was gathered for 2,4, and 6 weeks for the first, second, and third dyads, respectively. -Interventions lasted 14-20 weeks. Model Phase- Instructor introduced and explained the major story grammar element (main problem/conflict,	-Results show an increase in story grammar and basal comprehension performance by all six participants. -On story retell measures, results demonstrated an increase in the number of story elements recalled by five students -Only two students increased on

			<p>character information, attempts, twist/complication, resolution, and theme.</p> <p>-Lead phase- Students completed story maps for three new stories.</p> <p>-Independent Practice Phase- Students read at least three new stories and independently completed the story note sheets.</p> <p>-Generalization and Maintenance- Generalization was assessed using a fifth-grade passage.</p>	<p>number of words, correct word sequence (CWS), thought units (t-units), and sentences included in story retells.</p>
<p>Mastropieri, Scruggs, Mohler, Beranek, Boon, &amp; Talbott (2001)</p>	<p>Quantitative &amp; Qualitative</p>	<p>-24 middle school students, including 20 with learning disabilities</p> <p>-All enrolled in special education 7th grade English classes.</p>	<p>-Prior to implementation, all students took standardized tests. The program was implemented daily, during assigned 50-minute English period over a period of 5 weeks.</p> <p>-Pre and Posttests, developed by authors were</p>	<p>-Comprehension- posttest data- tutoring condition students scored 81.8%, while control group scored 63.3%</p> <p>-Student interviews- 83% of students agree they liked peer tutoring, 75% of students expressed a desire to use tutoring in other</p>

			administered. Comprehension test items were open-ended.	subjects and 42% agreed they would like to use different formats.
Kim, Vaughn, Wanzek, & Wei (2004)	Quantitative	The 21 studies included a total of 848 students with LD	-All of the studies included interventions using graphic organizers to improve the reading comprehension of students with LD. -Types of organizers included Semantic organizers, cognitive maps with a mnemonic, Cognitive maps without a mnemonic, and framed outlines.	-Cognitive maps with a mnemonic- Students who used cognitive maps outperformed those using conventional techniques -Cognitive maps without a mnemonic- The use of cognitive maps was associated with higher comprehension scores than the comparison condition. -Framed outlines- One study found that students using framed outlines significantly outperformed those in comparison conditions.
Manset-Williamson, & Nelson (2005)	Quantitative	21 students ranging from 9 to 14 years old. -No reading fluency above grade level 3.5 -Had a	-6 week intervention -treatment condition on a one-on-one basis -Totaled 20 hours	-Progress was made in students' reading decoding, fluency, and comprehension. Gains in formal

		significant delay in decoding, fluency, comprehension, and language processing	<ul style="list-style-type: none"> <li>-Measures of decoding- WJ-3 Word Attack</li> <li>-Measures of fluency- Daily curriculum-based measurement (cbm) probe was used</li> <li>-Measures of comprehension- WJ-3 and informally by having students read expository passages, retell the important ideas in the passage, and then answer multiple-choice questions.</li> </ul>	<p>measures of word attack and reading fluency after five weeks of intervention equaled grade-equivalent gains of approximately half a school year.</p> <ul style="list-style-type: none"> <li>-There was a weekly gain of 1.28 correct words per minute.</li> <li>-More explicit comprehension strategy produced better results than the explicit treatment.</li> </ul>
Kim, Vaughn, Klingner, Woodruff, Reutebuch, & Kouzekanani (2006)	Quantitative	-34 middle school students with disabilities	<ul style="list-style-type: none"> <li>-Intervention group received Computer-Assisted Collaborative Strategic Reading (CACSR) intervention</li> <li>-50 minute sessions twice per week over 10 to 12 weeks.</li> <li>-Comparison group received resource reading instruction</li> </ul>	-Results showed a significantly significant difference between intervention and comparison groups' reading comprehension.
Fritschmann, Deshler & Schumaker (2007)	Quantitative	Eight secondary students, including seven with learning disabilities.	A multiple-baseline across-subjects design was utilized. The inference	After instruction, both subgroups of students with disabilities earned a mean of



		Students were enrolled in a learning-supported English/ language arts class.	strategy was implemented ranging from 60 to 75 minutes.	20 points while the whole group in the experimental classes earned a mean of 23 points on the strategy-use test. The comparison group of students with disabilities and poor comprehenders, in contrast, both earned a mean score of 7 points while the whole group of comparison students earned a mean score of 10 points on the strategy-use posttest.
Spencer & Manis (2010)	Quantitative	-60 middle school students with severe reading delays	-Used a randomized experimental design -Tested fluency intervention program on the word-identification and reading-comprehension outcomes of 60 middle school students with severe reading delays	-Students in the experimental group made more progress on standardized tests of reading fluency than the students in the control group. No gains were seen in reading comprehension.
Jitendra, Burgess, & Gajri (2011)	Quantitative	-Five or more studies included a total of at least 20 participants	-18 group studies were analyzed -7 single-subject design studies	-Findings show that cognitive strategy instruction for

		-Participants had to be students with LD	-Only one group met the criteria for cognitive strategy instruction -Students with LD -Had to focus on evaluating cognitive strategies to comprehend expository text -Studies had to include at least one measure of expository text comprehension	teaching expository text comprehension is an evidence-based practice. -77% of studies provided insufficient information.
Berkeley, Mastropieri, & Scruggs (2011)	Quantitative	A total of 63 students were picked for intervention because of school-identified weaknesses in the area of reading.	A pre-post experimental design with 6-week delayed posttest was implemented to investigate the effects of reading comprehension strategy instruction with and without attribution retraining on reading outcomes.	- Results indicated that compared to the comparison group, both strategy instruction groups performed better on summarization measure of comprehension after treatment producing large effects. Both groups also performed better after a 6-week delay.
Kim, Misquitta & Linan-Thompson (2012)	Quantitative	The studies included a total of 465 students with LD	-The procedures included the use of cognitive mapping, semantic mapping, semantic feature	-The results indicate that interventions incorporating strategy instruction, specifically,

