READING COMPREHENSION INSTRUCTION IN THE MIDDLE GRADES FOR

STUDENTS WITH LEARNING AND BEHAVIOR PROBLEMS

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READING COMPREHENSION INSTRUCTION IN THE MIDDLE GRADES FOR STUDENTS WITH LEARNING AND BEHAVIOR PROBLEMS

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READING COMPREHENSION INSTRUCTION IN THE MIDDLE GRADES FOR STUDENTS WITH LEARNING AND BEHAVIOR PROBLEMS

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David Alan Crowe, son of David Crowe and Debra Moore, was born on February 7, 1977, in Montgomery, Alabama. He attended public and private schools in Alabama and graduated from Greenville Academy in Greenville, Alabama in 1996. In 2000, he received a Bachelor of Science in Elementary Education from Auburn University. David also received his Master of Science in Education from Auburn University in 2001 from the Department of Rehabilitation and Special Education. During this time, he taught in the Troup County School System in LaGrange, Georgia. After receiving his degree, he was accepted into the doctoral program in the Department of Rehabilitation and Special Education. In 2004, David decided to join the Rockdale County School System while he finished his degree. David is married to Laura Michelle Crowe, and they have one daughter, Kirsten McKenzie Crowe.

DISSERTATION ABSTRACT

READING COMPREHENSION INSTRUCTION IN THE MIDDLE GRADES FOR STUDENTS WITH LEARNING AND BEHAVIOR PROBLEMS

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National and state measures suggest students with learning and behavior problems demonstrate difficulty with comprehension tasks. Reading comprehension is essential for students with learning and behavior problems to be successful throughout their lifespan. Many studies have examined reading comprehension strategies with students with learning and behavior problems; however, few have examined isolated comprehension components. Even fewer of the reading comprehension studies have been conducted in the regular education classroom. Given the inclusive movement in today's schools, reading comprehension research in the general education classroom is needed to suggest strategies that work best with students with learning and behavior problems.

The purpose of this study is to provide a comparison of two instructional strategies aimed at improving reading comprehension achievement for students with learning and behavior problems in the general education environment. Explicit rule-based instruction and traditional basal instruction methods were the two instructional approaches under investigation. The explicit rule-based method emphasized the use of instructional sequences, pace of instruction, corrective feedback, as well as other teacher directed components during instructional sessions to develop students' skills; while the traditional basal method relied heavily on prior knowledge, open-ended questioning, and motivational activities to develop students' comprehension.

Forty-one students with learning and behavior problems from one large school system in the Metro-Atlanta area participated in the study. The students were randomly assigned to one treatment group: explicit rule-based model or traditional basal model. Instruction occurred over a consecutive 4-week period for 20 minutes per instructional session. The two levels of intervention were compared on unit tests, a maintenance test, and a gain test score from a reading comprehension composite score. Results of this study suggest to retain the null hypotheses proposed in the study. Students with learning and behavior problems benefited from the instructional sequences that were used in the study.

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My dedication to complete this dissertation is due to my wife and father who stood by me when times were rough. Similarly, I would like to extend my thanks to my dissertation committee. Special thanks to Dr. Craig Darch, without his excellent mentorship and diligence this process could have not been completed.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. INTRODUCTION

> "*. . . students who do not possess basic early reading skills by the end of third grade will likely continue to struggle with reading throughout their school career . . .*" (Bryant, 2003, p. 70)

In elementary school, students with learning and behavior problems, unlike typically achieving students, realize they do not have many essential skills that are necessary for successful reading experiences. In addition to students' limited word recognition and poor reading fluency, students that use insufficient strategies when reading demonstrated significant deficits in reading comprehension (Morris, Ervin, & Conrad, 1996). Gersten, Fuchs, Williams, and Baker (2001) suggested that students with learning and behavior problems do not possess the essential comprehension skills for understanding both narrative and expository text. The authors also noted that students with disabilities required more explicit, teacher-directed instruction to acquire critical comprehension skills. Furthermore, other authors indicated that nonreaders make little or no progress acquiring reading skills in whole-class, inclusion settings, even with substantial support (Klingner, Vaughn, Hughes, Schumm, & Elbaum, 1998).

Cazden, John, and Hymes (1972) suggested that "discontinuities" between teachers and students are a possible explanation for student difficulties with comprehension activities. Discontinuities refer to the language barrier that exists between

a child's home and school environment. In 1983, Heath found that when children from differing communities entered school, only the middle-class students whose language was similar to that of the teachers were successful during reading comprehension activities. In this sense, teachers must possess a clear understanding of children's backgrounds in order to use language that emphasizes the understanding between teacher and student. If the language barrier continues between the language a child experiences at home and school, the achievement gap between students with learning and behavior problems and their typical achieving peers may widen.

Statement of the Problem

Much of the intervention research in the area of reading has focused on decoding leading to an increasing demand for intervention studies for improving comprehension skills. Studies that have measured comprehension skills fail to compare instructional programs or methods. In fact, many of the intervention studies have measured pre- and post-test gains using a single instructional strategy to improve the comprehension skills of adolescents. These findings suggested that some form of instruction on comprehension skills is better than no instruction. The focus of this paper is to provide a thorough, comprehensive, and integrative review of the research interventions for teaching middle school students with learning and behavior problems comprehension skills.

National Relevance

In 2004, the U.S. Department of Education reported that one-third of the nation's third-grade children were below the minimum proficiency in reading. Earlier, the NAEP (2002) reported that 36% of fourth-grade students were performing at a "below basic"

reading level. This provides evidence that the effectiveness of reading comprehension instruction is not meeting the needs of many students. Similarly, a national report in 1994 showed that approximately 44% of fourth-grade children read below grade level for all students assessed (United States Department of Education, 1994). Other national reports (1996; 1998) indicated that 30% of eighth graders and 25% of twelfth graders read below their respective grade level. Also, fewer than 30% of middle school students comprehend grade-level text beyond literal understanding (Lyons, 1997). Another report suggested of the youth identified with reading disabilities in the third grade remained reading disabled in the ninth grade (Lyon, 1996). Given the disparity of students' reading levels, public attention is being drawn to instruction decisions regarding best practices for reading in the public school system.

In an effort to increase the accountability within the individual school systems, high-stakes testing has required each state to determine the manner that student achievement in reading will be measured. State mandated tests (e.g., Stanford Achievement Tests – Ninth Edition [SAT-9], Georgia Criterion Referenced Competency Test [CRCT]) use comprehension items to measure reading achievement in the middle grades. Also, teaching students with learning and behavior problems reading comprehension concerns many content area teachers that are not proficient in teaching decoding or comprehension strategies to students in the middle grades. Additionally, standardized tests for middle school children may be poor indicators of comprehension achievement for students who have difficulty decoding text. Thus, a solution to the standards of academic measurement and instructional strategies used by teachers and students remains unanswered.

Statewide Relevance

The Georgia State Department of Education (2005) reported that 22% percent of students did not meet the minimum criterion performance on the state mandated criterion-referenced competency test (CRCT) in the area of reading. The minimum acceptable performance for the CRCT was for each student to correctly answer 50% of the items on the reading subtest. Hence, careful attention must be given to the unique instructional modifications needed when students with learning and behavior problems are reading narrative and expository text.

Georgia's high stakes assessment, the CRCT, measures students' abilities to interact with text, and construct meaning before, during, and after reading by using strategies to integrate information from the text with the reader's prior knowledge (Pressley, Brown, El-Dinary, & Afflerback, 1995; Readance, Bean, & Baldwin, 1998). Constructing meaning can be problematic for students with learning and behavior problems because it requires them to use unfamiliar strategies. In fact, some researchers suggested that comprehension of text depends on the student's ability to activate prior knowledge and their ability to apply it to content area topics (Bryant & Lehr, 2001; Carr & Ogle, 1987; Pressley, Brown, El-Dinary, & Affleerback, 1995). For students who do not possess the background knowledge or specific reading strategies, comprehension of content area text may appear to be an impossible task to accomplish.

Middle School Milieu

Despite reading intervention programs during the primary grades, most students with reading disabilities continue to experience learning problems well into their adolescent years (Bunting, 1996). While it is important to consider that students at the

intermediate or middle grade level are capable of many things, developmentally most children at this age are still functioning at the concrete operational stage (Winn, Regan, & Gibson, 1991). Bryant, Linan-Thompson, Ugel, Hamff, and Hougen (2001) suggested that teachers believe that middle school is the last chance to teach reading comprehension strategies to struggling readers.

Adding to the challenges that middle school teachers face, students with learning and behavior problems may experience ever-growing dangers that many adolescents confront. Some adolescents encounter new and vulnerable exposure to the dangers of drugs, violence, and sex. Middle schools must overcome these obstacles to create a safe environment where students can learn successful reading comprehension strategies. Hence, teachers are challenged with the difficult task of educating the youth of the nation as community environments change.

Middle schools are replacing the departmental structure of the junior high with interdisciplinary teams (Bunting, 1996). Middle school teachers, in every content area, are given the responsibility of teaching students reading strategies. However, many middle school teachers do not have the qualifications or experience for teaching reading. This responsibility may be increasingly difficult due to the personal-social needs, as well as the demands that must be given to students' academic requirements (Stewart, 1989). In the middle grades (i.e., grade 6, grade 7, and grade 8), Georgia currently evaluates students using the CRCT to measure achievement in each content area (e.g., reading, language arts, math, etc.). Students who fail to meet the standard may be sent to summer school, retested, or retained.

There are many other issues that may interfere with a student's academic achievement in the area of reading comprehension. Concerns about the behavior of middle grades students, for instance, have gained attention from parents and professionals in the field. In some cases, students identified as having a learning disability exhibit atypical behaviors, and many students identified as having an emotional/behavior disorder have extreme needs in learning (Vaughn, Levy, Colman, & Bos, 2002). In fact, the authors reported that 50% of students with an emotional/behavior disorder meet one or more criteria of learning disabled. Kauffman, Cullinan, and Epstein (1987) revealed that 75% of the students with emotional/behavior disorders tested one year below grade level on reading comprehension activities. However, Sugai, Lewis-Palmer, and Hagan-Burke (1999/2000) reported that improvements in behavior were directly linked to improvements in academic success. Thus, teachers that are able to improve the academic ability of students with learning and behavior problems may have fewer behavior problems in their respective classrooms.

The ability to decode and comprehend text must be acquired early for students to be successful in general education classrooms by the time students reach middle school. For example, Boulineau, Fore, Hagan-Burke, and Burke (2004) found a substantial amount of research conducted and published in the area of reading; however, decoding was the primary interest of many researchers, not comprehension. In addition, assessments given to students in the middle grades (i.e., 6^{th}, 7^{th}, and 8^{th}) to measure reading achievement are constructed from reading comprehension items. Hence, research in the area of comprehension to justify instructional practices is needed for many instructional programs.

Data from the U.S. Department of Education (1999) indicated that students with learning and behavior problems constitute 7% of the school-age population (as cited in Gersten, Fuchs, Williams, & Baker, 2001). Also, Kavale and Reece (1992) highlighted that the majority of students with learning disabilities (at minimum of 80%) experience problems with learning to read and reading for understanding. Many students with learning and behavior problems that have been promoted to higher grades will continue to fail on reading tasks if interventions are unsuccessful. If unsuccessful instructional interventions continue, students with learning and behavior problems will experience wider achievement gaps. Rigorous data collection on instructional practices is vital to the future success of students with learning and behavior problems reading achievement.

Currently, there is a demand for accountability with all students, and in some instances, more accountability for students with learning and behavior problems. Students with learning and behavior problems, like typically achieving peers, must take assessments to measure academic growth. The instructional strategies that are taught to students with learning and behavior problems must prepare them for high stakes testing situations. Morocco (2001) suggested that students with learning and behavior problems improved their understanding of written text when they were engaged in instruction that reflects a rigorous application of (a) instruction designed around authentic tasks, (b) opportunities to develop cognitive strategies, (c) learning that is socially mediated, and (d) engagement in constructive conversations. Hence, best practices that are supported through scientifically based methods should be incorporated into more traditional classrooms that serve a wide range of student abilities.

Instructional Dilemmas in Reading Comprehension Approaches

Vaughn, Levy, Colman, and Bos (2002) suggested that more than any other area, school success is dependent on knowing how to read and understanding what is read. Constructing meaning from text can be especially difficult for adolescents because secondary school content textbooks readability levels are often higher than students assigned grade levels (Mastropieri, Scruggs, & Graetz, 2003). Several other issues related to reading comprehension instruction include: (a) the time allocated, (b) individual and group instruction, (c) the quality of instruction, (d) independent seatwork and worksheets, and (e) bottom-up versus top-down approaches to reading instruction. These issues will be further analyzed because of their impact on students' reading comprehension achievement.

Time allocated for reading instruction. Educators have time constraints to accomplish specific reading objectives. Vaughn, Levy, Colman, and Bos (2002) indicated that time was frequently lost during reading instruction because students were out of the room, waiting, or off-task. Haynes and Jenkins (1986) also indicated that teachers spent more time on correcting inappropriate behaviors than on teaching reading. In fact, as early as 1981, special education received warnings because as much as one-hour each day in special education classrooms were used for management chores and waiting (Leinhardt, Zigmond, & Cooley, 1981). Time allocated for reading must be used wisely if students with learning and behavior problems are to make the gains of typical achieving peers.

Individual and group instruction. The debate over individual versus group instruction continues for professionals in the public education system. Traditional

classrooms contain students with varied ability levels and reading interventions have evolved to balance the instructional level for typical classrooms. For example, it seems that studies conducted prior to 1990 consisted of more small group and individual instruction than those after 1990. Gelzheiser and Myers (1991) found remedial reading teachers spent more time than general or special education teachers on individual rather than group instruction. Students who were provided special education services received more individualized instruction (Haynes & Jenkins, 1986; Olinger, 1987; Ysseldyke, Thurlow, Mecklenburg, & Graden, 1984) and more small-group instruction than their non-disabled peers (Haynes & Jenkins, 1986). Middle schools are focused on developing students' reading skills through the use of interdisciplinary teams. These teams, consisting of four or five teachers, instruct students in the core academic areas (e.g., language arts, science, social studies, and math).

Quality of reading instruction. The quality (e.g., opportunities for responding, specific feedback) of academic reading comprehension instruction plays a critical role in student reading achievement. Ysseldyke, Thurlow, Mecklenburg, and Graden (1984) found that time spent on oral reading varied from just over 3-minutes per day in a resource setting (Leinhardt, Zigmond, & Cooley, 1981) to 13-minutes per day. They further noted that, on average, students with learning and behavior problems spent 6- to 10-minutes per day reading silently. Thus, students spent limited time reading, and teachers spent very limited time on reading comprehension instruction. Vaughn, Levy, Colman, and Bos (2002) observed, after reviewing many reading comprehension studies, that reading comprehension was sorely neglected and, in fact, only one study reported a reading comprehension strategy being taught in 41 observations. Hence, reading

comprehension skills are not explicitly taught in many public school classrooms. Another study found that no higher-level questions were asked of students with learning and behavior problems (Vaughn, Moody, & Schumm, 1998). Also, Gelzheiser and Myers (1991) reported that less than 10% of the time allocated for reading instruction was devoted to reading comprehension instruction. Thus, even in classrooms where reading is taught, reading comprehension activities seem to be neglected for students with learning and behavior problems.

Independent seatwork and worksheets. Initial research suggested that independent seatwork and worksheets are an intricate component to reading instruction. Independent seatwork and worksheets assess student progress. One report indicated that students spent 52% of their time completing individual seatwork while they were in the resource room (Haynes & Jenkins, 1986). Furthermore, numerous studies indicated that students consistently spent a large amount of time during reading in special and general education settings completing worksheets and doing independent seatwork (Allington & McGill-Granzen, 1989; Haynes & Jenkings, 1986; Ysseldyke, Christenson, Thrulow, & Bakewell 1989; Ysseldyke, Thrulow, Christenson, & Weiss, 1987; Zigmond & Baker, 1994). When the majority of allocated class time is spent on independent seatwork and worksheets, many students with learning and behavior problems will continue to experience failure. Assessing student progress is essential when the findings are used to plan for instructional interventions; thus, leading to greater student gains.

Bottom-up versus top-down approaches. Although many educators agree that reading comprehension may be one of the most critical skills a child learns in school, there is less agreement on determining the most effective methods for educating students

with reading comprehension problems (Crowe, 2005). Interventions about effective methods of instruction for students with learning and behavior problems in the area of reading comprehension remain constant. Some specific approaches can be categorized as the "bottom-up" approaches or "top-down" approaches. Reading instruction and corrective feedback can be based on either of these two approaches.

The "bottom-up" approach to reading instruction uses discrete hierarchical tasks to develop quick, accurate, and fluent word identification (Tunmer & Cole, 1991). One strategy that is used in the "bottom-up" approach is corrective feedback. Crowe (2005) described corrective feedback as a teacher who directs the reader to analyze the structure of words and make sound-symbol associations or "sound out" the word. As readers become more proficient in decoding and recognizing a greater number of words, meanings become attached to individual words, sentences, and larger discourse units (e.g., text passages). Furthermore, decoding-based feedback strategies are a widely used procedure for promoting children's word recognition and reading comprehension during oral reading activities. Proponents of the "bottom-up" approach view reading comprehension as a natural result of recognizing and pronouncing words (Reichmuth, 1997).

On the other hand, the "top-down" approach assist the reader make predictions about a passage to be read (Kamhi & Catts, 1999). The focus of the top-down approach is on contextual processing and accessing the reader's background knowledge about events or information presented in texts (Crowe, 2005). Attention is devoted to creating meaning (e.g., comprehending the text) rather than emphasizing the visual or perceptual aspects of

word decoding (Reichmuth, 1997). In a “top-down” approach, corrections or interruptions during reading by the teacher do not occur.

Reading strategies that promote multiple strategies have been termed integrated (Reichmuth, 1997) or interactive (Kamhi & Catts, 1999). Crowe (2005) described the integrated procedure as encouraging the reader to activate background knowledge while simultaneously attending to more discrete elements, such as word structure or word function within the context of the passage. This approach views reading as a communicative process. Furthermore, a summary of best practices in reading comprehension intervention suggested that “top-down” and “bottom-up” instruction are equally important for assisting the students with low reading ability (Mastropieri & Scruggs, 1997). The authors presented this method for greater awareness between the rationale and function of reading.

With regard to the instructional dilemmas middle school teachers encounter, current research on students with learning and behavior problems present conflicting results that will be presented in the review of intervention studies. There can be numerous reasons for reading failure. For instance, Vaughn et al. (2002) noted in a synthesis of research that (a) considerable time was allocated to reading instruction in both general and special education; (b) there was a range in the time allocated to reading instruction depending on the target student and the teacher, and whether students were provided reading instruction in one setting; (c) more individual and group instruction was provided in special education; (d) students spent considerable time waiting in both general and special education settings; (e) the quality of reading instruction was low, overall, with excessive time allocated to waiting, seatwork, and independent activities, and limited

time allocated to actual reading of text or direct instruction, particularly in the area of reading comprehension; and (f) independent seatwork and worksheets consumed, on the average, more than half of the time allocated to reading instruction. Each factor presents some instructional implications that can lead students with learning and behavior problems to be unsuccessful. The No Child Left Behind Act of 2001 proclaims that states will use scientifically based instructional practices in schools. Considerable time and effort should be made in choosing programs and/or instructional needs that students with learning and behavior problems require to be successful in the general education curriculum.

Classroom Structural Dilemmas Faced in Middle School

The physical and organizational frameworks of classrooms play an integral part in instruction for students with learning and behavior problems. The structure of the classroom is one of the first indicators students notice when in a new classroom environment. Students may ask themselves, “Does this look like a safe place? Is my work going to be put up on the board? Where will I sit if I get in trouble?” Some factors associated with these questions are the abilities of the teacher and grouping of students.

Teacher abilities vary from class to class, and from interdisciplinary team to interdisciplinary team in middle schools. Disciplinary style, instructional preferences, nurturance, and flexibility are all subject to problems of balance for teachers. Page (1987) suggested that in some academic settings, teachers and students believed low-track students could not learn, and teachers were not held accountable for the learning of those students. Furthermore, the author noted that teachers of students with learning and behavior problems often use multiple worksheets, with no clear academic focus, as a

primary means of instruction. Clearly, gains in reading comprehension were not the primary focus for some teachers.

In other situations, more experienced teachers are given classes where students either meet or exceed criterion levels of performance leaving less experienced teachers to instruct students with learning and behavior problems. In a study by Gamoran (1993), the primary investigator used ability grouping, seeking examples of schools that had (a) high-quality instruction in low-track classes, considering both curriculum content and student-teacher interactions, and (b) higher-than-expected achievement on a year-end literature test among students in low track classes. Of the 18 schools identified, only two of the schools met both of the standards the researchers were seeking. Instructional similarities identified within the two schools were (a) the same teacher taught both high- and low-track classes, and (b) the teachers implemented a similar literature curriculum across tracks in both schools. Students with learning and behavior problems suffer the consequences of tracking in some schools that promote lower-achieving peers with less experienced teachers.

Teacher-based Judgments on Reading Comprehension Achievement

Middle school reading teachers bring judgments and assumptions to their respective classrooms. These judgments and assumptions can influence the instructional methods that some teachers incorporate into their classrooms. For instance, in the before-instruction phase, teachers form judgments about their students relative reading abilities before making decisions about instructional groupings (Shavelson & Borko, 1979). However, judgments and assumptions portray who will achieve in a classroom and who will struggle with the academic demands. Hoge and Coladarci (1989) suggested that

teacher-based judgments or measures are treated in a very casual way. Students' academic achievement can be instrumental in teachers' perception of disability.

Wang, Haertel, and Walberg (1994) examined 50 years of educational research and found that contextual factors (i.e., teacher beliefs, classroom climate, instructional grouping) affected student achievement as much as student-dependent measures such as aptitude. Lipson and Wixson (1997) supported that finding stating, "perhaps no single factor influences the instruction setting more than a teacher's knowledge and beliefs about teaching and learning" (p. 128). This gives exponential power to teachers in terms of student achievement. Hence, classroom teachers' attitudes and beliefs do make differences in student achievement of reading comprehension to a degree.

In summary, there appears to be a widespread concern among school psychologists, educational researchers, and other professionals, that teachers are often subject to bias and error. This can be in relation to decision-making literature (Egan & Archer, 1985), expectancy literature (Brophy, 1983; Hoge, 1984), and assessment literature (Hoge, 1983; Hoge & Cudmore, 1986). Teachers' biases and errors about student performance must be minimized if students with learning and behavior problems are to overcome their difficulties associated with reading comprehension tasks.

Reading in the Home Environment and Tutoring

Reading at home and tutoring to accompany classroom instruction are also methods of increasing the amount of success that children have in school. Specialized forms of reading and writing, both in and out of school have distinctive effects (Hull & Schultz, 2001). The authors examined one specific instructional method, titled new

literacy studies (NLS), which is considered noteworthy for its emphasis on studying literacy in out-of-school contexts. This method, accompanied by explicit in-class instruction, has influential effects on reading comprehension for students with learning and behavior problems.

Expository and Narrative Prose

Students with learning and behavior problems display difficulty in reading comprehension with both predominant text forms: expository and narrative. These two major text structures require readers to interact with text and teachers to approach instruction differently (Bryant et al., 2001). Expository texts are usually found in content area classes (e.g., science, social studies, geography, and government). Whereas, narrative texts are usually comprised of stories found in the language arts classroom and the media center. In all, empirical evidence indicates that for most students, expository reading poses a greater challenge than does narrative reading (Berkowitz & Taylor, 1981; Ediger, 2002; Taylor & Beach, 1984).

Hall (2004) proposed that students who have learning and behavior problems and who are struggling readers might face a variety of challenges when reading expository texts in schools. These problems can include: (a) having difficulty decoding the texts (Bender & Larkin, 2000), (b) having poor metacognitive skills (Bender, 2002; Paris & Oka, 1989; Weir, 1998; Williams, 2001), (c) not comprehending what they read (Allington, 2001; Ivey, 1999; Worthy & Invernizzi, 1995), and (d) struggling to apply comprehension strategies appropriately (Bakken, Mastropieri, & Scruggs, 1997; Lederer, 2000). Furthermore, Saenz and Fuchs (2002) discussed many factors that may contribute

to the difficulty students experience with expository text, the four most commonly cited include text structure, conceptual density and familiarity, vocabulary knowledge, and prior knowledge. Expository texts contain content-specific vocabulary that may be unknown to the readers, and they do not always provide enough background information to help readers make sense of new information (Beck, McKeown, Sinartra, & Loxterman, 1991; Engelmann, Carnine, & Steely, 1991; Graesser, Leon, & Otero, 2002). The authors further suggested the mathematics texts might introduce new concepts too quickly. For instance, some teachers attempt to teach a new skill every other day or every single day. While teachers have been encouraged for years to incorporate reading instruction into their content area courses, few studies have presented and analyzed best practices that serve to increase the comprehension of students with learning and behavior problems (Baer & Nourie, 1993; Hall, 2004).

Text structure causes students difficulty when reading expository prose. Text structure refers to how the ideas in text are organized to convey a message (Weaver & Kintsch, 1991). Text structure in expository text is difficult because of the infrequent infrastructure used from beginning to end (Hiebert, Englert, & Brennan, 1983). These inconsistencies within expository text call for children to use multiple strategies while reading expository prose.

Another difficulty often displayed by students with learning and behavior problems is the conceptual density and unfamiliarity of expository materials. In general, expository text has greater conceptual density and less familiar concepts than do narrative texts (Taylor & Samuels, 1983). For example, a science textbook for middle school presents information in sections that may require the learner to become familiar with five

to ten new concepts within a single lesson. This task may be overwhelming for students who have difficulty with one to two new concepts in a single lesson. Some students with learning and behavior problems may choose behaviors that are inappropriate for the educational setting to avoid difficult tasks.

Vocabulary knowledge is another difficult area that can contribute to a student's inability to comprehend information fully. Vocabulary knowledge in expository texts consists of highly technical, multisyllabic words, that students often have difficulty decoding (Armbruster & Nagy, 1992; Bryant, Ugel, Thompson, & Hamff, 1999). In all, vocabulary knowledge has been established as the strongest predictor of successful comprehension of content area reading in secondary students with and without learning disabilities (Espin & Foegen, 1996).

Last, prior knowledge has proven to be a valuable commodity for students' comprehension ability. Some students' difficulty with expository reading is associated with students' schema or prior knowledge. Prior knowledge is an element presumed to provide the foundation for understanding (Meyer & Rice, 1984). Professionals who teach students with learning and behavior problems can never assume what knowledge diverse learners bring to the instructional setting. Schema theory attempts to explain how a reader's prior knowledge and text interact to shape understanding (Seidenberg, 1982). With this view, prior knowledge assists the reader in making predictions and establishing expectations about the content of text and facilitates comprehension (Graesser, Golding, & Long, 1991).

Good readers recognize the text structure or cuing systems and other dimensions that are characteristic of expository text and are able to read expository text with some

competence, despite a lack of explicit instruction (Meyer, Brandt, & Bluth, 1980; Taylor, 1980). Since poor readers fail to acquire these skills without explicit instruction, they may struggle with expository material (Gordon, 1990).

Most professionals would agree that narrative texts are stories written to entertain. The most common elements found in narrative texts are characters with goals and motives, event sequences, and morals and themes (Graesser, Golding, & Long, 1991). In the early grades, the emphasis of instruction is narrative prose. As students proceed to higher grades, students encounter more expository material. Barton (1997) and Hudson, Lignugaris-Kraft, and Miller (1993) indicated that by the time students reach high school, the primary text used for instruction is expository material.

Riley and Shapiro (1990) suggested that some students with learning and behavior problems rely heavily on word processing. This might hinder some students' comprehension. The authors suggested that lack of prior knowledge is an important factor leading to over reliance on word processing. Hence, many circumstances are related to students' inaccurate picture of details in narrative prose.

Summary

In conclusion, there are many factors to consider in the reading comprehension instruction for students with learning and behavior problems. Some components are more easily identifiable than others. Educators must find the most effective and efficient methods for delivering reading comprehension instruction for narrative and expository text. The comprehension skills students demonstrate in class are critical to finding a beginning instructional point for individual students. Students with learning and behavior

problems will demonstrate the success that is comparable to typically achieving peers when instructional and assessment methods are used effectively.

Learning Characteristics of Students with Mild Disabilities

Students with learning and behavior problems often engage in high rates of disruptive behaviors. Research has shown that students who have deficits in academic areas will also have significant deficits in social skills (Barriga, Doran, Newell, Morrison, Barbetti, & Robbins, 2002). The purpose of this section is to provide a description and analysis of academic characteristics and behavioral characteristics in relation to students' performance.

Academic Characteristics

Students with learning and behavior problems exhibit deficits in academic skills that impede their success in reading comprehension. Regardless of the perspective, a conceptual understanding of the relationship between problem behaviors and academic achievement will assist professionals in generating assessments, prevention, and intervention strategies for students with learning and behavior problems (Barriga et al., 2002). Characteristics of students with learning and behavior problems include attention deficits, retention problems, and poor self-concept of abilities in the area of reading comprehension.

Attention Deficits

Barriga et al. (2002) suggested that students with learning and behavior problems have a wide variety of problem behaviors that are linked to academic underachievement.

Students with attention deficit/hyperactivity disorder experience both learning and behavior problems in traditional classrooms (Faraone et al., 1993).

Interpretation of research concerning students with attention difficulties should be taken cautiously because research of problem behaviors is complicated by the fact that many children and adolescents exhibit multiple problem behaviors (Barriga et al., 2002). In fact, investigators are aware of potential confounds that result from associated problem behaviors that are not the specific interests of particular studies. Frick et al. (1991) conducted studies of externalizing problems that have suggested aggressive behaviors in childhood are related to underachievement primarily because of their association with attention problems. The researchers further noted that attention problems might represent a syndrome that is not only interconnected with, and conceptually related to a variety of other syndromes, but also fundamentally involved in the academic achievement of students with learning and behavior problems.

In 2002, Barriga et al. studied whether or not attention problems mediated the relationships between other problem behaviors and academic achievement. The researchers used the Teacher's Report Form for Ages 5 to 18 (TRF; Achenbach, 1991), and the Wide Range Achievement Test, Third Edition (WRAT3; Wilkinson, 1993) to measure the independent variables. The results suggested that ethnicity was associated with academic achievement measures; however, it was not associated with any of the problem behavior measures. To pursue the possibility of curvilinear problem behavior-academic achievement relationships, Barriga et al. conducted multiple regression analyses that predicted overall achievement and academic performance on each of the eight-scaled scores. The study suggested the Withdrawal, Somatic Complaints, Attention

Problems, Delinquent Behavior, and Aggressive Behavior scales exhibited significant correlations with academic achievement measures. Multiple regression analyses were also used to examine the relationships between withdrawal, somatic complaints, delinquent behavior, and aggressive behavior and each of the academic achievement measures, while controlling for attention problems. Similar patterns of significance emerged for each analysis. Attention problems were the only variable associated with unique variance in each of the academic achievement measures. Attention problems appeared to mediate each of the relationships among the other four problem behaviors and the academic achievement measures. Because attention problems were associated with unique variance in academic achievement across multiple regression analyses, post hoc analyses were conducted to explore this relationship in greater detail.

The Inattentive and Hyperactive-Impulsive subscales exhibited significant correlations with the academic achievement measures. Thus, the Inattentive subscale was a good predictor of academic performance. In conclusion, the research suggested the difficulties that attention problems can generate with students with learning and behavior problems. The significant relationships among behavior problems and academic underachievement were mediated by attention difficulties demonstrated by students with learning and behavior problems (Barriga et al., 2002). Relative to attention difficulties displayed by students with learning and behavior problems, memory and retention problems can also arise when students' abilities are academically or behaviorally insufficient for the required academic task.

Memory and Retention Attributes

Martinussen, Hayden, Hogg-Johnson, and Tannock (2005) reported that memory is essential to the thought process because it permits internal representation of information that makes sense to a reader. The researchers conducted a meta-analysis to determine whether children with attention deficit/hyperactivity disorder (ADHD) displayed a specific pattern of deficits related to either memory modality or level of processing. They also studied the impact of potential moderating variables, such as reading disability or language impairments.