			analysis, semantic/syntactic feature analysis, as well as graphic organizers	main idea and summarization, showed high effects of comprehension. -The use of self-monitoring paired with main idea strategy improved comprehension. -Comprehension paired with other components such as vocabulary, had significant effects on comprehension.
Boudah (2013)	Quantitative	A total of 22 middle and high school students with mild disabilities participated in the study.	Teachers implemented the main idea strategy in small groups in their resource classes over approximately five months of one school year.	Mean student performance increased tremendously on the posttest, from approximately 15% to 60% on the highlighting measure, from approximately 28% to 90% on the verbal paraphrasing measure, and from approximately 16% to 60% on the comprehension questions measure.
Sabatini, O'Reilly, Halderman, & Bruce (2014)	Quantitative	A total of 426 sixth grade students completed the GISA assessment. A subsample of 237 students	A component skills battery was used to measure core reading skills such as word recognition, decoding,	-Results indicate that students were able to read, understand, and problem solve in complex learning environments,

		completed both the GISA and RISE component skills batter.	vocabulary, and morphology, as well as a second assessment used to assess reading comprehension.	but students' ability to do so was usually hindered by their basic reading skills.
Hock, Brasseur-Hock, Hock, & Duvel (2015)	Quasi-experimental	A total of 40 sixth grade special education students participated. They were classified by the level of support they were provided ranging from "severe" to "less severe". All students had reading goals on their IEP's	Eight special education teachers taught Fusion Reading or the district's current reading program. Five FR teachers each taught one section of FR to groups ranging from four to eight students. 40 students were included in the study, 20 in each section. The FR group met 50 minutes per day five times per week throughout the school year.	Statistically significant differences were found between the experimental group and the comparison group on several measures of reading achievement with scores favoring the experimental condition.

## Chapter 2: Reading Comprehension Studies

Gargill and Jitendra (1999) conducted a 14-20 week intervention to investigate the effectiveness of direct instruction of an advanced story map procedure on reading comprehension performance. A total of 6 sixth and eighth grade students with LD attending a middle school in the Northeastern United States participated in this study. Every session was conducted during the school day in a quiet room next to a resource room. Instruction and testing took place during the regularly scheduled 40 to 50 minute resource classes. None of the students selected were receiving instruction in reading in the general education or resource classrooms during the study.

A multiple baseline design across all participants was utilized to assess the effects of advanced story mapping in promoting reading comprehension. Baseline, intervention, generalization, and maintenance were included in the experimental conditions. The baseline lasted approximately 2, 4, and 6 weeks for the first, second, and third dyads. Interventions lasted 14-20 weeks and all participants were instructed in pairs. The sequence of instruction consisted of model, lead, and independent phases. During the model phase the instructor demonstrated how to determine and explained the major story grammar elements of (a) main problem/conflict, (b) character information, (c) attempts, (d) twist/complication, (e) resolution, and (e) theme. Next was the lead phase, which shifted the instructional focus more towards student independence. This phase allowed students to complete story maps for three new stories with decreased teacher support. Finally, the generalization and maintenance phase allowed students to use story map sheets and complete story grammar and basal comprehension tests when they have finished reading their story.

Baseline results indicated story grammar and basal comprehension tests mean scores that were 30% and 39%, respectively. Predictably, during the model phases mean levels of story

grammar comprehension improved to 51% (range = 37%-59%) when used to compare with baseline performance. All students demonstrated an increase in the majority of story grammar components. The results showed an increase of 13% for the mean level basal comprehension scores. During the lead phase, story grammar scores saw a drastic improvement from those during baseline. On average, increases of 52% (range =38%-62%) were observed. The mean performance was 91%, 84%, 80%, 89%, 82%, and 80% for the six students on their story grammar tests. During the independent phase, all participants' scores on the story grammar tests displayed drastic improvement over baseline scores. An average increase of 55% (range = 40%-67%) from baseline to the independent phase, while the mean increase for the basal comprehension tests was 24% (range = 5%-26%). For the generalization and maintenance phase, the mean performance on the story grammar test was 86% correct, an increase of 56% from the baseline to generalization condition. The mean performance for the basal comprehension test of all students increased from 42% in baseline to 58% during generalization. Finally, the maintenance condition saw an average increase of 19% from the baseline to maintenance for the story grammar test. Basal comprehension test scores increased by a mean of 19%.

Story retells were analyzed and the results showed that 5 of the 6 participants increased the number of story grammar elements included in retells ( $M = 26\%$ , range = 35-49%). The strategy questionnaire was found to be most helpful in understanding short stories ( $M=4.7$ , range = 4-5), while placing information on the note sheet was helpful ( $M = 4.0$ , range = 3-5). Feedback also revealed that the story map note sheet was useful to remember the short stories ( $M = 3.8$ , range = 2-5).

Mastropieri et al., (2001) examined the effects of teaching middle school students with learning disabilities to tutor one another in reading comprehension strategies. Participants

included 24 middle school students with mild disabilities, which include 20 with learning disabilities. All students were randomly assigned to a tutoring or traditional reading instruction condition. Interventions lasted five weeks in duration.

Both conditions required identical reading materials. They consisted of high interest, low vocabulary materials that were within the reading range of the majority of students selected. These ranged from 2nd to 4th grade reading levels according to Fry's readability formula (Fry, 1977, as cited in Mastropieri et al., 2001). Partner reading was the basis for the tutoring dyads. Tutors provided corrective feedback while the first reader read for 5 minutes and then the students would rotate positions. The first reader was always the stronger reader. Tutors would provide valuable, corrective feedback. Students identified an incorrectly read word, prompting a correct response. A specific strategy was used that consisted of identifying an incorrectly read word, prompting the correct response, supplying the correct word, and prompting re-reading. Students were asked to summarize their story when they finished. The traditional instruction control group required oral reading where students took turns reading aloud. Teachers guided students to activate prior knowledge and make predictions.

A 16-item peer tutoring open-ended interview was also utilized to assess the students' feelings on tutoring. They were asked the purpose of peer tutoring, the rules and procedures, to explain specific reading comprehensions strategies practiced. They were also asked what they liked and did not like. Qualitative data included teacher interviews, teacher journal entries, and observational records.

Results of the comprehension pretesting showed no statistically significant difference between the two conditions. Performance was low for both conditions. The tutoring condition students scored 81.8% correct (SD = 13.9) on the posttest for reading comprehension, while the

control condition students scored 63.3% correct (SD = 17.2). This was a statistically significant condition according to a t-test,  $t(19) = 2.72$ ,  $p = 0.013$ . The students interviews showed that 83% of students agreed they liked peer tutoring, and listed interactions with partners (50%), reading stories (50%), and becoming a better reader (42%) as benefits from tutoring.

These results indicate that peer tutoring is not only effective for reading comprehension, it is also advantageous to student engagement and motivation to read. Teacher responses to peer tutoring were also overwhelmingly positive.

Kim, et al., (2004) reviewed 21 group design intervention studies to examine the effects of graphic organizers on reading comprehension for students with learning disabilities. The authors developed a set of specific criteria to determine eligible studies to be reviewed. One requirement was for all students to be in grades k-12. Another requirement was all students must be identified with a disability. The research must have a design that is either a treatment-comparison design or a single-group design. Finally, the research must include a dependent and an independent variable. The study included a total of 848 students with LD.

Extensive coding was used to organize the applicable information from each intervention study. An interrater reliability of .96 (range = .75- 1.00) was found. The effect size,  $d$ , was calculated for studies that contained satisfactory statistical information. Effect size was calculated as the difference between the interventions group's mean posttest score and the comparison group's mean posttest score for treatment-comparison design studies. Effect sizes were interpreted using Cohen, 1988, as cited in Kim, et al., 2004 guidelines: 0.2 small effect size, 0.5 medium effect size, and 0.8 large effect size.

Six of the 21 studies were reported in one article (Bos & Anders, 1992, as cited in Kim, et al., 2004), while another journal article had three studies (Horton, Lovitt, & Bergerud, 1990, as



cited in Kim, et al., 2004). The authors reviewed a total of 15 journal articles containing a total of 21 separate intervention studies.

Every study included group designs or more specifically, studies utilized either a treatment-comparison design (n = 16) or a single-group with multiple treatment design (n = 5). A cross-study investigation reported four types of graphic organizers. 1. Semantic organizers include semantic mapping, semantic feature analysis, and semantic/syntactic feature analysis (n = 9; Anders et al., 1984, Kim, et al., 2004, Bos & Anders, 1990, as cited in Kim et al., 2004, Bos & Anders, 1992, as cited in Kim et al., 2004 Studies 1, 2, 3, 4, 5, and 6; Bos et al., 1985, 1989, as cited in Kim, et al., 2004). Cognitive maps with a mnemonic are enforced by a teacher/researcher or student to develop a cognitive map through the use of a mnemonic.

3. Cognitive maps without a mnemonic demonstrate a variety of concept relationships in a unit (n = 7; Darch & Carnine, 1986, as cited in Kim, et al., 2004, Darch & Eaves, 1986, as cited in Kim, et al., 2004, Griffin, Simmons, & Kame'enui, 1991; as cited in Kim et al., 2004, Horton et al., 1990, as cited in Kim et al, 2004, Studies 1, 2, & 3; Sinatra et al., 1984, as cited in Kim et al., 2004). 4. Framed outlines are represented by lesson outlines or overviews that help determine the main ideas and important details (n = 2; Darch & Gersten, 1986; Lovitt et al., 1986, as cited in Kim, Vaughn, Wanzek, and Wei, 2004).

The duration of the interventions between studies varied greatly. In 19 of the studies, interventions lasted between 1 week and 3 weeks, which ranged from 2 to 12 sessions. The other two studies contained interventions that lasted 12 to 16 weeks and didn't report the total number of sessions (Lovitt et al., 1986; Sinatra et al., 1984, as cited in Kim et al., 2004). Either teachers (n = 13), researchers (n = 6), or study teachers- researcher (n = 2) delivered the interventions.

Findings showed that in eight of the nine studies, semantic organizers correlated with large effect sizes ( $d = 0.81-1.69$ ). The ninth study displayed a medium effect size ( $d = .40$ ; Bos & Anders, 1992, Study 5, as cited in Kim et al., 2004). Students who used cognitive maps with mnemonics outgained the ones using traditional reading techniques on a reading comprehension test ( $d = 0.91$  and  $0.81$ , respectively). Interestingly, student-generated cognitive organizers were more effective than ones generated by experts. Students utilizing cognitive maps without a mnemonic demonstrated higher comprehension scores than comparison conditions (i.e., typical reading instruction) in two treatment- comparison group design studies ( $d = 1.79$  and  $1.34$  respectively; Darch & Carnine, 1986; Darch & Eaves, 1986, as cited in Kim et al., 2004). However, Griffin et al., 1991 found cognitive maps did not significantly bolster reading comprehension scores of students with LD ( $d = 0.50$ ,  $p > .05$ ); this may have resulted from similarities between the comparison group and the intervention condition. Framed outlines were reviewed in two studies and the finding revealed students using framed outlines significantly outperformed those in comparison conditions (i.e., reading basals) on a reading comprehension test ( $d = 1.79$ ; Darch & Gersten, 1986, as cited in Kim et al., 2004).

This lead to impressive results. Effective outcomes were revealed for elementary and secondary students for the use of graphic organizers. It is important to note that the majority of reading comprehension measures used were developed by the researchers themselves.

Manset-Williamson and Nelson (2005) compared the use of two supplemental balanced and strategic reading interventions that targeted decoding, fluency, and reading comprehension of upper-elementary and middle school students with reading disabilities. The study consisted of 21 participants ranging in ages 9 to 14 years ( $M = 11$  years, 6 months;  $SD = 1$  year, 5 months).

Participants were randomly assigned to two treatment conditions. The treatment conditions were delivered one-on-one four days per week, for one hour per day, for a total of 20 hours.

Both treatment conditions incorporated the same training in phonological awareness/analysis, strategic decoding, and reading fluency, referred to as Phonemic Awareness/Analysis, Decoding, and Fluency Instruction (PDF). Tutors provided direct instruction, modeling, and guided and independent practice. Approximately 35 minutes per session was devoted to teaching strategy instruction for comprehension and decoding. The final component was reading fluency, which required rereading.

Guided instructional procedures allowed tutors to model specific comprehension strategies for students, such as prediction, summarization, and question generation. This condition was based on techniques used in the assorted manifestations of guided reading (Cunningham & Allington, 1999; Fountas & Pinnell, 1996, as cited in Manset-Williamson & Nelson, 2005). This condition was named PDF/GR (Phonemic Awareness/Analysis, Decoding, and Fluency Instruction + Guided Reading). Explicit instruction in reading comprehension and self-regulatory strategies is referred to as PDF/EC (Phonemic Awareness/Analysis, Decoding, and Fluency + Explicit Comprehension). During explicit comprehension procedure students were introduced to the mnemonic “SUPER-G” that stood for: Set goals, Use prior knowledge, Predict what you think will be in the text, Explain the main idea in your own words, Retell the most important points, and Give yourself feedback. Worksheets were used to teach the strategies.