Children with ADHD displayed moderate to large impairments in memory, with the magnitude of the impairment varying according to the modality of the memory task (Martinussen et al., 2005). They also reported that large impairments were evident in both the spatial storage and spatial central executive (CE) domains, whereas more modest deficits were found in verbal storage and verbal CE domains. The authors continued (a) that there were no differences in the findings for verbal storage domain when the digit span subtest was excluded from the verbal storage analyses, (b) recent research examining the Paced Auditory Serial Addition Test (PASAT) in an adult ADHD population demonstrated that the adults were activating different areas than typical adults and were primarily completing the tasks using visual imagery, and (c) the Cambridge Neuropsychological Test Automated Battery (CANTAB) spatial memory test may have been less sensitive to frontal dysfunction in the age ranges and was therefore removed from this study.

Interestingly, the control of extraneous variables (i.e., reading disability, language impairments) explained a significant amount of the variance for the spatial storage

domain, and the variables approached significance for the spatial CE component. However, neither moderator variable explained a significant amount of variance for verbal storage or verbal CE domains. Martinussen et al. (2005) findings indicated that controlling for reading disability and/or language impairment did significantly explain the amount of variance in spatial CE domain. Several possible explanations exist for the larger deficits served in spatial compared with verbal memory for children with ADHD. Other authors reported that memory tasks tend to involve the right hemisphere (Kwon, Reiss, & Menon, 2002), while others simply state spatial tasks are simply more challenging than verbal tasks, and some researchers believe that another disorder underlies the spatial memory weaknesses displayed by students with ADHD.

In summary, there are many students with learning and behavior problems that have been diagnosed with ADHD. Teachers and parents may believe that ADD and ADHD is the cause of their child's problems academically and behaviorally and search for answers from the medical field. Some students have a negative connotation with having a disorder that they have to take medication for, while others see medication as the possibility to improve their academic and behavior wellbeing.

Self-Concepts of Students with Learning and Behavior Problems

An individual's self-concept can have a pivotal role with regard to his or her academic success. Since students with learning and behavior problems have limited successes in school, one can speculate that their self-concept is diminished. Chapman (1988) delineated the differences between general self-concept and academic self-concept. Chapman stated, "That general self-concept includes behavioral activities (i.e., success in sports, music, art, etc.) while academic self-concept focuses on outcomes of

academic achievement" (p. 350). Students who have positive perceptions will usually succeed at higher rates than students who are quick to stop an activity because they have not been successful.

Chapman (1988) performed an extensive review of research to find if students with learning disabilities had significantly different general and academic self-perceptions. The primary investigator wanted to distinguish if there were differences when students were placed in various academic environments, and if students' negative self-perceptions increased as they aged. Furthermore, results indicated the mean effect size for students with learning disabilities was lower than their non-disabled peers by .50 standard deviation units. In other words, approximately 20% more students that have a learning disability than their typical achieving peers have general self-concept scores lower than the 50^{th} percentile. Chapman also found that on average, children with learning disabilities self-concept scores were lower than 70% of the students in the non-disabled group. Students with learning disabilities tend to have general self-concepts that are within the normal range, but nonetheless lower than their non-disabled peers. Overall, 20 studies reported findings on the academic self-concepts that resulted in significantly lower scores for students with learning disabilities compared to their non-disabled peers using specific academic self-concept measures. The results suggested 81% of students with learning disabilities have lower academic self-concepts than their typically achieving peers.

The expectation that all students would have decreased self-concept was not evident from the research (Chapman, 1988). However, the author showed that it was clear negative self-concepts may develop at least by third-grade. Yauman (1980) supported the

findings of Chapman in two groups of 3rd grade students with learning disabilities that had lower general self-concept scores than their non-disabled peers. However, no obvious pattern of differences existed in the self-concepts of students with learning disabilities when examined by grade level.

In addition to the previous lines of research, Chapman (1988) also analyzed research in terms of three main placements for students with learning disabilities including (a) full-time segregated, (b) mainstreamed with part-time remedial withdrawal, and (c) unplaced. The investigator found that some remedial help is associated with higher levels of general self-concepts. Also, data suggested that segregated or mainstreamed environments are not systematically associated with the differential effects of general self-concepts. Also, students in mainstream classrooms have poorer school-related self-perceptions than students with learning disabilities in some sort of remedial program and that students in mainstream programs tended to have poorer academic self-concepts than students with learning disabilities in special classes. Finally, findings from unplaced students, but not students with learning disabilities in segregated remedial programs, indicated lower general self-concepts than students in the non-disabled group.

Gonzalez-Pienda et al. (2002) examined interest as it relates to a student's self-concept. The authors suggested that children's academic aptitudes would significantly and positively affect their academic achievement directly and indirectly. However, the data did not support the effect of causal attribution processes would exert significant influence on academic self-concept, but self-concept significantly explained academic achievement.

This line of research is critical in developing an understanding of the challenges that students with learning and behavior problems encounter in their daily lives at school. An individual's self-concept plays an important role in the academic and behavior goals that schools must achieve. Many factors outside of the school are beyond teachers' control; however, teachers are able to equip students through careful preparation that leads to establishing structural control in the school setting.

Behavioral Characteristics

In addition to characteristics that students with learning and behavior problems present academically, there are many factors that also contribute to a student's misbehavior in the classroom. Whether the purpose of misbehavior is to avoid a particular activity, gain attention from teachers or peers, or simply to be viewed by peers as a tough person, misbehavior impedes student learning. Students' misbehavior not only takes away from their own learning, but also reduces the amount of time that the students have to learn. An analysis of motivational issues followed by management concerns by teachers will be discussed and analyzed as they relate to instruction in public education.

Motivational Aspects for Students with Learning and Behavior Problems

Many researchers suggest that it is important to develop a better understanding of the impact motivation has on cognitive processes. Tobias (1994) indicated that the construct of interest is often confounded with prior knowledge. Krapp, Hidi, and Renninger (1992) also set the distinction between situational and topic or individual interest. These authors defined situation as, "interest by aspects of a situation, such as novelty or intensity, and by the presence of a variety of human interest factors

contributing to the attractiveness of different types of content, and topic or individual interest as peoples relatively enduring preferences for different topics, tasks, or contexts and how they influence learning" (p. 2).

Tobias (1994) illustrated perspectives that delineate the importance of interests when educating young children. Tobias reported some perspectives including (a) people enjoy tasks that interest them, whether they lead to the attainment of rewards and other goals or not; (b) interests seem to be stable and long lasting among adolescents and adults; (c) interests are ubiquitous; (d) investigations of interest have face validity because it has long been assumed that people work harder and learn more on tasks related to their interests than on others; and (e) studies of interest can also help to establish a much needed link between motivational research and investigations of cognitive processing sought both by researchers on motivation and by those examining cognitive processing during training and instruction. Ineffective cognitive processing may be attributed to the likelihood that student interests were not engaged by the tasks they were involved in accomplishing.

An individual's interests are directly related to the person's past experiences or what others refer to as prior knowledge. In other words, individuals showed more interest in activities that they found familiar. Krapp et al. (1992) reported that prior knowledge may overrule other variables. Programs dealing with cognitive processes, such as reading comprehension, must consider interests with regard to students' achievement levels.

Tobias (1994) reported that first-grade student interests were not significantly related to comprehension of a story about topics which they had little knowledge. This author performed a review of literature on the interest-knowledge relationship for the

purpose of discussing the optimal association between the variables. Morris, Tweedy, and Gruneberg (1985) found a median correlation of .72 between knowledge of various soccer teams and interests, measured in terms of students' attitudes to those teams. These authors speculated that emotional attachment may be a critical contributor to the enhanced performance attributed to interest. Schneider and Bjorklund (1992) also found interest-knowledge relationships to be significant in three studies, and correlations between interest measures (alpha reliability .76 and .67 for second and fourth graders, respectively) and domain knowledge measures (alpha reliability = .70 and .73 for second- and fourth-graders) that tended to increase with the age of the students.

In an earlier study, Tobias (1992) examined the effects of interests on acquisition. Using a self-report Likert-type scale, interest (alpha reliability = .87) and domain knowledge (alpha reliability = .93) were significantly correlated ($r = .53$, $p < .01$). Garner and Gillingham (1992) measured interest while students were reading a narrative text and found a significant association with topic knowledge. Furthermore, Entin and Klare (1985) conducted an investigation in which the effects of interest were nonsignificant once prior knowledge was used as a covariate. This line of research shows that interest-domain knowledge relationship was highest on both passages for students who knew most about the domain. This information is essential to the comprehension of students with learning and behavior problems. If teachers are able to provide sufficient background or access prior knowledge, students that exhibit learning and behavior challenges will have increasingly more opportunities to succeed in the general education classroom.

In an examination of motivational characteristics, Quirk and Schwanenflugel (2004) looked at five programs used with remedial readers. They also examined five characteristics often associated with effective interventions for students with learning and behavior problems including (a) explicit vs. embedded phonics instruction, (b) small group vs. one-on-one instruction, (c) single decodable text vs. free-choice reading, (d) instruction is one size fits all vs. individualized instruction, and (e) no motivational vs. motivational emphasis. The authors emphasized the importance of motivational aspects for several reasons. First, children who are motivated to read are likely to spend more time reading. Second, scales of reading motivation account for 10% of the variance in reading performance measures, such as standardized assessments. Finally, students who are motivated to read are less likely to feel the cycle of frustration, failure, and avoidance that is common among students with learning and behavior problems.

In a related study, Margolis and McCabe (2003) suggested that many struggling learners resist academics, thinking that they lack the ability to succeed, even if they give their full effort. Their article emphasized the need to link new work to recent success, teaching students needed learning strategies, stressing peer modeling, teaching struggling learners, and helping them identify important goals ultimately leading to better self-efficacy. The authors proposed that teachers can help students gain self-efficacy in reading comprehension by adhering to students' instructional and independent levels. For instance, students at the instructional reading level should quickly and correctly read aloud 90-95% of the words in context and understand 70-89% of the text. Thus, improving self-efficacy in reading comprehension activities may lead to further success in the general education curriculum for students with learning and behavior problems.

Research has provided teachers, administrators, and parents with alternatives when dealing with motivational issues in the classroom. “We believe that classroom instructional practices that manipulate the learning process through extrinsic behavioral contingencies may be insufficient in the long term for maintaining significant and generalizable academic growth in students with learning problems” (Schultz & Switzky, 1990, p. 18).

Management Concerns for Teaching Students with Learning and Behavior Problems

Management of student behavior is a concern that many professionals have expressed in the public school system. The concern in managing student behavior, such as talk-outs and time on-task, is evident in the many studies that are performed with students with learning and behavior problems. The manner in which behavior management is established can affect the results of a study.

Summary

In sum, researchers must begin to consider many extraneous variables that can have an individual impact on studies of academic achievement. Students’ self-concepts, motivational issues, and general management concerns must be addressed through specific instructional elements. The following section will analyze descriptive and experimental interventions performed with general education, at-risk, and special education students.

II. REVIEW OF RELATED LITERATURE

The following review will include literature related to the methods of instructing students in reading comprehension skills, factors influencing reading comprehension, and problems associated with reading comprehension and instructional techniques.

Comprehension Research

Descriptive Studies of Instructional Interventions

The following studies provide information on interventions found in the literature on general education students, at-risk students, and students placed in special education. Each study will be discussed and analyzed in relation to the intervention's impact on student achievement. Results and limitations will also be discussed as they relate to student outcomes.

General Education Students Comprehension Outcomes

There have been some interesting findings regarding reading comprehension interventions that have been descriptively identified. Some studies pertain to instructional interventions; however, other studies have looked at class size and grouping variables to impact student achievement. For example, Ornstein (1991) performed one study identified school size and class size as potential benefits for students in the general education classroom, as well as students with learning and behavior problems. However,

there are contradictory results when examining the size of a school or class on students' academic outcomes. Researchers disagree on what constitutes a large and small school or class. Therefore, the data obtained from studies on class size and school size research should be considered carefully.

Ornstein (1991) further suggested that conventional knowledge has predicted that larger schools are more effective. One argument for this may be that larger schools are more capable of offering more diversified opportunities for students with learning and behavior problems. On the other hand, larger schools or classes may distant teachers and students from one another psychologically. For instance, smaller schools appear to have a well-established community base with students, teachers, and parents. In essence, whatever larger schools have in terms of meeting students needs, they lose in the packaging and implementation of curriculum and instruction.

Consensus pertaining to the use of ability groups is difficult to establish. In a research synthesis, Slavin (1990) defined ability grouping as "any school or classroom organization plan that is intended to reduce the heterogeneity of instructional groups; in between-class ability grouping the heterogeneity of each class for a given subject is reduced, and in within-class ability grouping the heterogeneity of groups within the class is reduced" (p. 471). Middle schools tend to use the latter. However, ability grouping may take several alternative forms. Some advantages for ability grouping (a) it permits pupils to make progress commensurate with their abilities, (b) it makes possible the adaptation of the technique of instruction to the needs of the group, (c) it reduces failures, (d) it helps to maintain interest and incentive, because bright students are not bored by the participation of the dull, (e) it allows for slow pupils to participate more, (f) it makes

teaching easier, and (g) it makes individual instruction possible for small slower groups. Some disadvantages may include: (a) slow pupils need the presence of the able students to stimulate them and encourage them; (b) stigma is attached to low sections, operating to discourage the pupils in these sections; (c) teachers are unable, or do not have time, to differentiate the work for different levels of ability; and (d) teachers object to the slower groups (Slavin, 1990).

Ability grouping is a difficult decision that school personnel will make in their careers. Ability grouping for some schools already takes place. An example of this is gifted class groupings and self-contained settings for students with disabilities. The decision to group regarding typically achieving peers and students with learning and behavior problems may lead to substantial effects for these students. Other than class size and grouping variables to improve the instructional activities for students, there are also many instructional practices that can be used to help students achieve higher rates of success on comprehension assignments.

There has been discussion about the best approach to teach students in the general education classroom. Montague (1993) described student-centered and strategy-centered approaches for teaching general education students. The authors pointed out the significance of awareness to different strategies and the different cognitive outcomes associated with those strategies. It has been suggested that strategy instruction operates as a “multiple component package” (p. 434) for two primary reasons. First, the intervention must operate for more than a quick fix of the problem. Students need strategies that they will be able to apply for the long-term. Second, the model strongly suggests the

development of metacognitive abilities in students. Strategies incorporated into classroom must be essential for attaining objectives for other tasks that students with be confronted.

However, comprehension strategies for students in the general education setting are not necessarily beneficial for students with learning and behavior problems. The usefulness of reading comprehension strategies that are effective for students in the general education curriculum may not eliminate cognitive processing differences. Therefore, comparable performance does not suggest comparable strategies. One strategy that has been recommended for nondisabled students is the use of critical literacy to improve reader responses.

McLaughlin and DeVoogd (2004) suggested the use of critical literacy aids teachers and students with reasoning, seeking out multiple perspectives, and active thinking. The authors suggested that readers continuously make choices about content and text that focus on different and aesthetic continua. In their outline of critical literacy principles, the authors identified five essential principles to increasing students' critical literacy skills including: (a) focus on issues of power and promote reflection, transformation, and action; (b) focus on the problem and its complexity; (c) techniques that are dynamic and adapt to the contexts that they are used; (d) examine multiple perspectives; and (e) environments to promote critical stance. These principles may aid teachers and students to generate discussions about difficult-to-understand text. Group discussions of difficult text may assist students to pick out the critical details when reading.

Discussion techniques promote student talk detailing information from text. Lloyd (2004) emphasized the use of student talk to promote comprehension strategies. This

author also suggested the use of strategy instruction for promoting a combination teaching method consisting of the read-aloud strategy, the guided-reading strategy, and literature circles to improve students' comprehension of text. Each of these strategies assist readers to develop the schema for students participating in the general education curriculum.

Teachers have the opportunity for input and through action research to help with decision-making processes in schools. Klingner, Vaughn, Hughes, and Arguelles (1999) performed a study investigating seven teachers in a 3-year study of their instructional practices in their respective classrooms. Three primary approaches to reading comprehension instruction were used by the teachers including collaborative strategic reading (CSR), partner reading, and making words. Results suggested that there were several factors that impeded the sustained implementation of these strategies. For example, high-stakes achievement testing and an emphasis on content coverage were key dilemmas with which teachers struggled. Content coverage and pressure of high-stakes tests are common factors that many teachers have to attend. Time constraints and a general discontinuity between teaching style or personality and a practice affected implementation of these strategies. Regular education teachers must adhere to the demands of the schools when implementing strategies for all students participating in the general education curriculum.

There have been several reviews about basal reading programs that are primarily used in general education classrooms (Shannon, 1989). However, Shannon did not suggest how schools can improve, but presents information about basal series and how teachers employ basal series with students. On the other hand, strategy instruction was

reported to be used by 98% of teachers in grades 3-5 (Guthrie, Schafer, Secker, & Alban, 2001). Results from Shannon's investigation suggested that the effects of reading instruction were statistically significant on achievement in mathematics, science, and writing. Reading instruction aids students in content area subjects. The effects on reading comprehension were from schools with high-impact programs that used an integration of curriculum and an abundance of books and resources. Therefore, no single basal program was present at schools that demonstrated significant effects in all areas of reading comprehension instruction.

Another article discussed how teachers impact the performance of students reading comprehension in a single grade. To achieve success, Ahrens (2005) suggested that teachers must know critical information about their students to plan reading instruction. The author also suggested that teachers need to be open to change with regard to the manner that reading instruction is delivered. As well, teachers must not be consumed by over-reliance on basal texts. The over-reliance on basal texts was indicated as the most problematic. In essence, the resources that are made available for teachers must be considered carefully by school districts and teachers and need to contain a method of continuous training for teaching students reading comprehension skills in the middle grades.

The middle grades (e.g., sixth, seventh, and eighth grades) are critical stages for developing the comprehension skills that adolescents need to be successful for the remainder of their school career and beyond. However, Davidson (1990) pointed out, "Unfortunately, research shows that lower achieving readers and writers often receive separate and unequal instruction in reading and writing when compared to higher

achieving readers and writers" (p. 76). Davidson described some common practices and beliefs about successful literacy learning programs. For example, with respect to the school community, there needs to be a shared vision in developing literate adolescents. Some teachers instructed their classrooms differently, but a constant vision of what teachers need to incorporate to develop the reading comprehension skills of youth must be aligned. There have been many recommendations about how to achieve this goal.

Clark and Graves (2004) recommended scaffolding instruction for students in the general education environment. These authors suggested that comprehension instruction is much less frequent than required for students and agreement about how to foster students' comprehension remains far from complete. The authors defined scaffolding as, "a process that enables a child or novice to solve a problem, carry out a task or achieve a goal which would be beyond his unassisted efforts" (p. 571). In their view, scaffolding is an effective strategy because it helps the teacher to keep the task whole, while students gain understanding and manage the parts while presenting the student with a challenge.

Another strategy that presents a potential challenge for some students with comprehension problems is teacher read-alouds. Some educators recommended read-alouds, but little is known about their relative effectiveness in middle schools. Albright and Ariail (2005) documented that read-alouds are a fairly common practice for young children in elementary school; however, read-alouds may not foster intermediate-grade students' comprehension of text. If fact, research revealed that 85.5% of teachers use a read-aloud strategy with their students in middle school. The most common rationales for read-alouds in middle school were to: (a) model good reading practices, (b) make texts more accessible to readers who cannot read, (c) increase understanding/comprehension of

the text, and (d) reinforce content knowledge. Read-alouds may be one efficient strategy for increasing students' reading comprehension of text, but there remains little quantitative data to recommend this to teachers.

A related strategy called think-alongs has also been documented in the general education classrooms. A think-along strategy has been identified as a process in which an individual voices his or her thoughts during the performance of a task (Kymes, 2005). Think-alongs assist the teacher identify the process that a student uses to comprehend text. The goal of think-alongs is to ensure students comprehend relevant and/or related information in a timely manner with accuracy. Think-alongs have been are also suggested by Wilhelm (2001) for assisting students with reading comprehension activities when reading narrative text. Wilhelm identified think-alongs to aid students develop inferencing skills. Inferencing is an essential skill for students to comprehend a wide variety of text. Therefore, one strategy to assist in the development of inferencing skills is think-alongs.

For instance, Ehlinger and Pritchard (1994) suggested the use of think-alongs in secondary content reading enables students to gain insights into processing behaviors and subject content. The authors defined think-alongs as, "an oral or written representation of a reader's process of constructing meaning from, or in reaction to, text" (p. 187). This description of think-alongs expands the use of graphic organizers to include oral representations, however, does not exclude visual representations of information. Think-alongs may be limited due to lack quantitative analysis. The effectiveness of oral think-alongs is questionable. Other studies that have examined the use of visual representations or graphic organizers have demonstrated effectiveness with students across ability levels.

The use of graphic organizers will be discussed further when instructional interventions are identified.

Students may incorporate the strategy, “questioning the text” (Harvey, 2001, p. 16) when faced with a passage. Harvey described this strategy designed to improve reading comprehension with four essential elements including choosing the text, introduction of the strategy, model thinking aloud and mark the text, and allow time for guided practice. However, many students do not get to choose the text, narrative or expository that they are required to read in school. Therefore, the initial step of the strategy can be excluded in most circumstances. Using this strategy, the teacher models the think-aloud strategy discussed earlier for students to improve their comprehension ability. Think-alouds may confuse some students about the particular process they are suppose to be incorporating. However, a combined strategy of questioning the text and think-aloud may be beneficial for students, but also lacks quantitative data to support such a task.

Quantitative research measures are not available supporting the use of story frames. A story frame is a cloze procedure with phrases and clauses left out of paragraphs (Oja, 1996). Oja suggested the use of this strategy and its particular usefulness with middle school students who are developing summarizing skills and other basic analytic approaches to narrative text. Student’s ability to monitor their comprehension can be enhanced by using story frames. This type of cloze procedure to enhance students’ understanding of text needs to be evaluated objectively for use with subjects with learning and behavior problems.

Pressley and Wharton-McDonald (1997) suggested that there has been some neglect of comprehension processing and instruction in the classroom. The infrequent use of comprehension strategies helps to explain the results from national samples indicating that many students are below grade level in the area of reading. Pressley and Wharton-McDonald addressed the myth that students will be able to comprehend simply because students can decode the words of a passage. They suggested that students who are good at comprehending relate to the text before, during, and after instruction. Also, students require a repertoire of comprehension strategies that they will be able to call upon if they encounter difficult material. There are many strategies that teachers may teach in the general education classroom, but few strategies are practiced frequently enough for students to master those strategies and use them independently without prompting from the teacher.

In the general education classroom, some teachers choose to use an elaboration strategy to improve the overall comprehension abilities of their students (Ritchie & Karge, 1996). Some cognitive psychologists agree that for information to be retained in the long-term memory, it is imperative that students elaborate on the new material. The increasing demands that are put on teachers create feelings of pressure to cover information as quickly as possible. Students remain at a basic knowledge level for some content. Ritchie and Karge suggested that six elaboration methods can be used to enhance students' learning of content material and assist in the generalizabiltiy of the information including (a) microlevel elaborations, (b) transformational elaborations, (c) situational elaborations, (d) macrolevel elaborations, (e) generality elaborations, and (f) general-to-

detail elaborations. While each elaboration technique has its differences, they contain practical application that can be used with many different instructional objectives.

Elaboration techniques can be used to enhance the comprehension skills that students can use to comprehend difficult prose. Another author views narrative as “a unique means of sense making” (Zigo, 2001, p. 64). Zigo involved the use of elaboration techniques such as (a) storied vocabulary lessons, (b) storied learning in relational contexts, and (c) role-playing. Zigo supported the use of these strategies for the generalizable exercises.

Individual teacher’s perspectives are also important to consider in regards to academic achievement. From nine teacher interviews, common themes were identified as aspects of good teaching (Sturtevant & Linek, 2003). Four primary categories identified by these teachers were (1) teachers focus on classroom that are “student centered” in which students are “problem solvers,” (2) teachers focus on student needs beyond the classroom, (3) teachers focus on the value of their own relationship with students, (4) teachers focus on lifelong learning. While it is important to view interventions and strategies that are common in successful classrooms for students with learning and behavior problems, teachers’ behavior has an influential effect on the students they teach.

In a descriptive analysis involving 435 teachers (grades kindergarten through twelve), Spor and Schneider (1999) performed a qualitative analysis to determine what teachers know, use, and want to learn more about in their respective content reading areas. When teachers were asked about content area reading strategies, the results suggested that most teachers make use of journals/logs (67% of teachers) followed by study guides (66% of teachers). When asked about the materials teachers use,

unsurprisingly, most teachers used the content textbooks (50% of the teachers) followed by workbooks/worksheets (17% of teachers). This indicates why many teachers are concerned about teaching reading in the content area. Teachers use other difficult tasks (e.g., journal writing/writing logs) for reading comprehension instruction for students with learning and behavior problems.

Assessments must be used to plan for instruction if teachers are to successfully educate all students in the general education classroom. The instructional hierarchy from promoting acquisition in isolation, promoting fluency in context, and promoting generalization and retention is suggested by research (Daly, Lentz, & Boyer, 1996). Daly, Lentz and Boyer suggested that this model for reading instruction must be followed for students to gain, retain, and generalize skills.

Finding the appropriate strategy or schema, activating it, and filling in the missing information are requirements for successfully comprehending text (Hartman, 1995). Hartman suggested that some readers make causal attributions when reading text. Simply knowing a strategy is not enough for students to demonstrate successful experiences with text. The method teachers use to assess comprehension achievement indicates a student's ability to connect with the text and draw upon the text to retain key information. Although, simply retaining and recalling information is not a teachers only focus. Therefore, strategies for modeling reaching comprehension across different context are necessary for generalizable results. Students must begin to see reading comprehension strategies are useful in other environments.

Smagorinsky and Smith (1992) investigated the issue of knowledge transfer. Specifically, the authors suggested that students should acquire general knowledge about

writing and literacy understanding that enables proficiency in all contexts. Students only require a limited number of strategies to use throughout their school careers. Others argue that strategies should be situational in nature. This requires varying strategies for different contexts. Smagorinsky and Smith suggested there is not a consensus pertaining to the number of strategies students are taught in school.

Teacher talk can have an impact on student learning. Mariage (1995) suggested notable differences between successful teachers and unsuccessful teachers. For instance, the author reported that successful teachers spend more time scaffolding, modeling strategies, encouraging risk-taking, and transferring control from teacher-directed to student-directed tasks. On the other hand, unsuccessful teachers spend their time evaluating student responses. While evaluating student responses is an important factor in teaching, teachers must also use research based instructional approaches. This product appears to be true for both narrative and expository prose.

When reading narrative prose, it is important for students to be able to identify the main idea. Identifying the main idea is central to reading comprehension (Broek, Lynch, Naslund, Ievers-Landis, & Verduin, 2003). Broek et al. suggested that finding the main idea can be accomplished by younger students but with less consistency than older students. This finding illustrates the level of awareness in the young children and adolescents. Perhaps overlooked is the level of the student. Furthermore, older students have more experience with strategies that are taught throughout each grade level. Perhaps the level of mastery with identifying the main idea was the determining factor for those results suggested.

Vocabulary instruction is another instructional practice used to improve student comprehension of text. Research suggests four practices that teachers use to expand students' vocabulary and improve reading outcomes with regard to comprehension (Blachowicz & Fisher, 2004). First, teachers can assist students in developing word awareness through word play activities and tasks. These tasks create a positive environment for learning and using new words. Second, teachers can deliver explicit, rich instruction to develop critical vocabulary for students. Blachowicz and Fisher further suggested the STAR model that consists of selecting, teaching, activating, and revisiting key vocabulary. Building strategies that promote independence is the third practice that teachers could use to expand students' comprehension skills. Students should be engaged in a wide range of books to increase their vocabulary skills. This process may also be effective and efficient in the content areas.

Reading within the content areas is crucial to the successful comprehension outcomes for students. Dickson (1995) suggested the importance of reading in the content areas for students to make ample gains in reading comprehension. There are some barriers that students may encounter to content area prose. For example, Massey and Heafner (2004) suggested the use of scaffold reading experiences as a temporal framework for reading in social studies class. Massey and Heafner also indicated that while primary schools are concerned with word recognition and decoding, comprehension skills are not guaranteed. Hence, particular reading strategies that take place before and during instruction to enhance the comprehension outcomes for students must be encountered early in a students schooling.

Some researchers argued that science educators at the middle and secondary levels dismiss instructional questions related to reading and textbooks (Laine, Bullock, & Ford, 1998). For science classrooms, reading comprehension is just as vital. Laine et al. also advocated that teachers hold textbooks as a central place in science instruction. Science educators do not appear to use a wide array of reading material in their instructional practices. The researchers estimated that only 16% of time in science class is devoted to active reading, while 33% is obligated to oblique reading where students do not receive specific attention. Reading skills are critical for content area classes as well as context facilitation.

The learner, the text, and the context of instruction should be examined closely when teachers assess students' comprehension skills. Moje, Dillon, and O'Brian (2000) suggested that variables presented from learners, texts, and contexts impact the students' abilities to recall and retain information they read. For instance, the authors agreed that many expository texts are increasingly difficult for students. Simply decoding expository material can be challenging without regard to comprehension of information. Teachers must make attempts to increase student motivation levels when reading difficult material. One method is a cognitive approach to teaching that is learner-centered that takes the environment or situational context into consideration (Winstead, 2004). This may increase a student's motivation to complete difficult activities.

Teachers in other classes, such as home economics, art, and drama, may also take an active participation in developing adolescence reading abilities. Witherell (2000) suggested that literacy may be developed through the arts. For example, educators in the arts can employ strategies that promote growth and development in students and

incorporate reading comprehension strategies that take learning styles into consideration. Witherell recommended five principles that will assist teachers with comprehension instruction for various classrooms that include (a) targeted outcomes that are clear and concise, (b) generalization to other classes, (c) learning supported by teaching through the arts, (d) multiple intelligences should be fostered, and (e) the assessment teachers use should fit the mode of the presentation. Following these five principles, teachers can assist students from diverse cultural backgrounds.

Hammerberg (2004) suggested a diverse perspective for delivering metacognitive instruction. From the construction of meaning, students derive information and use an interactive process for making sense of text. This view corresponds with a balanced literacy approach developed in 1996 (Frey, Lee, Tollefson, Pass, & Massengill, 2005). Balanced literacy can be characterized as an approach that assumes reading and writing achievement are developed through instruction and supported through various approaches that differ by teacher support and child control. The activities that children are involved in vary including guided reading, independent reading and writing, read-alouds, shared reading, accountable talk, conferencing, pair and share, and predictions. These methods provide various approaches to achieving the same objectives.

One practice in schools that provides students opportunities to read is the sustained silent reading program (SSR). Fisher (2004), a teacher in San Diego, California, suggested that SSR provides an excellent opportunity for students to read a wide variety of texts. Sustained silent reading is a common practice is public schools. Furthermore, the program gives teachers opportunities to instruct students to comprehend difficult to

understand text. Responsibility for reading appropriate material at an appropriate readability is placed on individual students.

Some teachers believe the SSR program is too unstructured and that students will not be required to read classic literature. Zach (1997) promoted the use of using classic literature for building students' reading comprehension abilities in the general education classroom. This author considered that children can build positive character traits by reading classic literature. Many students, however, may not find classic literature interesting, thus locate other readings they desire to read. Teachers' perceptions vary with regard to students motivation to read.

In conclusion, many strategies come highly recommended by teachers, parents, and other authors about how to instruct children in order for students to demonstrate higher levels of comprehension. Some strategies are composed of a single component whereas others consist of multiple components. Some authors contended that students with learning and behavior problems learn and process information differently. For this reason, careful consideration should be given to strategies that are taught to that population. Teachers using a specific comprehension strategy, need to collect data pertaining to the strategies students use to comprehend information.

At-Risk Students Comprehension Outcomes

The following section highlights descriptive articles that discuss and analyze approaches to reading comprehension for struggling/at-risk students that participate in the general education curriculum. Specific articles will be discussed with regard to relevance and importance of conducting future quantitative analyses. Teacher behaviors and

perspectives will also be discussed in choosing strategies to use for students with learning and behavior problems.