A randomized comparison group design was used to arbitrate the effectiveness of the more explicit PDF/EC and PDF/GR reading interventions. Both tutors and participating students were assigned randomly. Paired sample t-tests were used to investigate the difference between

posttest scores on the dependent measures and pretest scores for each intervention. A one-way analysis of covariance (ANCOVA) was used with posttest scores as dependent variables and pretest scores as covariates to identify the differences between treatments on dependent variables.

**Table 2: Outcomes for Reading Measures**

Guided Reading				Explicit Comprehension			
Measure	Pre	Post	Gain	Pre	Post	Gain	Between Groups a
Retell Quality	1.5	2.9***	1.4	1.6	4.2***	2.6	4.8**
SD	1.1	(2.9)b	1.2	1.2	(4.1)	2.5	
Main Idea	.5	.9**	.5	.6	1.4**	.9	5.8**
SD	.4	(.9) .5	.5	.6	(1.4)	.7	
Multiple Choice c	5.2	6.2	.9	5.8	7.4**	1.7	1.0
SD	1.8	(6.3) 2.2	3.0	1.9, 2.7	(7.4)	2.2	
L-W Ident.	77	80.9**	3.9	69.8	70.1	.3	3.6*
SD	7.3	7.5	5.2	13.7	13.2	2.4	
Reading Fluency	74.6	79.5**	4.9	72.1	75.9**	4.6	.02
SD	7.3	6.9	4.6	6.4	8.8	3.9	
Passage Comp.	79.2	78.7	-.5	70.3	75.6*	5.2	3.4*
SD	7.5	8.7	7.7	17.4	14.5	5.6	
Word Attack	85.5	88.7**	3.3	80.2	84.8*	4.6	.32
SD	5.5	6.0	3.6	11.2	6.6	6.4	

Note: Scores from WJ-3 are age-based standard scores

a) F-scores, b) Scores in parentheses represent adjusted posttest means for ANCOVA, and c) Multiple-choice scores represent the average items correct out of 12.

\*P < .1. \*\* P < .05 \*\*\* P < .01.

Overall, both treatment conditions responded in a positive manner in regards to the tutoring as measured by the social validity interview. The program was described by students as “fun”, “cool”, “great/good”, and “helpful”. Students in both treatment conditions made improvements on the most immediate measure of reading comprehension: passage oral retell.

Kim et al., (2006) examined the effects of computer-assisted comprehension using a computer program, Computer-Assisted Collaborative Strategic Reading (CACSR) developed by researchers. The study was conducted on 34 students with disabilities.

Students in the intervention group received the CACSR intervention, which lasted 50 minutes and consisted of 50-minute sessions two times per week over 10 to 12 weeks. A total of 16 students participated in the intervention group while 18 students participated in the control group. Students in the comparison group received services in a resource reading class. CACSR provides students with an individualized, interactive reading comprehension program. The intervention includes feedback for all students. Students in the control group received resource reading instruction and language arts instruction.

Students for both groups took a pre and posttest. Every participating intervention teacher was trained on CACSR implementation. At the end of the intervention all participating teachers for the CACSR group and their students were interviewed. The program consists of two parts: (a) Learning collaborative strategic reading (CSR), and (b) Using CSR to Learn. Students start out working Learning CSR and then move to Using CSR to Learn. The Learning CSR includes: preview, click and chunk, get the gist, and wrap-up. Every section includes instruction on what each strategy is, when it is used, why it is important, and how each strategy is used.

The comparison condition was comprised of two teachers’ classes that included a reading resource class and students in a special education resource language arts class. Both classes

lasted 50 minutes five times a week. These classes focused on reading fluency, vocabulary, and comprehension. They paired students in groups of two and had one student read while the other monitored errors during the 1 minute timed reading. Then, they would reverse their roles. Vocabulary instruction consisted of students using dictionary to identify unknown words. Comprehension instruction allowed students to read passages and answer questions. Both teachers had students in the CACSR and comparison conditions.

The Woodcock Reading Mastery Test-Revised Passage Comprehension (WRMT-R PC) subtest was used as a pre and posttest measure of students' reading comprehension. A proximal measure was developed to test the students' abilities to write the main ideas of and asking questions about individual passages. This assessment was also given at both pretest and posttest.

An ANCOVA using the WRMT-R PC scores revealed that the experimental (CACSR) group outperformed the comparison group on the posttest Passage Comprehension scores,  $F(1, 31) = 4.75, p < 0.5$ . The SMD effect size was .50. Statistically significant differences between the groups was demonstrated using the adjusted posttest measures for Question subset,  $F(1, 30) = 11.34, p < .01$ . The SMD effect size was 1.18.

Qualitative results show the majority (12 out of 16) saw the efficacy of the CACSR intervention in a positive manner. The four students that did not like the CACSR described it as "boring." Students identified a variety of strategies that they found to be helpful, including click and clunk, get the gist and wrap-up. All but one student felt that the CACSR intervention helped them improve their reading.

Overall, the results revealed students significantly improved their reading comprehension. Standardized mean difference (SMD) displayed positive outcomes that support the use of the CACSR intervention (SMD = .50-1.18). Higher effect sizes were found on

researcher-developed measures ( $SMD = .77 = 1.18$ ) than on standardized measures ( $SMD = .50$ ). CACSR's built-in recording function helps started instruction to meet students' needs.

Fritschmann, Deshler, and Schumaker (2007) used an inference strategy on eighth grade students, including seven with learning disabilities. The study involved a total of eight 8th grade students from an urban midwestern community. Instruction was provided for two groups of four students each during different class periods.

The inference strategy was created to help students make meaning out of clues provided in text and respond to a wide variety of inference questions. Four types of questions were deemed most important after extensive reviews of standardized tests. The four types that emerged are: purpose, main idea/summarizing, predicting, and clarifying.

The strategy focused on five steps. Step 1, "Interact with the passage," involved students interacting with the passage and the questions. During the second step, "Note what you know," students were required to activate their background knowledge or experiences they have related to the topic and questions. They must underline any words that signal what to look for in the passage. The third step, "Find the clues," had students read the passage and find the clues that are directly related to keywords in the questions and then underline those words. The fourth step, "Explore more details," prompts students to look for any extra clues that help support the contingent answers they have selected. The final step, "Return to the question," asks students to go back to every question and make sure every question has an answer that has been selected and marked. The mnemonic "INFER" was developed to help students remember the steps.

Students were required to take several tests for this study. They took a strategy-use test to analyze and categorize literal and inferential questions. Prior to instruction students used 0% of the strategies included. During instruction that number increased to 66%. Upon completion



of the study, 82% of the strategies were being utilized. A Friedman Test and follow-up comparisons showed a significant difference between the students' baseline and post-instruction strategy-use scores ( $p = .012$ ). For the criterion-based comprehension test, the mean baseline score was 32%. During instruction the students answered a mean of 77% of the questions correctly. Post-instruction scores went up to a mean score of 82%. The maintenance test score after students completed the whole program equated to 78.67%.

These results indicate students with disabilities can learn to use a strategy to answer numerous inferential questions. Small group instruction may be a requirement in order for there to be similar results. Additionally, students' satisfaction with regards to their reading improved.

Spencer and Manis (2010) conducted a study that used a randomized experimental design to test a fluency intervention program on the word-identification and reading-comprehension outcomes of 60 middle-school students with severe reading delays. The study implemented many of the recommendations from meta-analyses of fluency studies: (a) a relatively long implementation period, (b) administration of the intervention by an adult, (c) regular corrective feedback, (d) a system for moving students into progressively more difficult material, and (e) systematic record keeping (Chard et al., 2002; NPR, 2000; Therrien, 2004, as cited in Spencer & Manis, 2010).

The study took place at two middle schools on the outskirts of a large urban city on the west coast. Participants included 17 girls and 43 boys in grades six through eight, ranging from 10 years 11 months to 15 years old. The GORT-III and the WRMT-WI assessments were used to determine eligibility for the study. The assessments were designed to measure the students' reading fluency and comprehensions.

Participants were assigned randomly to one of two groups. The experimental group used Great Leaps Reading (Campbell, 2005, as cited in Spencer & Manis, 2010), which consists of three levels: sounds or individual words, short sight phrases, and connected text. Students worked for 10 minutes with an assigned paraprofessional. Participants did 1 minute timed readings and were placed with more challenging readings if they had less than two errors. If they had more errors they reviewed them with the paraprofessional and the students practiced the page one more time. Progress was graphed by the students.

Students in the control group also worked 10 minutes per day with individual interventions. However, they worked on general study skills using the Skills for School Success program. This is a research-based program that focuses on using textbooks, taking tests, keeping track of assignments, and study (Archer & Gleason, 2002, as cited in Spencer & Manis, 2010). Third or fourth grade reading level materials were used based on individual student ability.

Results show that the experimental group made significantly more progress than the control group on the Phonemic Decoding Efficiency assessment ( $p = .025$ ), with an effect size of 0.41 (Test of Word Reading Efficiency (TOWRE); Wagner, Torgesen, & Rashotte, 1999). The experimental group also made statistically significant gains in mean residualized gain scores (RGS) for GORT-III Rate ( $ES = 0.59$ ), GORT-III Accuracy ( $ES = 0.62$ ), and Gort-III Passage ( $ES = 0.61$ ) when compared to the control group. No significant difference was found between the experimental and control groups on the RGS of the Woodcock Comprehension assessment.

The results indicate that the interventions were successful in improving reading comprehension. Students in the experimental group made a lot more progress than the control group. The majority of literature aligns with the Great Leaps Reading Program, which has clear performance criteria for the students, systematic progression into harder materials as students

master each level, implementation by adults, and incorporation of regular error correction and feedback.

Jitendra et al., (2011) evaluated the quality of published group and single-subject design studies that support cognitive strategy instruction. This comes after Gersten et al, (2005, as cited in Spencer & Manis, 2010 and Horner et al. 2005, as cited in Spencer & Manis, 2010), spent time advocating for the evaluation of these strategies. The authors reviewed 18 group studies and 7 single-subject design studies and looked at the average effect sizes and percentage of data that overlapped (PND).

Gersten et al. (2001, as cited in Jitendra et al., 2011) conducted a meta-analysis that was intended to investigate the impact of auditory/language-dependent strategies (e.g., summarization, self-questioning, paragraph restatements, collaborative strategic reading, text-structure) and visually dependent strategies (e.g., semantic feature analysis, visual attention therapy, text illustrations) for both expository and narrative texts. Meanwhile, Gajria et al. (2007, as cited in Jitendra et al., 2011), conducted a meta-analysis of reading interventions that looked at expository text comprehension for students with LD.

The authors had to determine what was evidence-based practice. For group design studies they used Gersten et al. (2005, as cited in Jitendra et al., 2011), set of criteria that a practice is evidence-based only if at least two high-quality studies or four acceptable studies support the practice and the weighted effect size (ES) must be significantly greater than zero. Posttests were used to calculate the ES that were given within 2 weeks of the end of the intervention. Horner et al. (2005, as cited in Jitendra et al., 2011), established whether or not the criteria for cognitive strategy instruction was an evidence-based practice for single-subject research design studies. The criteria required: (a) a minimum of five single-subject studies

published in peer-reviewed journals that meet minimally acceptable methodological criteria and document experimental control, (b) at least three different researchers conducted the studies across at least three different geographical locations, and (c) the five or more studies included at least 20 total participants. Most of the studies ( $n = 10$ ; 56%) met or surpassed the minimum criteria across all components.

**Table 3: Interventions for Comprehending Expository Text**

Strategy	Authors
Identifying different text structures	(Backen, Mastropieri, & Scruggs, 1997; Smith & Friend, 1986).
Identifying main idea and/or self-monitoring or self-regulation	(Ellis & Graves, 1990; Graves, 1986; Graves & Levin, 1989; Jitendra et al., 2000; Malone & Mastropieri, 1992; Miranda et al., 1997).
Summarizing main idea	(Gajria & Salvie, 1992).
Using a cognitive map	(Boyle, 1996, 2000).
Engaging in self-questioning	(Wong & Jones, 1982).
Examining question-answer relationships	(QAR; Simmonds, 1992).
Thinking and reading critically	(Darch & Kame'enui, 1987).
Recalling new content-area information through elaborative interrogation	(Mastropieri et al. 1996).
Reciprocal teaching in combination with the QAR strategy	(Labercane & Battle, 1987) or reciprocal teaching adapted as in the POSSE strategy (Englert & Mariage, 1991) or in collaborative strategic reading (CSR; Klingner et al., 2004).