For at-risk students, not meeting the requirements that states have mandated with respect to high stakes testing is probable. An achievement gap exists between at-risk students and the general population, although smaller than that for students with disabilities. Therefore, research for proactive instruction strategies to aid these students is crucial (Tajalli & Opheim, 2004). Teachers and schools that serve large populations of at-risk students need to equip those individuals with successful strategies for reading comprehension.

Johnson (1998) examined reading comprehension instruction for students at-risk and discussed the assumptions of basic principles of instruction that have generated successful outcomes. Johnson also suggested that one-third to one-half of students participating in the general education classroom can be considered at risk. The author outlined 20 principles of instruction that can be used in the general classroom for students labeled at-risk (see Table 1). However, simply following basic instructional principles alone will not suffice when teachers design instruction poorly.

Table 1

Principles of Effective Instruction

Principle	Rationale for Principle
Maintain high expectations	Teachers' expectations of their students influence the instructors' behavior that affects student achievement.
Make use of praise; minimize criticism	The use of praise is more effective intervention strategy and demonstrates to students positive educational experiences.
Capitalize on learning technologies	Provides necessary supports to parent, teachers, and at-risk learners for higher levels of academic achievement.
Balance direct instruction with challenging activities	Provides explicit model for teaching students challenging activities and assignments within children's ability levels.
Teach learning strategies	Provides generalized examples across settings and content.
Accommodate students learning style	Facilitates student learning by utilizing student strengths as a basic framework.
Establish an experiential base for learning	Provides examples that activate students' background knowledge the student already possess.

(table continues)

Table 1 (cont.)

Principle	Rationale for Principle
Teach vocabulary directly	Communicates structures and concepts allowing students to connect information into meaningful units.
Focus on meaningful skills, concepts, and activities	Information builds around authentic tasks and activities students encounter in the natural environment.
Use examples and demonstrations	Provides explicit model and demonstrates of the skill performed with 100% accuracy.
Actively involve the students	Interactive appeal to students' senses and provides reasons to learn.
Encourage cooperative learning	Provides opportunities to learn from other students and share common thoughts and beliefs.
Ask and encourage questions	Creates deeper understanding of concepts and linkages.
Teach self-monitoring	Provides opportunities for students to monitor their own progress and involvement in data collection procedures.
Provide and create opportunities for practice and review	Practice is critical to the maintenance of skills across similar and different environments.

(table continues)

Table 1 (cont.)

Principle	Rationale for Principle
Integrate skills throughout the curriculum	Provides reinforcement of previously learned skills across contexts.
Build upon students interest	Interests and enthusiasm help students develop intrinsic motivation to learn.
Manage instruction efficiently	Models of organization and self-management help facilitate student learning.
Celebrate cultural diversity	Multicultural education emphasizes the uniqueness of students to practice within their own culture.
Facilitate parental involvement	Parental or family involvement is essential to the development of skills.

Instruction designed around individual learning styles is also suggested to improve the reading achievement made by at-risk students (Wallace, 1995). Wallace suggested that learning styles include (a) working in small groups rather than large group instruction, (b) poor auditory memory, (c) low motivation level of students, (d) low persistence from students, and (e) a need for more tactile or kinesthetic illustrations. Accounting for students' individual learning styles is promoted through increased interactions with students designed to help teachers identify methods of instruction that are successful for students at-risk.

Barry (2002) attempted to find strategies that were most commonly used in classes for students with learning and behavior problems. The author's documentation of teacher preferences with regard to the use of reading comprehension strategies uncovered that most teachers used one or more of the following strategies: (a) visual aids/mental images, (b) analogies, (c) graphic organizers, (d) note taking, (e) writing to learn, (f) study guides, (g) vocabulary activities, (h) anticipation guides, (i) K-W-L, (j) summarizing, (k) previewing, (l) question-answer relationships, (m) problematic situations, (n) student-developed questions, (o) think-alouds, (p) reciprocal teaching strategies, (q) directed reading-thinking activities, (r) guided imagery, (s) gloss, (t) discussion webs, (u) story impression activities, and (v) intra-act. Barry indicated these strategies aided comprehension for students with learning and behavior problems; however, some strategies listed were used for comprehension activities directly associated with testing scenarios in classrooms.

Teachers involved in Barry's examination thought more strategies exist, but it was difficult to find time to incorporate the strategies due to the overwhelming accountability to cover material for standardized testing. Therefore, time was considered to be the most influential variable when teachers responded to the author's request for implementation of a specific strategy. Allocated time necessary for successful implementation of instruction may become an important factor when conducting future research on reading comprehension in school settings. Due to limited instructional time, teaching comprehension strategies to struggling students may be a rarity in the public education classroom.

The reading comprehension abilities of students at-risk are varied. Some students at-risk may have average comprehension abilities; however, many at-risk students perform below average on reading comprehension tasks. Mastropieri, Scruggs, and Graetz (2003) suggested that many struggling readers at the secondary level read on a fourth- or fifth-grade level. Some secondary students at-risk also display weaknesses in decoding that makes comprehension tasks seem impossible. Other secondary students exhibit specific comprehension problems due to inappropriate use of strategies that are used to perform the task or activity. Therefore, strategies for reading comprehension must be implemented explicitly by regular classroom teachers at each grade level.

Some teachers lack the ability to teach reading comprehension strategies in the content areas. Clark (1993) illustrated the strategies that are required by regular education teachers for teaching at-risk students. Thus, teachers, like students, are taught strategies for teaching students comprehension techniques. Teachers in the content areas suggested that they lack the necessary skill to teach students reading comprehension in secondary classrooms. Schools and preservice institutions must make efforts to improve the quality of instruction for teachers in order for them to be effective at teaching at-risk students comprehension strategies in secondary classrooms.

For older students at the secondary level, decoding and fluency skills must be achieved for students at-risk to be successful in the general education classroom. Archer, Gleason, and Vachon (2003) recommended that teachers use approaches such as reading segmented word parts, decoding different syllable types, and flexible use of strategies for decoding difficult words. Students also need to improve systematically their reading rates to become more proficient at decoding in order for more time to be allocated for

comprehension instruction. The authors recommended that research validated programs offer instructional methods that will help students at-risk of reading comprehension failure succeed in modern classrooms.

Successful reading experiences can maintain academic achievement in content area courses. Hence, content area teachers, who also provide instruction in the area of reading comprehension, are able to instruct students in the needed strategies to be successful in their respective classrooms. Espin and Deno (1993) suggested the contributions of general reading skill can impact academic success for struggling students at the secondary level. This is positive considering the number of students that enter middle and high school with deficits in reading comprehension. Thus, teachers are able to justify reading comprehension activities within their daily lessons.

The metacognitive ability required to perform various classroom activities has also suggested the need for reading comprehension instruction at the middle and high school levels. Students at-risk in reading comprehension need to actively monitor their abilities to retain information from difficult text (Thiede, Anderson, & Therriault, 2003). Thiede, Anderson, and Therriault suggested this type of metacognitive monitoring increase a student's ability to retain key details questioned by many comprehension assessments. Also, students performing at higher levels of comprehension, display greater abilities to monitor their comprehension than do students with learning and behavior problems. Equipping individuals with this strategy teaches students the strategies needed to perform well on reading comprehension activities. Thus, students become self-regulated readers and establish a connection with written text.

Poor readers often use very few strategies, regardless of the particular reading activity. This leads to decreased self-efficacy, task value, and motivation for students with learning and behavior problems (Horner & Shwery, 2002). Horner and Shwery suggested that good readers use a wide variety of strategies while poor readers use inappropriate strategies for specific text. In essence, for children to become self-regulated readers, students need to actively set short-term goals, be able to use selected appropriate comprehension strategies, and evaluate their own progress towards achieving their individual goals. Hence, individual learning styles of students with learning and behavior problems are considered when selecting appropriate reading comprehension strategies.

Other strategies, such as a multisensory approach to increase students reading growth, have also been recommended. For example, Negin (1991) suggested the use of multisensory supplements to facilitate reading growth in students with learning and behavior problems. Specifically, the author descriptively identified these supplements as audio presentations providing (a) a model of fluent reading and appropriate inflection, (b) practice in word recognition, (c) focused attention to details, (d) sustained emphasis on completing reading tasks, and (e) time to attend to comprehension. A multisensory approach has been documented to increase instructional effectiveness by appealing to various modalities and strengths of individual students with learning and behavior problems. The effectiveness of the multisensory approach will require further quantitative evaluation to be considered as a practice that has been validated by limited research.

Class discussions have also been used by teachers to increase the amount of detail students recollect. According to Lenihan (2003), class discussions can be either teacher directed or student directed, and can improve the comprehension outcomes displayed by

at-risk students in the general education classroom. Lenihan established this recommendation through experiences of class discussions and the benefits of allowing some class discussions to be led by students. Once again, no quantitative data suggests the use of class discussions in the manner as Lenihan described them, but class discussion could serve as an area for future research consideration.

Word perception techniques including configurative analysis, structural analysis, phonic analysis, and contextual analysis have also been given considerable attention for at-risk students (Stockard, 1990). These activities are designed to improve general reading and comprehension abilities in the science classrooms. For example, Stockard presented his students with a science content worksheet that left out most of the vowel letters to allow students to strengthen vital word perception techniques. Hence, this type of context presented another strategy, documented by the author, to improve the reading comprehension abilities of students with learning and behavior problems. The generalization of this strategy to high-stakes testing and other forms of reading comprehension activities remains unanswered.

Cooperative story mapping is a comprehension strategy that some students use successfully when reading narrative and expository prose. The primary goal of reading instruction is to sustain productive competent readers (Mathes & Fuchs, 1997). This includes the informational or narrative passages that are read by students. A story map, as suggested by Mathes and Fuchs, is one method of achieving competency in reading comprehension. The authors identified a story map as a graphic representation of basic story elements. For students to completely use and understand the strategy, teachers use a

four-step strategy for teaching students to use story maps including: (a) reading the story, (b) skimming the story, (c) completing the story map, and (d) discussing the story.

Visual displays provide critical information from a passage to enhance the cognitive understanding of abstract concepts. Arnheim (1993) suggested that children's perceptions of linkages can be enriched by visual displays. This aids students' perceptual thinking of narrative information. Promoting this activity cooperatively allows students, even with the lowest reading level, to comprehend the critical elements of the passage. The visual display illustrated in Figure 1 is an example of the concept linkages students gain from visual depictions.

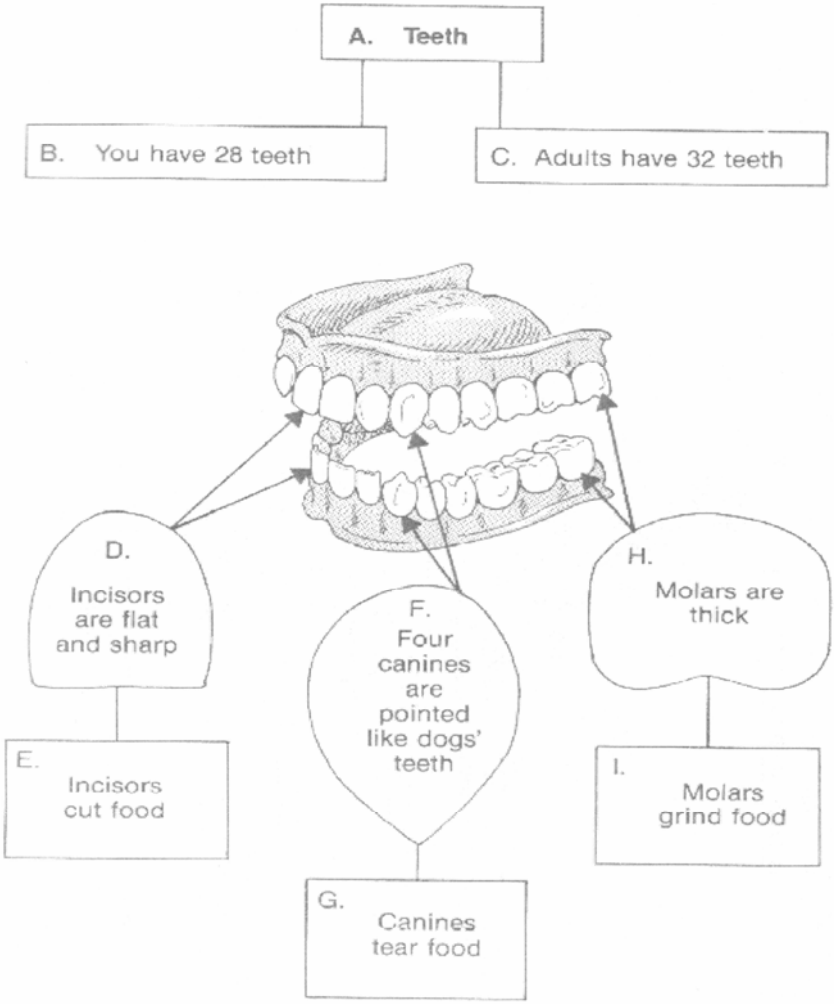

Figure 1. Visual-Spatial Display to Improve Comprehension of Expository Text. From "Your World of Facts – Student Workbook," by S. Engelmann, K. Davis, and G. Davis. SRA: McGraw-Hill. Copyright 1981. Reprinted with permission from publisher.

Repeated readings are another strategy that can be conducted with individual students with reading comprehension problems. Blum and Koshinen (1991) suggested the

repeated reading strategy for students at-risk to build fluency. The authors provided descriptions from previous experiences indicating the improvements students can make in reading comprehension when repeated readings are required from at-risk readers. Repeated reading also appears to influence the level of students' content knowledge, strategy knowledge, and motivation. Hence, there are documented benefits to instructing students to use the repeated reading strategy. Certainly, time considerations should be taken into account when implementing this strategy with children who decode slowly. Requiring a struggling reader to decode a passage multiple times can necessitate considerable instructional time.

When considering the time element, some teachers use a problem-based learning (PBL) strategy designed to improve behavior and increase achievement in content area courses, such as science. Gordon, Rogers, Comfort, Gavula, and McGee (2001) referred to this strategy as student centered. When students actively use this strategy, they respond to the problem, determine the goals, and conduct inquiries according to personal learning preferences. Again, students' individual learning styles appear to have an impact in the PBL strategy. Unlike other instructional interventions, the PBL strategy appears to have an impact on students' behavior displayed as reported by the investigators. Decreases in student disruptive behavior, increases the amount of time that can be devoted for academic instruction. The authors suggested the PBL strategy is effective for expository material; however, there is no documentation to support the use of problem-based learning strategies with narrative prose.

On the other hand, figurative language is a common element found in narrative prose. Instruction for figurative language is necessary for students to comprehend many

narrative texts (Palmer & Brooks, 2004). Similar for students in the general education setting, scaffolding instruction is one method for teaching at-risk students to identify and understand figurative language. Palmer and Brooks also suggested that scaffolding instruction appeared to help students' schemata that aided student understanding of the context surrounding figurative writing.

Other discrete teacher behaviors may enhance or motivate students to accomplish reading comprehension tasks successfully. High educational expectations can promote, enhance, and motivate students at-risk to achieve in regard to comprehension activities (Trusty, 2001). Trusty uncovered that stable/lowered expectations differed for females and males students. Males were more likely to be subject to stable high expectations from teachers and parents. On the other hand, Caucasian students, without regard to sex, were more likely to have lowered expectations when socio economic status was used as a covariate. Students who had low expectations were influenced by high expectations from teachers and parents performed better at academic tasks than students with lower expectation. Therefore, the expectations that teachers and parents have influence the achievement gains made by our students. However, expectations alone will not motivate students to read.

Many middle school students have a negative attitude and resistance when asked to perform a reading activity (Ivey & Broaddus, 2001). When students were asked what reading activities they enjoyed most from classes, 82% of students responded when the teacher reads out loud. Thus, students do not particularly enjoy the reading tasks assigned in school. These data provided insights into the activities that students will be motivated to complete. Thus, students require motivation from teachers and parents to perform

activities in class and provide multiple opportunities for individuals to be reinforced from their environment.