The results of the study indicated that cognitive strategy instruction for teaching comprehensions of expository text is an evidence-based practice for group design studies only.

Most of the studies that didn't meet the group design criteria were more than 10 years old. The analysis revealed that over half of the experimental and quasi-experimental research studies did not meet or partially met the criteria for several components that constitute, or make up essential quality indicators. It is recommended by the authors to have typical agents (e.g., general education or special education teachers) conduct the interventions.

Berkeley, Mastropieri, and Scruggs (2011) conducted a pre-post experimental design with 6-week delayed posttest to determine the effects of reading comprehension strategy (RCS) instruction with and without attribution retraining (AR) on reading outcomes for seventh, eighth, and ninth graders with learning disabilities. The 63 participants were located in a metropolitan school district on the East coast. A special education reading teacher (n = 5), a reading specialist (n = 1), and a trained researcher (n = 1) were the instructors for the study.

Six reading comprehension strategies were used for the RCS lessons: (a) setting a purpose, (b) previewing, (c) activating background knowledge, (d) self-questioning, (e) summarizing, and (f) strategy monitoring. RCS+AR materials included the RCS materials and specific AR content that focused on attribution concepts taught in their lessons: (a) I know lots of good strategies, (b) I will try hard to use the best ones, and (c) I will only have positive thoughts. Read Naturally was the program that was being used at the time by the participating schools to help struggling readers with their fluency and reading comprehension.

Every student participating in the study received instruction over a 4-week period for a total of 360 minutes. Participants for the RCS and RCS+AR were subjected to the following sequence: (a) teacher modeling, (b) guided practice, and (c) independent practice. Students in the RCS+AR conditions also received 10 minutes of AR to help them develop beliefs about reading success and failure. The RN program prescribed students to: (a) make predictions, (b)

practice reading the story using a repeated reading technique, (c) answer implicit and explicit comprehension questions, and (d) graph their fluency progress.

ANOVAS with instructional group ( $n = 2$ ) were utilized on pretest scores of the three instructional groups (RCS+AR vs. RCS vs. RN) for all measures to see if groups showed statistically significant differences prior to intervention. Results showed no significant differences among the three instructional groups for pretesting. A post hoc analyses with Bonferonni adjustment for multiple comparisons declared that both the RCS+AR and RCS conditions scored significantly higher than the RN condition ( $p = .000$  and  $p = .005$ ). These differences displayed large effect sizes (ES) for both RCS+AR ( $ES=1.44$ ) and RCS groups ( $ES = .94$ ). No significant differences were found between the two groups. A follow-up post hoc analyses with Bonferoni adjustment for multiple comparisons was used for the attributions for reading success and it showed that the RCS+AR condition was significantly higher than both the RCS group ( $p = .001$ ) and the RN comparison condition ( $p = .001$ ).

The findings showed that both RCS groups benefited by learning content and showing higher-level thinking about reading. Also, the students in the AR showed more persistence after instruction ended. Findings show that teaching reading comprehension strategies in conjunction with AR is an evidence-based practice. Students in both groups continued to outperform the comparison condition after a 6-week delay. This is significant considering that students generally do not persist with strategy use when reading novel expository material (Vaughn et al., 2000, as cited in Berkeley et al., (2011).

Kim, Linan-Thompson, and Misquitta (2012) examined the effectiveness of analytical factors in instruction for improving the reading comprehension of middle school students with learning disabilities. The meta-analysis reviewed fourteen studies published between 1990 and

2010. The authors identified five critical factors: (1) type of instructional methods, (2) self-monitoring, (3) components of reading incorporated, (4) fidelity of instruction (scripted vs. nonscripted and researcher vs. teacher), and (5) group size. A total of 465 students with LD participated in the combined studies.

Elbaum et al. (2000, as cited in Kim et al., 2012), noted that one-to-one tutoring was efficient, but there was no difference between one-to-one and small group instruction. However, significant differences were reported between one-to-one and large group ( $n = 10$ ), favoring one-to-one instruction. Small group was favored over large group instruction. The search for articles was conducted in two parts: (1) an electronic search of educational databases including Academic Search Alumni Edition, Academic Search Complete, ERIC, and PsychINFO, and (2) reviewing articles in previously published syntheses. This search resulted in a total of 14 studies meeting the criteria.

Results showed that graphic organizers (GO's) had a medium effect on content knowledge test and very low effect on fact quizzes ( $ES = 0.48$  and  $0.07$ , respectively). Student and teacher developed GO's outperformed the students using the teacher-developed GO on comprehension. High ESs were found on posttest for the main idea strategy (mean  $ES = 1.41$ ) and standardized tests (mean  $ES = 0.84$ ). Jitendra et al. (2000), as cited in Kim et al., (2012), reviewed main idea with self-monitoring strategy versus regular reading instruction in the resource room. The author found a high effect on posttests that included training, near-transfer, and far-transfer subtests ( $ES = 3.40$ ,  $1.95$  and  $1.43$ , respectively) and a posttest ( $ES = 2.20$ ). Text structure versus traditional instruction on comprehension was successful in improving reading comprehension of students with LD (range  $ES = 2.14$ - $3.12$ ). Boyle (2010, as cited in Kim et al., 2012), reviewed the effects of strategic note-taking strategy on content recall. The intervention

group scored higher than the control group, and displayed high effects on posttests (range ES = 0.83-1.01) and follow-up tests (range ES = 0.83-0.88).

Findings indicate that instructional modifications are beneficial for improving comprehension, but their effects vary. Some studies showed high effects using GOs while other showed little or no difference between intervention and control groups. Meanwhile, students using the strategies consistently, showed high comprehension scores. The most beneficial strategies were determined as main idea, summarization, and targeting underlying structures. The ESs were high on posttests and on standardized test.

Boudah (2013) introduced the main idea strategy as well as reviewed the research background behind the strategy. The purpose of the main idea strategy is to advance reading comprehension for students with learning disabilities and other students who struggle with reading comprehension. The study reviewed twenty-two students from middle- and high-school. Highly qualified teachers with an average of 18 years implemented the strategy instruction provided in the research study.

The strategy is based on a four-part instructional sequence. Before starting, students take a pretest to evaluate how well they understand what they read, and commit to learning the strategy. Part 2 is teaching the main idea strategy. This component requires teaching prerequisite skills and concepts, describing the strategy to students, paraphrasing, modeling, and verbally practicing the steps of the strategy. Practicing use of the Main idea strategy is the 3rd part. It starts out with controlled practice that starts with reading below the student's current reading level. After this, their main idea score is computed by listening as she or he verbally paraphrases the main idea for each paragraph. The score is calculated by adding the number of main ideas correct and dividing it by the total possible points. After a student has mastered the



Main Idea Strategy with controlled practice passages, they begin using the strategy with grade-level textbooks. Finally they move on to part 4: Post testing students and generalizing strategy use. This test is written at the readability level of the student's current grade. It is important that students are held accountable to demonstrate their transfer of learning. They should be asked if they are using the Main Idea Strategy on a regular basis.

The strategy was taught for approximately a five-month period within one school year. The researcher provided follow-up consultations to the teachers to support implementation. "Mean student performance increased substantially on the posttest, from approximately 15% to 60% on the highlighting measure, from approximately 28% to 90% on the verbal paraphrasing measure, and from approximately 16% to 60% on the comprehension questions measure." (Boudah, 2013, p. 149) According to the teacher report, 100% of the middle school students with disabilities in the study went on to pass their state reading test. Only 63% of them passed the year before.

The results also indicated social validation for the strategy instruction. Teachers responded very well and reported that they observed students transferring the skills to other reading tasks without prompting. A student's ability to understand main ideas has a dramatic impact on academic performance. This program has potential to increase student performance for students who struggle to understand inferential main ideas in their reading.

Sabatini, O'Reilly, Halderman, and Bruce (2014) present data from two assessments designed to work together to provide a more comprehensive view of reading comprehension. A total of 426 sixth grade students completed the GISA assessment while a subsample of 237 students completed both the GISA and RISE skills battery. All participants had informed consent.

The RISE (Reading Inventory and Scholastic Evaluation), is administered through the internet and consists of six subtests: Word Recognition and Decoding, Vocabulary, Morphological Awareness, Sentence Processing, Efficiency of Basic Reading Comprehension, and a traditional Reading Comprehension test (Sabatini et al., 2014). These scores help provide informed educational decision-making for the district, school, and teachers. This individual skill provides a look at whether prerequisite reading skills are barriers to reading success. These skills need to be taken into consideration when determining the meaning of comprehension test scores.

The RISE is a 45-60 minute web-administered field-tested in previous trials (Sabatini et al., 2013). Each RISE scale runs from 300 to 400 with an average standard deviation of about 25 per subtest. A scale score of (SS) of 370 was used as a threshold. The researchers also set 330 as a lower cut point, which allowed students to fall into one of three categories: Proficient (370 and above), Basic (330-369) or Below Basic (below 330).

The second assessment was the GISA (global integrated scenario-based assessment). It is intended to measure a wider look at reading literacy ability. The GISA measures comprehension in authentic reading situations. Test takers are given a specific purpose for reading and a set of materials (e.g., websites, blogs, newspaper articles, Op Ed pieces, authoritative texts, etc.). Their progression through the materials is very structured which allows them to demonstrate different dimensions of comprehension.

The GISA is a 45-minute, web-administered, scenario-based examination that looks at reading comprehension. An example provided by the authors was a brief description of the Organic Farming Form. Students read a form and determined and answered several questions regarding organic farming. It included texts on techniques used in organic farming. Each test includes multiple-choice (MC), constructed-response (CR), and graphic organizer (GO) items.

Results indicated a “mean total correct for GISA was 20.0 of 37 (SD = 8.93), alpha reliability (n = 237) was  $\alpha = 0.90$ , and the split half reliability was  $r = .75$ . A significant one-way ANOVA ( $p < .001$ ) showed a difference in GISA scores among the groups” (Sabatini et al., 2014, p. 39). The pattern of correlations among measures shows a strong relation among all the measures ( $r = .704-.836$ ), which shows all the component skills measured by the RISE are directly correlated, or related to comprehension on the GISA.

These results are promising for future insights into students’ reading abilities. The fact that they correlate suggests that both are probably measuring some of the same aspects of reading comprehension. We do see that lower level skills may be necessary, but not enough of a prerequisite into higher levels of reading performance. However, the results show that having high levels of reading sub skills does not necessarily mean high levels of performance on more complex measures of comprehension.

Hock, Brasseur-Hock, Hock, and Duvel (2015) examined the effects of a comprehensive 2-year reading program called Fusion Reading. The program is designed to reduce the achievement gap of middle school students with reading disabilities. Authors reviewed a couple of different studies that were conducted in a medium sized urban school district in the Midwest. A total of 40 sixth grade special education students participated. There were a total of 8 sixth grade special education teachers in the studies; 5 teachers taught Fusion Reading (FR), the experimental intervention, while the other 3 teachers taught Corrective Reading, the current program being utilized by the district.

Fusion Reading was the intervention used and was taught in small groups (3-8 students) who met on a regular schedule in 50-min sessions five times a week throughout the school year. The program is designed to be a 2-year supplemental reading program and includes seven

instructional units. FR does not replace language arts or other core classes. Four main components are included in the program: (a) Word Level Skills, (b) Comprehension, (c) Motivation, and (d) Assessment. Each session contains five sections: (a) Warm-up (5 min), Thinking Reading (12 min), Explicit Instruction (20 min), Vocabulary (18 min), and Wrap-up (5 min).

The comparison condition was Corrective Reading (CR). CR is designed to promote decoding, fluency, and comprehension skills of students in Grades 4 to 12 who are below grade level for reading. For this study, CR was taught in small groups (4-8 students) that also met regularly in 50-min sessions five times a week throughout the school year. All staff members in this study had been provided PD in implementation of the program.

The research design for this study was a quasi-experimental matched comparison group design. Study 1 used grade analysis and used it as a pre- and posttest. Then, repeated measures analysis of covariance (RM ANCOVA) was performed to reviews the changes in overall GRADE scores between students who were administered the FR intervention and those who were in the comparison group. The MAP (Measures of Academic Progress) reading measure was administered for the second study. MAP scores are aligned with the common core standards and provide a snapshot of how well a student is doing in a subject at that particular time. Multi-level modeling (MLM) was used to estimate how MAP scores in this study changed over time.