There are many prerequisite skills to developing the literacy for young adolescents. For instance, Indrisano and Chall (1995) found that challenges are critical for language development. The authors suggested from past experience that low socio economic status students who received instruction using books on a challenging level make better gains in all aspects of reading and comprehension. Thus, while teachers adhere to the individual learning styles of students at-risk, providing students with challenging prose should also be considered as an effective manner to improve their overall reading achievement.

While presenting challenging reading material is beneficial, students must also be provided with engaging and meaningful reading experiences to increase their motivation to read on future occasions (Guthrie, Meter, McCann, Wigfield, Bennett, Poundstone et al, 1996; Rossow & Hess, 2003). Rossow and Hess suggested engaging and meaningful instruction differs from what typically takes place in the remedial classroom. The emphasis of engaging and meaningful instruction is to help students identify a purpose for reading. Identifying a purpose activates reading motivation for students who are at-risk; however, students who have experienced multiple failures in the primary grades will be more difficult to motivate. Activating a purpose for reading will also help teachers meet goals for high stakes testing requirements.

There is evidence suggesting that high-stakes testing demands excellent comprehension in content area courses taught in public schools. However, Fischer (2003) suggested that comprehension is usually not expressly taught to students, even students

who have shown discrepancies in their comprehension ability. Fischer noted that skilled comprehenders integrate information from different parts of text and form representations that help them understand expository and narrative prose. The author emphasized the use of questioning to improve students' comprehension abilities. In a sense, framing questions can provide students with assistance on comprehension tasks, however, do not explicitly teach students to comprehend information on their readability level. The author does lack evidence from quantitative analysis on the use of questioning procedures.

Students in Special Education Comprehension Outcomes

The following studies provide relevant information pertaining to descriptive studies for students with disabilities. All of the following studies involve participants that have been identified by state and federal guidelines as having a disability. Each study will be discussed and analyzed for information relevant to studying reading comprehension for students with learning and behavior problems.

Research suggested that there are a variety of factors that lead students to comprehension difficulty (Gersten, Fuchs, Williams, & Baker, 2001). For instance, text structures found in narrative and expository text, vocabulary knowledge, and appropriate use of prior knowledge all appear to affect a student's ability to comprehend information that he or she reads. Gersten et al. further noted the importance of reading fluency in comprehension achievement for students with disabilities. Specific strategies must target specific deficits in reading for the achievement gap to lessen for students with disabilities.

Jitendra, Edwards, Sacks, and Jacobson (2004) examined 19 vocabulary studies that comprised 27 investigations using students with learning disabilities as participants. Strategies found to be effective for students with learning disabilities included (a)

mnemonic approaches, (b) cognitive strategy instruction, (c) direct instruction, (d) constant time delay, (e) activity-based methods, and (f) computer-assisted instruction. The authors suggested activities that could be conducted in the general education classroom or remedial classroom to improve the comprehension ability for students with disabilities.

For students with disabilities to benefit from comprehension instruction, general education teachers must use instructional practices that benefit all students (Anderson, Yilmaz, & Wasburn-Moses, 2004). Anderson et al. reported that 96% of all general education teachers have taught students with disabilities at some time. Understanding practices that are effective with the majority of students may not be the best instructional approach to use with students with disabilities. As emphasized earlier, students with disabilities use less effective strategies than their non-disabled peers. Schmidt, Rozendal, and Greenman (2002) indicated that poor readers have metacognitive strategy deficiencies that have a large impact on reading comprehension problems. These authors suggested that collaboration between regular and special education teachers provide the means for proactive instructional reading strategies.

Some reading strategies have been effective for students with attention deficit disorders (ADD) and attention deficit/hyperactivity disorder (ADHD). Ostoits (1999) suggested that 9% of students with ADD or ADHD have a true reading disability. Some strategies suggested by this author include small group work, prereading strategies, strategies used after reading, and allowing students with ADD or ADHD to move about during reading instruction. Cooperative learning groups are also beneficial to students with ADD/ADHD.

For instance, Wilkinson (1994) emphasized the use of cooperative learning groups for students with learning and behavior problems. Cooperative learning forms a structure for reading comprehension activities where students can build upon their weaknesses through other students' strengths. Wilkinson provides examples such as using new words, writing the first sentence of a summarization exercise, or even getting started to present information to the classroom. This type of instruction can assist students' development of deeper understanding while providing individual assistance for the student that struggles with comprehension tasks.

Graves and Braaten (1996) promoted a scaffolding instructional model for students with disabilities. They defined the Scaffolding Reading Experience (SRE) as a flexible framework that helps students with disabilities get the most information from text. This allows teachers to devote all their efforts to planning, developing, and implementing the activities set out in the SRE model. Researchers have studied the results of others' work pertaining to the cognitive processes that are predictors of reading comprehension in students with learning disabilities (Swanson & Alexander, 1997). This line of research suggested that students with learning disabilities were deficient on all cognitive processes compared with readers who were skilled at comprehending prose. From this, Mastropieri and Scruggs (1997) suggested best practices for students with disabilities to improve their comprehension. The authors provided information about (a) reinforcement, (b) vocabulary instruction, (c) corrective feedback, (d) repeated readings, and (e) direct instruction when teaching reading comprehension strategies to students with disabilities. Mastropieri and Scruggs further uncovered that strongest outcomes were found for teacher-led questioning and self-questioning strategies, preceded by text-

enhancement strategies and strategies involving basic skills instruction and reinforcement.

Other strategies that improved students with disabilities comprehension outcomes were strictly teacher controlled (Algozzine, Ysseldyke, & Campbell, 1994). One such strategy is integrative strategy instruction. Integrative strategy instruction (ISI) provides students with disabilities generalized instructional practices (Ellis, 1993). This model of instruction bestows orientation, framing, applying, and extending strategies useful to reading comprehension tasks that students with disabilities can use in a variety of educational settings. Strategies that are teacher-oriented appear to improve reading comprehension outcomes for students with EBD and LD. Such strategies include: (a) consistent teacher effort to keep students engaged, (b) creative and relevant instructional activities, (c) ongoing teacher monitoring of student progress, (d) self-monitoring of student progress made in reading comprehension, and (e) daily reading for enjoyment to promote independent reading. Campbell and Olsen (1994) presented similar strategies to use at the secondary level for students with reading disabilities. Strategies these authors recommended consisted of interventions designed to increase student motivation and decrease student behavior through effective instructional programming.

Rodden-Nord and Shinn (1991) suggested that students be equipped with various reading skills within and across content area courses. Equipping students with disabilities with various instructional strategies and teaching students when to use them can be difficult for general and special education teachers. These authors found that students in the primary grades benefited in later grades when teachers taught students broad based strategies that could be generalized across various instructional situations. The

generalization of skills across grade levels suggests that students with disabilities can perform within the average range if instructional strategies are used that have the greatest utility. The time allocated between teacher groups (i.e., remedial teachers, general teachers, and special education teachers) are similar with respect to comprehension, decoding, and indirect reading activities (Gelzheiser & Meyers, 1991).

Other processes to promote reading comprehension may include the manner in which instruction is delivered. Some teacher-directed programs promote the use of teaching scripts. Gunter and Reed (1997) studied the use of scripts and the effectiveness in teaching students with emotional and behavioral disorders. Information based on their qualitative study, indicated that students with emotional and behavioral disorders are requested to perform tasks without being given the necessary information to do so immediately before the request is made more than 80% of the time. Strikingly, some students with emotional and behavior disorders will find it difficult to maintain appropriate student behavior while they are learning new academic skills.

Instruction for students with emotional and behavior disorders using teaching scripts resulted in increases in the teachers' effective instructional practices and decreases in undesirable student behavior (Gunter & Reed, 1997). In their study, the use of scripted lessons ensured that the teachers presented students with needed information before asking them questions or giving an assignment in the content area. The percentage of correct responses by students with emotional and behavioral disorders increased from 72.5% to 86.9% of their attempts. The information provided from this study suggested that using scripted lessons provide teachers with more opportunities to reinforce students

for being correct in academic situations. The use of this method in interventions may have a substantial impact in students' performance during comprehension activities.

Paris and Oka (1989) suggested the use of a reading coach. Reading coaches could be other students, parents, volunteers, or other related service personnel that assist students with reading. Other strategies that could be incorporated to assist with the coping skills of students with reading comprehension disabilities are reciprocal teaching or direct explanation strategies. Regardless of the strategy chosen, students require specific interventions that help motivate themselves to want to improve in the educational arena.

Summary

Many descriptive studies have been performed analyzing the effectiveness of reading comprehension interventions. Many of those studies lack sufficient quantitative analysis to be used as a scientifically based practice in the classroom. Other studies have been both descriptively identified as good instructional practices and experimentally evaluated with general education students, at-risk students, and students with disabilities. The following section will provide information about experimental intervention studies that have been conducted to improve the comprehension ability of youngsters.

Experimental/Intervention Studies of Instructional Interventions

The following section will provide information regarding some educational practices that have been experimentally studied to improve students' comprehension ability. There are similar investigations for general education students, at-risk students, and students with disabilities. Each demographic variable will be discussed separately. Finally, a summary of results will be included from all the studies analyzed.

General Education Students Comprehension Outcomes

The proceeding section will discuss a review of the intervention research on reading comprehension that has been conducted with general education students. The number of participants, length of study, and significant effects will be discussed with regard to student achievement.

In an examination to determine the effects of cognitive style and gender, Hite (2004) used the Nelson-Denny Reading Test (NDRT) to measure the effects on students' reading comprehension. The results from the study revealed that neither gender nor field orientation were significantly related to comprehension scores on social content passages. However, for non-social content, there was a statistically significant difference in reading comprehension scores between field dependent and independent subjects in favor of male and field independent subjects. This study assisted in interpreting difficult instructional tasks when students comprehend expository text. This study also revealed that male students receive higher mean scores on comprehension measures on expository material when other variables are controlled. Thus, teachers can design instruction (e.g., pace of instruction, task variation) to level the playing field for students participating in the general education curriculum. Some interventions to assist in the competency for reading expository text may include multi-component interventions to meet the needs of diverse learners.

Bryant et al. (2000) performed a multi-component reading intervention study designed to enhance word identification, fluency, and comprehension strategies used by middle school. This study used the Word Identification strategy, Partner Reading Strategy, and Collaborative Strategic Reading (CSR) to enhance middle school students'

ability in content areas. Results suggested that the Word Identification strategy was statistically significant between a pre- and post-testing situation ($p < .05$, effect size = .64). Also, students with learning and behavior problems demonstrated a statistically significant increase in fluency ($p < .05$, effect size = .67). However, results from the comprehension measure suggested that students with learning and behavior problems did not demonstrate statistically significant improvements. Upon further examination, students with learning and behavior problems did improve with pre-test means equaling 28.57 and post-test means equaling 33.57 over the 4-month intervention period.

The authors discussed three primary limitations of the study including: (a) 4-months, although a long study period, was determined to be a short period of time to effect previous years of failure significantly, (b) teachers needed more time to use and implement strategies as part of their daily routine, and (c) the limitation of not using a control group to determine that the outcome measures could be attributed at least in part to the enhanced focus on teaching reading. Thus, results from this study should be examined with careful attention to the study's limitations.

Teachers are allocated specific amounts of time to instruct the students in content area instruction. Connor, Morrison, and Petrella (2004) examined the effect of instruction during the phases of the school year relative to specific comprehension tasks. In doing so, the authors questioned the instructional activities that were determined by students' comprehension, decoding, and vocabulary skills. Results suggested that among classrooms, the variability of instructional time varied from 15-minutes to 160-minutes per day. Thus, the final model proposed by the researchers revealed significant main effects for the amount of instructional time on students' reading comprehension growth.

Quantitatively, the model appears to explain about 87% of the variance when reading comprehension growth assessed in the spring. The instructional variable appeared to impact student outcomes substantially if instruction was child-managed and explicit ($p <$ .001, r = .768).

Furthermore, teachers appeared to select instructional strategies based on beginning student performance during the early months of the school year (Connor, Morrison, & Petrella, 2004). Teachers that taught low- to average-ability students appeared to instruct students in more teacher-managed explicit instruction. On the other hand, teachers who instructed high-ability students appeared to use less teacher-managed instructional approaches and more child-managed explicit activities. From this finding, high-ability students achieved more at a faster rate than low- and average-ability children.

Rates of listening while reading (LWR) also appear to have some influence on the comprehension abilities of students. Lionetti and Cole (2004) compared the effects of LWR on words correct per minute, accuracy of decoding, generalization, and comprehension for fourth- and fifth-graders. The results suggested that a slow LWR rate did not predict greater improvements on the dependent measures (i.e., words correct per minute, accuracy, generalization, and comprehension) when trade books were utilized. The authors indicated that greater gains may have been seen if more students were utilized in the analysis since the study only contained 4 subjects. Also, the reading comprehension effects were not consistent during the intervention or follow-up sessions. Therefore, the LWR did not appear to have an effect on students' comprehension outcomes. This study's programming allowed students to read a passage a single time.

Repeated reading may have been necessary to promote the fluency and generalization of content for improved comprehension measures.

Repeated reading is an evidenced-based strategy for increasing reading fluency and comprehension (Therrin, 2004). In a meta-analysis review of the literature, Therrin found that repeated readings can improve students' overall reading fluency and comprehension. Also, if the teacher's interest is solely confined to improving fluency and comprehension, a correct feedback component to instruction should be added and passages should be read repeatedly until a criterion performance is reached. This study provided results from other analysis of the repeated reading instructional strategy. In a longitudinal study, Cain, Bryant, and Oakhill (2004) addressed the relationship between working memory capacity and reading comprehension skills in children. Interestingly, their study suggested that working memory and knowledge of component skills of comprehension using narrative text did predict unique variance in reading comprehension above and beyond word reading ability, vocabulary, and verbal ability controls. Thus, acquiring the basic component knowledge of reading comprehension at a young age is beneficial for students in upper grade levels. This may also provide more successful reading strategies earlier for general education to increase the motivation of students to read at a later age.

Reading comprehension is a skill involving numerous processes including (a) perception of letters, (b) rapid recognition of words, (c) detection of the function of writing, and (d) deriving meaning from sentences (Aarnoutse & Schellings, 2003). Aarnoutse and Schellings studied the effectiveness of instruction aimed at developing reading motivation and strategies with problem-oriented learning environments. Using a

pre- and post-test control group design, the results suggested that students who participated in problem-oriented learning environments outperformed the control with regard to reading strategies and obtained higher scores on a reading motivation scale. However, results were not consistent when children were tested using a standardized reading assessment. This result suggested that experimenter-made evaluations present some biases. Therefore, caution should be used when using experimenter made evaluations in research. One method for obtaining student performance data is through the use of summarization evaluations (Chang, Sung, & Chen, 2002).

The use of inferential questioning may hinder younger students' ability to recall text information in general and information specifically targeted as important from the text (Broek, Tzeng, Risden, Trabasso, & Basche, 2001). The results proposed an important role for readers' management of attention attributes. Thus, while older or higher achieving students benefit from inferential questioning, younger students do not gain understanding.

Other research asserts that cognitive flexibility develops over the elementary school years and can be assessed using multiple classification tasks (Carwright, 2002). Carwright proposed that a reading-specific multiple classification (RMC) activity that requires students to sort printed words along semantic and phonological dimensions simultaneously can provide an index of the ability to comprehend informative text during reading. A multivariate analysis of variance revealed that passage comprehension posttest scores were significantly higher for the RMC training group (t (11) = 7.17, p <.001). Thus, the RMC skill provides an independent contribution to the variance on students

reading comprehension achievement. However, in this research, there did not appear to be consideration given to assessment type or biases within assessments.

Furthermore, Hintze, Callahan, Matthews, Williams, and Tobin (2002) studied the differential predictive bias of curriculum-based measures in reading across African American and Caucasian elementary students. Results suggested that curriculum-based measurement appears to be a sensitive form of direct reading assessment for both African American and Caucasian elementary-age students.

Other authors proposed different strategies with the same purpose. Rose, Parks, Androes, and McMahon (2000) examined an imagery-based learning approach to improve elementary students reading comprehension outcomes. This study incorporated a randomized pretest-posttest control group design to assess the impact of drama-based instruction on students' achievement tests scores in reading comprehension. Classes were randomly assigned to a Reading Comprehension through Drama (RCD) group or control group. The authors explained that the RCD program uses drama techniques consistent with research on imagery and memory.

When comparing the overall reading achievement improvement rates for the two groups, the investigators found that RCD students' reading scores increased significantly more than students participating within the control group (Rose et al., 2001). Even when controlling for the pretest differences between the two groups, students who participated in the RCD program achieved an average of 3 months more than students who did not participate ($F(1, 154) = 7.87$, $p < .006$). Thus, students may benefit more from an RCD program designed specifically to improve the performance of reading comprehension on standardized high-stakes tests. When examining the pretest differences that were used as

a covariate in the analysis, particular interests existed pertaining to student prior knowledge or students' content-related attitude with regard to their comprehension level.

Hollingsworth and Reutzel (1990) studied the effects of content-related attitude on comprehension for general education students. The results suggested that content-related attitudes do not significantly affect students' overall reading comprehension of expository text. That is, student attitudes towards reading expository material do not predict or influence the level of comprehension that students gain from reading the text. It is important to note that expository and narrative texts differ. Students' relative attitudes about reading narrative texts may influence the students' overall reading comprehension achievement, whereas expository material presents content that some students with difficulty.

Similarly, Schraw (2000) investigated reader beliefs and meaning construction in narrative text. This author contended that students with learning and behavior problems hold different beliefs about the meaning construction process that affects their understanding of narrative prose. Therefore, the study dealt with how transmission and transaction beliefs about reading affect comprehension, engagement, and holistic understanding.

The transmission model views reading as a process of transmitting meaning from the author to the reader's memory (Schraw, 2000). The transaction model views reading as a process emphasizing a reciprocal transaction amount the reader, text, and author. The investigator concluded that students who hold either of these two beliefs would demonstrate different levels of knowledge when reading narrative texts. Finally, the study concluded that transaction beliefs are related to more involved processing in the form of

thematic and critical responses and can construct higher-order interpretations from texts. Teachers of students within the general education classroom attempt to understand why students respond to question in particular fashions.

Other research in the area of reading comprehension focuses on the use of the negotiation processes (Branden, 2000). Branden attempted to reveal negotiation methods of meaning that optimally promote the comprehension of text in the content of real-life situations. Specifically, the researcher wanted to assess the validity of negotiation methods with 151 students who were multilingual. Subjects for this study were placed into one of four conditions (a) unmodified input condition, (b) pre-modified input condition, (c) collective negotiation condition, and (d) pair negotiation condition. The results from the study indicated that statistically significant higher comprehension scores were obtained when students were given a pre-modified version of the text than when given the unmodified version ($p < .001$). Also, subjects displayed statistically significantly higher comprehension scores when they were give the chance to negotiate the meaning of hard words and phrases than when give the unmodified version ($p < .001$). This was also true when the students were allowed to negotiate the meaning than when given the pre-modified version ($p < .001$). Furthermore, subjects yielded statistically significantly higher reading comprehension scores when the collective negotiation condition was used rather than the pair negotiation condition ($p < .001$). In sum, when students in the general education classroom were allowed to negotiate the meaning of difficult words, they performed with higher accuracy levels on reading comprehension tasks, especially when a collective negotiation procedure is followed over a paired negotiation procedure.

The previous study did not use a precorrection method for intervening when children did not understand difficult text. In another study, Spires and Donley (1998) studied a prior knowledge activation (PKA) strategy for students making spontaneous connections between their background knowledge and expository texts. The authors found that students using the PKA strategy consistently outperformed students using another strategy, the main-idea treatment, and those in the no-instruction control group on application-level comprehension questions, but not on literal level questions. After further investigation, the authors noted that the PKA strategy and a combination of the PKA-main idea group again outperformed students within the control group on higher application-level questions and demonstrated positive attitudes toward reading. In essence, results from this study are promising, considering this type of instructional activity for students participating in the general education classroom. Questions remain unanswered about the maintenance effects that would occur once the PKA strategy or main idea comprehension strategies were withdrawn.

The evidence was unclear whether the previous study focused on generalization across reading tasks such as narrative and expository prose. However, Markell and Deno (1997) performed an earlier study to examine the association between increases in student performance in reading aloud from text and other measures that teachers use to assess comprehension. Each of nine participants was involved in reading material beginning with second-grade passages and ending with sixth-grade passages. Specifically, the number of words students read correctly in the first minute was recorded. This was used to determine the passage difficulty and level of understanding. Preceding this, students were given maze passages to complete independently, and then answer text-explicit

questions based on the maze passages. Examining the nine students independently, the mean score decreased as the passages increased in reading level. The standard deviation of scores increased for questions correct and maze correct, but appeared to decrease on words read correctly when subjects were given sixth grade reading material. This may be due to fewer words read correctly on the sixth grade level. This study involved only nine students (2^{nd} grade = 3 subjects, 4^{th} grade = 3 subjects, and 6^{th} grade = 3 subjects). Thus, it is difficult to generalize these findings to other students in public classrooms.

In an examination of two reading strategy approaches, Ezell, Hunsicker, and Quinque (1997) studied the use of Question Answer Relationships (QAR) with a peer-assisted condition and a teacher-assisted condition. The QAR approach involves three question types including "right there" questions, "putting it together" questions, and "author and you" questions. The researchers used a pretest-posttest group design to compare the relative effects of the two treatments. Results from the total scores of independent probes at the end of each intervention phase showed no significant difference between the two groups. Similarly, no significant difference was also found when comparing the two groups by their performance across intervention phases or by question type. After an eight-month follow up, students demonstrated good skill maintenance overall. In fact, the students in the peer-assisted condition averaged 4.77 (*SD* = 1.5) correct out of six possible with an overall accuracy rate of 80%, and students in the teacher-assisted condition averaged 4.88 (*SD* = 1.0) correct with an overall accuracy rate of 81%. Thus, this strategy for reading comprehension does possess strengths with regard to the usefulness and generalizability of the strategy. One major limitation with this analysis was the nonexistence of a control group.

A study that used a control group was conducted to determine whether think-alouds improve students' reading comprehension of more or less coherent text. Loxterman, Beck, and McKeown (1994) studied the effects of text coherence and active engagement on students' comprehension of social studies prose. The authors found 88 sixth graders to participate in the study. Two text versions were made from the original passage of their sixth grade social studies textbook. Results from the analysis revealed that students recall performance increased across the continuum and the difference among conditions was significant. Further investigation using a post hoc pairwise comparison revealed that the revised text using think-aloud conditions (M=28.1) was significantly higher than the control condition (M=15.5). All other comparisons from the analysis were not significant. The authors used a stratified random grouping for this analysis. This indicates that students were already grouped into classes, and classes were assigned to the treatment conditions. Although this practice is common and accepted, the use of stratified random sampling is a limitation of this study.

In another study examining the use of think-alouds procedures, Crain-Thoreson, Lippman, and McClendon-Magnuson (1997) examined the various procedures of the single think-aloud process. The investigators study consisted of 24 university students enrolled in a teacher certification program. The primary investigator, using one of the two think-aloud procedures, trained individual participants. The results indicated no significant effect on passage comprehension scores. The authors further reported that individual training only consisted of one session, 15-20 minutes in length. This short duration helps explain the nonsignificant effects of the treatment condition when compared to the control group.

A study that involved more training for participants studied the effects of two teacher-directed pre-reading instructional procedures (Davis, 1994). The two teacher-directed instructional procedures analyzed in this study were directed reading activities (DRA) and story grammar/structured overview story mapping. The two procedures were analyzed on a literal and inferential reading comprehension measure. The sample consisted of 60 third-grade and 60 fifth-grade students. Results from this study suggested that the pre-reading modified story mapping procedure resulted in 14% better inferential comprehension ($p < .0005$) and 7% better literal comprehension than the DRA group at the third-grade level; however, no statistically significant differences were found at the fifth-grade level. This study, similar to previous studies, did not use a control group to make comparisons. Therefore, results from this study should be further analyzed using a control group to establish a comparison and further examination about what processes work well with older students.

Another pre-reading strategy suggested for students consists of different types of organizers (i.e., concept, analogy, outline, or dummy). Kloster and Winne (1989) studied the effectiveness of using various organizers as a pre-reading strategy for students in the eighth-grade. This particular study used 227 participants in an eighth-grade mathematics classroom. The results revealed no differences among the treatment groups on average letter grade. Hence, the use of organizers in mathematics classes did not predict grade performance for eighth-grade students. On the other hand, higher initial scores were found for the outline group (61%) than the other three types of organizers participants used: concept (30%), analogy (38%), and dummy (38%). The authors predicted this because initial outlines include verbatim statements in the passage students were required

to read. Again, the authors did not use a control group to compare performance to regular classroom conditions.

Beck, McKeown, and Worthy (1995) considered the effects of students comprehension by giving text a voice. In their study, four different versions of passages were used including (a) the original text version, (b) a version revised for greater coherence, (c) a version of the textbook that exhibited voice, and (d) coherent passages that exhibited voice. Using fourth-graders in their study, participants were asked to read one version of the four passages and answer open-ended questions immediately after reading and again one-week later. The results revealed that immediately after reading, the coherent passage that exhibited voice had given students a significant advantage over all other passages in both recall and questions. Also, the passage modified only for coherence held an advantage for recall over the original passage and the modified only for voice. Similar results were obtained for questions in the delay condition, but results did not indicate significant differences. Using the unmodified text version as the control group, the authors of this study found results that were statistically significant when compared to general conditions, although, the authors interpretation of given a text voice was unclear.

Vocabulary skills are critical for students to attain for successful reading experiences (Senechal, & Cornell, 1993). Senechal and Cornell studied, 80 4-year old and 80 5-year old children in two sessions to investigate children's vocabulary acquisition. The first session, 25-minutes in length, was devoted to pre-testing the participants' knowledge of synonyms and target vocabulary. The researchers then used a questioning condition after the first introduction of target words. Finally, the study ended with a

posttest occurring one-week following the reading of the storybook. Interestingly, analysis of the experimental reading episodes suggested significant differences as a function of age and reading practice, $F(1, 152) = 7.82$, $p < .001$, and $F(3, 152) = 158.08$, $p < .001$. Given this data, the authors concluded that as children grow older, a child's vocabulary subsequently increases. However, the interaction between age and reading practice was not significant.

Sinatra and Royer (1993) examined the differences in component processing skills of students of different ages and the developmental changes that occurred over the course of one-year. The participants were given a computerized battery designed to measure their general reading skill. Only 59 participants in the original 112 were found for the post-testing session. Results from this study indicated that accuracy data in decoding showed accuracy in concept activation that was the sole significant predictor of sentence comprehension. Furthermore, in an analysis of response times, data suggested that both word naming time and concept activation speed were related to the speed of sentence comprehension. This information is important to understand how students become more fluent comprehenders. Thus, to become fluent at comprehending narrative text, instruction needs to focus on fluent decoding strategies and fluent concept activation. This study used 4- and 5-year olds in their study, whereas other research has documented effects with older subjects.

In a similar study pertaining to reading comprehension, Medo and Ryder (1993) performed an analysis of variance to determine the effectiveness of teaching vocabulary to improve students' comprehension abilities of expository prose. The authors assumed that expository prose is more difficult for students because of the variety and depth of

background knowledge that students possess. Similarly, textbooks are incoherent and inherently incomplete because they fail to link concepts and connections of key elements.

The intervention was an instructional strategy linking vocabulary to previous knowledge and examining the connections within the vocabulary for the students participating in a science classroom (Medo & Ryder, 1993). When compared to the control group, the treatment group scored significantly higher on the Iowa Test of Basic Skills (ITBS) comprehension items. The results suggested that teaching text specific vocabulary increases students' ability to understand difficult expository text. However, when further examined, it may be likely that instruction in text specific vocabulary is a more effective teaching strategy for comprehension outcomes than teaching no strategy. This article looked narrowly at vocabulary instruction for students, a broader sense of comprehension research will allow a better understanding and more generalizable results.

Smith (1991) investigated the cognitive processes used by five successful and five less successful ninth-grade readers to construct meaning from narrative prose. The author investigated the use of think-alouds, similar to the previous think-aloud strategy described by Albright and Ariail (2005). The results of this study suggested that students are primarily story driven readers. This generalization of students reading purposes is unclear due to the passages participants were reading. All of the participants read narrative passages; therefore, to ascertain that students are story driven readers without giving participants an expository passage seems difficult. More interesting, Smith reported no clear significant differences between successful and less successful readers. However, the author suggested that, on average, successful readers used two more processes than did the less successful readers using the think-aloud procedures.

In a meta-analytical review, Neville and Searls (1991) suggested the usefulness of sentence-combining strategies and their relative effectiveness for reading comprehension. An assumption by the authors was the interactions of sentences used in written texts, students will be better equipped to understand the interactions between text and meaning. In the 24 studies reviewed in the sample, the studies used a mean sample size of 48 subjects in the control and 55 subjects in the experimental groups. Ninety-percent of the studies occurred between the years of 1975 and 1984 making the information from this study relevant, but somewhat out of date. In intervention research, it is important to consider the interventions that are statistically significant; however, it is also useful to examine the studies the do not demonstrate significance in order to find what methods appear to be ineffective for students. The results from Neville and Searls meta-analytic review suggested that the sentence-combining strategy produced no significant differences among effect sizes on criterion measures such as: cloze tests, standardized reading comprehension subtests, and standardized reading tests that usually include both comprehension and vocabulary measures. Other strategies that deal with text-enhancing elements have produced similar results.

For instance, Grant and Davey (1991) performed an analysis of text-headings and their effects on comprehension outcomes for students, the multivariate analysis performed revealed a significant main effect for the time it took to complete a comprehension measure. However, the authors' research suggested no significant differences, when compared to a control group, in main effect of heading condition or the interaction of the heading condition. Students in the heading condition did not significantly outperform the no-heading condition subjects on the comprehension

measure. Interestingly, the authors found that students in either group performed with a higher percentage correct on immediate testing than they did on delayed testing. This finding is important to consider given that many students do not retain information well.

In a similar study, Cox, Smith, and Rakes (1994) examined the effects of visual elaboration strategies to improve comprehension of students at the college level. Readers were categorized as high- or low-ability after the administration of The Nelson-Denny Reading Test, and subjected to one of two treatment conditions or a no treatment condition. Results from their study suggest the use of external visual elaborations that constitute drawing sketches at the designated points in the passage scored higher than both the internal visual elaboration group and the read-only control group on both the immediate and delayed tests. However, readers who were categorized as high-ability to comprehend text demonstrated mean scores that were higher on those categorized as low-ability in reading comprehension on the immediate test of recall across all treatments. The use of external visual elaborations or visual displays representing information gave struggling readers a better chance of succeeding at reading comprehension tasks.

Another study of student comprehension of expository text compared the effects of two discourse environments. Kucan and Beck (2003) investigated three questions related to talk and text comprehension. The results from their analysis suggested the there is no significant main effect for condition, talk and text comprehension versus no talk and text comprehension for recall scores. However, a matched pairs *t*-test revealed a significant improvement from pretest to posttest for recall scores ($p = .001$) and for question-response scores ($p = .042$). Talking about text supports comprehension for students in the general education classrooms.

Teaching students effective strategies has been documented to increase students' reading comprehension achievement. For instance, Stevens, Slavin, and Farnish (1991) performed an experimental study to investigate the influence of explicit instruction on reading comprehension strategies, and the degree that cooperative learning processes enhance student strategy learning. In this study, students were assigned to one of three treatment conditions: (a) cooperative learning with explicit instruction, (b) explicit instruction alone, and (c) traditional instruction control. The results indicated a significant impact of explicit instruction and cooperative learning on teaching students specific reading comprehension strategies. Within this study, the two treatments that used explicit instruction yielded significant and substantial effects on student achievement gains in reading comprehension. However, the results also provided evidence about the cooperative learning process to direct instruction. The authors suggested that these processes of explicit instruction did not produce statistically significant effects alone. In an earlier study of direct instruction, research indicated that students who participated in the Direct Instruction Follow-Through Program (p. 116) demonstrated significantly higher achievement than for local comparison participants (Darch, Gersten, & Taylor, 1987). This gain was most dramatically indicated by the percent of children performing one of more years below grade level. This gives evidence of the effectiveness of explicit instruction with students in the general education classroom.