For study 1 results indicated a significant difference between the intervention and comparison group over time,  $F(1,32) = 6.67$ ,  $p = .015$ , Hedge's  $g = 1.66$ . A second RM ANCOVA was conducted on MAP scores from Year 1. Significant differences were found between the experimental and comparison groups over time;  $F(1, 27) = 5.16$ ,  $p = .031$ , Hedge's  $g = 1.04$ . The second study displayed students' MAP scores for the intervention group are

estimated to be 8.00 points higher than students with 0 years of Fusion Reading intervention.

Also, MAP scores continue to increase every year of intervention.

Findings from the studies show that students receiving the FR program performed a lot higher on standardized measures of reading than students receiving the comparison group.

Results show the positive impact of FR on student reading achievement. Study 2 showed us that students who received the FR program for longer periods significantly outperformed those who received FR for less time. Students lost some of their gains over the summer, but made up for them the following year.

### **Chapter 3: Conclusion and Recommendations**

The purpose of this research paper was to evaluate the effectiveness of reading comprehension interventions that were primarily targeting middle school students with learning disabilities. Chapter I focused on background information on the topic, while Chapter II reviewed the research literature. In this concluding chapter, I discuss conclusions, recommendations for future research, and the ways these findings can be implemented.

#### **Conclusions**

Eleven of the studies employed qualitative research designs; one of them used both qualitative and quantitative measures, while another study used a quasi-experimental design to measure the level of effectiveness. A variety of studies and strategies were examined that included various treatment sessions and durations. Overall, all of the studies displayed positive changes in students' reading performance.

Three of the studies included a meta-analysis (Kim et al., 2004; Jitendra et al., 2011; Kim et al., 2012) that looked at several different reading interventions. Three of the studies contained research from the University of Kansas. The *Inference Strategy* (Fritschmann et al., 2007), the *Main Idea Strategy* (Boudah, 2013), and the *Fusion Reading Program* (Hock et al., 2015) all displayed hopeful findings. The computer-assisted collaborative strategic reading program (Kim et al., 2006) and the scenario-based and component reading skills measures to understand the reading behavior of struggling readers (Sabatini et al., 2014) were web-administered. One study focused on advanced story maps (Gardill & Jitendra, 1999), and one focused on students with learning disabilities tutoring one another to improve reading comprehension (Mastropieri et al., 2001). Manset-Williamson and Nelson (2005) included decoding, fluency, and reading comprehension in their intervention, while Spencer and Manis (2010) reviewed the impact a

fluency intervention has on comprehension outcomes for middle-school students. Spencer and Manis found gains in fluency, but not in reading comprehension. One study (Berkeley et al., 2011) examined the effects of attribution retraining (positive self talk) on reading comprehension.

The number of participants ranged from eight students (Fritschmann et al., 2007) to 426 students (Sabatini et al., 2014). Duration of intervention time ranged from 15 hours (Fritschmann et al., 2007) to two years (Hock et al., 2015).

### **Recommendations for Future Research**

Several authors discussed the need for further research for comprehension strategies utilized on struggling middle school students. Most of the research is geared toward the needs of struggling elementary students. A lot of the studies included either middle school and high school students, or middle school students and elementary students. Further research is needed in this area to ensure the strategies are appropriate for middle school learners.

Researchers need to do more investigating to understand the strengths and weaknesses of readers who struggle to achieve proficiency in reading. Manset-Williamson and Nelson suggest that there is a “gap in our understanding of how to best teach older children with reading difficulties to comprehend what they read” (Manset-Williamson & Nelson, 2005, p. 61). Another common issue presented by the authors was a small sample size or the duration of the intervention.

Future research is also recommended on graphic organizers and whether or not the skills can be generalized to standardized testing. Most of the research is on teacher instruction with graphic organizers not on students’ independent use of graphic organizers. In the research

synthesis conducted by Kim et al., (2004) only two studies included standardized reading tests and they did not demonstrate positive effects on reading comprehension.

Considering the number of schools with technology in the hands of their students, it seems practical that more research is needed on effective web-administered reading comprehension interventions.

Other limitations included the number of participants. For example, Gardill and Jitendra (1999) were limited to six participants who were provided more individualized attention than most students would receive. Another example of this would be from Mastropieri et al., (2001) where 24 students participated in the intervention. The authors recommend future research being devoted to analyzing the variables that contribute to comprehension improvement. They also recommend future research containing an increase in sample sizes and more classrooms.

### **Implications for Current Practice**

The findings from the studies contain valuable information to the field of special education. As a middle school special education teacher, I currently work in a 6th grade English class with students reading anywhere between a 2nd-5th grade reading level. I am also teaching a 7th grade reading plus class that focuses on fluency and comprehension. Their range is similar (3rd-6th grade). For both of these classes it is my job to determine what interventions I should be using. It can be a difficult task. Fortunately, my findings provided me some comfort, but also created an intense desire to do more for my students.

I am excited to implement some of these strategies and put them into practice. One of the specific interventions or strategies that come to mind is the Kansas Reading Strategies. The strategies require a buy-in from the students and allow students to track their individual progress. These will be implemented in my English class as well as my reading plus class. I would also



like to discuss my findings on *Fusion Reading* with my administrators. After reviewing the impressive research that demonstrates statistically significant results, I would like to discuss the possibility of using the curriculum for our reading plus class. This class already has the recommended parameters in place such as five 50-minute class periods per week and 2-3 years to implement the curriculum.

Most of the studies I found require curriculum that can cost the district a lot of money. While I have not invested time to look at all of the costs, I can imagine that it would cost a lot of time and money to implement the programs effectively. A school district would be wise to look at the research and evidence before deciding to spend that amount of money on a program.

As a result of this review of literature, I have found a wide variety of strategies that I can implement immediately. With this, I am motivated to narrow the achievement gap of my students' reading comprehension levels.

### **Summary**

Reading comprehension is essential for all students' across every content area. Once a student gets to middle school it is vital that they are able to read to learn instead of just learning to read. The findings show just how important the prerequisite skills are for achieving reading proficiency at the middle school level.

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