Halpern, Hansen, and Riefer (1990) suggested the use of analogies to help students understand and remember text. The authors suggested, "Analogies are pervasive in human thought" (p. 298). Thus, analogies can assist student recall of critical information. In the study, participants were assigned to a two-test condition or a

condition devoted to reading the passages and rating their knowledge. In a comparison of immediate- versus delayed-recall of information, participants within the immediate testing was greater for free recall than for cued recall and for spontaneously mentioning the analogy. Interestingly, results also suggested that domain analogies play a helping role in subjects inferential abilities. Analogies can assist students identify information not explicitly stated within text conditions. This study preceded an examination of analogies to assist children acquire information from expository prose.

Vosniadou and Schommer (1988) investigated the use of explanatory analogies to understand information from expository text. Participants were required to recall the information described in the texts and communicate the information to another child. Not surprisingly, the effects were stronger for the older children than for the younger children. However, participants that had the greatest number of inference errors about the topic were not related to the presence of the analogies. Thus, the authors reported that analogies can assist children acquire information from expository text due to the possibility of transferring an unfamiliar structure to a familiar one.

On a similar note, Reutzel and Hollingsworth (1991) explored the effects of topic-related attitudes on student learning and recollection of text. The study consisted of 58 sixth-grade students assigned to one of three topic-related treatment conditions including favorable, unfavorable and neutral attitude groupings. Three 300- to 350-word passages were developed by the researchers on neutral, negative and positive topical attitudes. Interestingly, the analysis suggested a significant difference between the positive and negative passages averaged across testing times favoring recall on the negative passage. Also, free recall was significantly affected by testing time. Students recalled significantly

more in an immediate recall condition than in the delayed condition when averaging across both passage types. Therefore, topic-related attitudes do not appear to interfere with the immediate recall of text-based information found in expository text. Therefore, text-related attitude does not predict greater achievement without regard to other variables.

Self-monitoring, similar to self-regulation, comprehension of a specific passage may help students have greater achievements in the area of reading comprehension. In another study of reading comprehension achievement, elementary school children were used to determine the effectiveness of teaching students to revise problematic text that could facilitate students' comprehension monitoring (Beal, Garrod, & Bonitatibus, 1990). Beal, Garrod, and Bonitatibus suggested that many children generally overestimate the communicative quality of written text and believe that students understand messages that adults consider incomprehensible. Results from the authors' study suggested the self-question strategy to be effective and help children discover the critical textual information missing or inconsistent with other sentences in the narrative passage. Also, in relation to strategy training, the results appear to document that sixth-graders are more likely to detect and revise the target textual problems than third-graders. Thus, training sixth-graders this strategy will elicit better results than with third graders.

In a related study, Weed, Day, and Ryan (1990) found that the relationships between "metamemory" (p. 849) and recall depended on how "metamemory" was assessed and the timing of the child's engagement with the recall task for fourth-graders. Hence, many factors such as the self-monitoring comprehension strategy depend greatly on how it is assessed and the relative engagement with each participant.

McDaniel and Pressley (1989) studied the effects of keyword and context instruction of new vocabulary meanings on text comprehension and memory. In the study new vocabulary was taught by one of three methods including keyword, semantic context and no-strategy control. For the participants selected, the analysis found no significant effects for the main effect of text type ($F(1, 69) = 3.58$, $p < .06$). Therefore, the function of how the target vocabulary words were studied did not affect the speed of comprehension by the subjects. Therefore, the instructional process of how new vocabulary learning was presented did not facilitate reading comprehension.

Baker and Zimlin (1989) performed an examination of the instructional effects on participants use of two levels of standards. They suggested that average- and above-average readers' instructional level (i.e., higher level instructional or lower level instructional standards) affects students' level of comprehension. The results suggested that subjects subjected to either training conditions outperformed the control group. Also, the authors found that the effects from training the students on the use of standards were highly generalizable to other texts for average and above average readers. This finding is important considering the need for strategies that can be applied to multiple types of narrative and expository prose.

Other authors suggested that schemata affect the encoding and retrieval of information from textbook prose (Kardash, Royer, & Greene, 1988). Using undergraduates for the study, the results suggested that using schema activation exerts an influence on retrieval processes for comprehension of text but not on encoding processes. This avenue of research is critical for understanding that the before reading phase of

instruction is critical for participants at the undergraduate level. However, the effectiveness of this strategy with middle school students may vary.

Cross and Paris (1988) examined children's knowledge of their own cognitive skills, and the influence on learning and development. Using participants from the third- and fifth-grade, the authors found the Informed Strategies for Learning (ISL) increased students' awareness and use of effective reading strategies. The authors concluded that although there were aptitude-treatment interactions, the general trend for participants' cognitive skills and strategic reading become more congruent as students get older.

The previous studies analyzed present various strategies and attempted to discover the processes that students use to comprehend narrative and expository text. A summary of studies used with general education students has been summarized in Table 2. Research has suggested several strategies for working with students of average- and above average reading ability. However, strategies for students at-risk for reading failure or students with disabilities require further attention.

Table 2

Review of the Literature for General Education Students

Authors	Participants	Setting	Procedures	Results
Connor, C. M., Morrison, F. J., & Petrella, J. N.	73 students from the third grade	five child participants per classroom; longitudinal focus for 3 to 4 years.	explicit instruction vs. implicit instruction	average to low reading comprehension scores achieved; Greater for explicit activities
Lionetti, T. M., & Cole, C. L.	four children from a private school	a quiet hallway; over an 8-week period	listening while reading (LWR) vs. control group	rates in favor of the LWR group
Cain, K., Bryant, P., & Oakhill, J.	102 children.	longitudinal project over a period of 3 years	working memory capacity; higher level component skills	Working memory and component skills predict unique variance in reading comprehension
Aarnoutse, C., & Schellings, G.	experimental group of 155; control group of 172.	40 lessons of four different units.	problem oriented learning environments vs. control group	experimental group to outperform the control group
Broek, P., Risden, K., et al.	240 students	read three hierarchically structured stories	inferential questioning vs. general factual questioning; immediate questioning vs. delayed questioning	Questioning facilitated memory but only for information specifically targeted by the questions
Cartwright, K. B.	A total of 44 children	The duration of this study was unspecified; students received instruction individually	domain-general multiple classification task vs. reading-specific multiple classification task	Reading-specific multiple classification skill made a unique contribution

(table continues)

Table 2 (continued)

Authors	Participants	Setting	Procedures	Results
Rose, D. S., Parks, M., et al.	94 subjects in the experimental group and 85 subjects in the control group	experimental classrooms for approximately 20 hours of instruction	RCD experimental control group vs. control group	Enhanced achievement for drama-based instruction and comprehension achievement
Hollingsworth, P. M., & Reutzel, D. R.	78 subjects from one year round school	50 min. were allocated for one year	positive attitude condition vs. objective position condition	no significant difference among the three groups'
Schraw, G.	Two hundred forty seven undergraduates	introductory educational course	transmission or transaction beliefs students	Transaction beliefs were related positively to the type and number of reader responses
Branden, K.	151 primary school children	general education classroom with an unspecified time	unmodified pre-modified, unmodified with oral negotiation with a peer, and unmodified negotiation	negotiating the meaning of unmodified written input led to higher comprehension
Spires, H. A., & Donley, J.	112 ninth graders enrolled in the general education social studies	Six 45-minute sessions followed by four 45-min sessions	prior knowledge activation strategy vs. main idea strategy vs. no instruction control group	Both the PDA and MI-PKA groups performed higher on application level comprehension
Markell, M. A., & Deno, S. L.	42 third-grade students across four classrooms	general education curriculum for15 levels of difficulty	passages containing 8-9 explicit questions; a maze passage	improved performance on traditional comprehension tasks
Ezell, H. K., Hunsicker, S. A., & Quinque, M. M.	25 students working in dyads; 23 students working alone	small group reading; a 8-month follow up probe	peer assisted vs. teacher assisted vs. QAR	no significant difference between the two groups on assessments

(table continues)

Table 2 (continued)

Authors	Participants	Setting	Procedures	Results
Loxterman, J. A., Beck, I. L., & McKeown, M. G	88 sixth graders	a original text and revised text for two weeks.	original text silently vs. original text thinking aloud vs. revised text silently vs. revised text thinking aloud	recall performance gradually increased across the continuum which was significant
Crain-Thoreson, C., Lippman, M. Z., et al.	24 college level students participated in this study	3 passages in 3 different presentation modes; specific time allotment was unspecified	marked think aloud vs. unmarked think aloud vs. control group	no effect of the presentation mode on essay scores
Davis, Z. T.	120 students from the third and fifth-grade	the regular education classrooms; 20 min. lessons were conduction for two stories	directed reading activity (DRA) vs. story grammar/ structured overview	story mapping procedure 14% better inferential comprehension and 7% better literal comprehension
Kloster, A. M., & Winne, P. H.	227 students form an eighth grade mathematics class	instruction in the general education classroom	concept organizers: concept, analogy, outline, or dummy	true advance organizer outperformed outline and dummy groups
Beck, I. L., McKeown, M. G., & Worthy, J.	164 fourth graders	period of one week in individual sessions	original version, version revised for coherence, version of the textbook, and coherent passages that exhibited voice	voiced coherence passage held significant advantage over all other passages in both recall and questions
Senechal, M., & Cornell, E. H.	80 4^{th} and 5^{th} grade children	individually with the researcher for approximately 1 session of 30 min	reading practice: questioning vs. recasting vs. word repetition, vs. verbatim reading	average difference between the two ages and between conditions never exceeded 9% of the mean total time

(table continues)

Table 2 (continued)

Authors	Participants	Setting	Procedures	Results
Sinatra, G. M., & Royer, J. M.	112 students in grades 2-5	length lasted for one year in the regular education classroom.	component processing skills developmental changes over one year	Correlation of .92 between performance on the syntactic analysis task and performance
Smith, M. W.	two classes in one high school	one training session of approximately 45 minutes	successful vs. unsuccessful readers use of think aloud protocols	Successful readers tended to rely more heavily on their personal experience
Stevents, R. J., Slavin, R. E., & Farnish, A. M.	486 students in four elementary school	one of three treatment groups; 60-90 minutes of instruction	cooperative learning with direct instruction, direct instruction alone, and traditional instruction	two instructional treatments including the direct instruction on main idea strategies outperformed significantly better than the control group
Darch, C., Gersten, R., & Taylor, R.	Over 600 students	instruction typically in the general education classroom; a 7-year period	direct instruction program vs. traditional instructional methods	the direct instruction outperformed the local comparison students on almost every measure
Halpern, D. F., Hansen, C., & Riefer, D.	193 individuals	one week with individual session	two-test group vs. scientific topics group	no differences; domain analogies control
Vosniadou, S., & Schommer, M.	58 students	a total of 40 days individually	familiar vs. unfamiliar topics; analogy vs no-analogy condition	children in the analogy condition recalled and communicated more of the information

(table continued)

Table 2 (continued)

Authors	Participants	Setting	Procedures	Results
Reutzel, D. R., & Hollingsworth, P. M.	58 sixth grade students	Social studies classroom for approximately 50-min. long	favorable vs. unfavorable vs. neutral	experimentally created topic-related attitudes do not appear to interfere with the immediate recall
Beal, C. R., Garrod, A. C., & Bonitatibus, G. J.	Twenty four children in a third grade classroom; 18 children from a fifth-sixth grade	whole class instruction; approximately 20 min long for 2 sessions	self-questioning strategy vs. no strategy	the strategy in question was most effective in increasing third graders' scores
McDaniel, M. A., & Pressley, M.	75 students enrolled in an undergraduate course	tested together; screened for vision impairments individually	keyword vs. semantic context vs. no strategy	comprehension favored the keyword method
Baker, L., & Zimlin, L.	80 fourth-graders	individually for one session lasting from 20-30 minutes	macrostructure vs. microstructure vs. no instruction	more likely to identify problems; both trained groups identified more problems than control condition
Kardash, C. A., Royer, J. M., & Greene, B. A.	one hundred twenty seven undergraduates participated	Subjects received a perspective at the time of instruction and testing	reading group vs. listening group	schema activation exerts an influence on retrieval processes
Cross, D. R., & Paris, S. G.	87 fifth graders and 84 fifth graders	30 min lessons were taught twice each week	informed strategies for learning vs. no treatment	gains in metacognition and reading strategies

Students At-Risk Comprehension Outcomes

The following section will be comprised of intervention/experimental studies that have focused on struggling at-risk students. Studies that have focused on specific interventions for students in comprehension strategies will be discussed.

Some students are considered at-risk due to socio-economic status or because English is not their primary language. Whatever the case, specific interventions are necessary for at-risk students to be successful in the general education classroom. Shippen, Houchins, Steventon, and Sartor (2005) performed a study to investigate the differential effects of two direct instruction reading programs, one overt decoding strategy, and one covert decoding strategy. The authors used seventh graders performing 2 or more years below grade level in reading. The results suggested that univariate tests associated with the time main effect were highly significant for word reading efficiency, reading rate, reading accuracy, and reading fluency (p <.01). Between subject tests effect was associated with the level main effect were also highly significant for word reading efficiency, reading rate, reading accuracy, and reading fluency (p <.01). However, the between-subjects main effect were only significant for reading rate (p <.05). Hence, all groups made significant gains when the direct instruction programs were used, but the programs appeared to be more effective and efficient for high ability readers.

Similarly, Mason (2004) examined the effects of two strategic approaches to reading comprehension. Thirty-two students participated in the study that used a TWA (Think before reading, think While reading, think After reading) approach, and an RQ (reciprocal questioning) approach. The results of this study indicated a significant main effect for the TWA group compared with the RQ group ($F(1, 27) = 5.151$, p <.05). Also,

a statistically significant main effect was found for the number of information units in the oral retail for TWA compared to RQ ($F(1, 27) = 8.194$, $p < .01$). The author concluded the usefulness of the TWA strategy when compared to the RQ strategy for teaching students reading comprehension strategies. The use of TWA with secondary children was not mentioned in the literature.

Rashotte, Macphee, and Torgesen (2001) examined the relative effectiveness of a phonologically based reading program. The treatment group received instruction from the Spell Read program for eight weeks while the no-treatment control received only regular classroom activities with no individual assistance from the teacher. Results from this analysis suggested that a phonologically based reading instruction program can significantly impact the word level reading skills as well as the reading comprehension skills of students reading below grade level.

Another study expanded Rashotte, Macphee and Torgensen by studying the effects of individual reading tutoring on the time-on task and student-teacher interactions often displayed by early signs of academic and behavior problems (Gest & Gest, 2005). This study also consisted of a tutored condition and a non-tutored condition. Results from this study suggested that patterns of change can exist for students with very low initial reading skills when given individual attention with tutors. Reportedly, all four students in the tutored condition showed gains in time-on task between weeks 1-3 (58% to 69%) and weeks 10-12 (59% to 65%). On the other hand, non-tutored students showed virtually no change or slight declines in time on-task. This research is valuable because of the relevance between time on-task and student achievement. By increasing the amount of

time students spend engaged, the more likely students will have opportunities to be successful, eventually leading to a decrease in the achievement gap.

Tutoring has also been examined for four first-grade students experiencing delays in reading fluency and comprehension. Hitchcock, Prater, and Dowrick (2004) studied the effects of tutoring and video self-monitoring intervention with regard to student fluency and comprehension of narrative prose. Results from this single subject research design suggested that tutoring by a community partner and video self-monitoring can increase a participant's reading comprehension and fluency skills. The greatest rate of increase was found when the video self-modeling tape for reading fluency was shown to students. When the reading comprehension strategy was introduced, all students continued to make gains in both reading fluency and comprehension. Interestingly, after the intervention, a follow-up analysis reported the continued use of comprehension strategies and self-modeling of reading fluency over time. Thus, the strategies introduced in the research design were generalized back to the general education classroom.

Training students at-risk to incorporate a think-aloud strategy can assist students understanding of literal and higher order reading comprehension (Ghaith & Obeid, 2004). The authors studied 32 eighth-grade students assigned to a control group or experimental condition. Results of their analysis suggested a significant relationship between mastery level think-alouds and overall reading comprehension ($r = 0.73$, $p < .01$). Furthermore, the researchers identified a significant relationship between mastery level think-alouds and critical higher order comprehension ($r = 0.53$, $p < .05$) and between mastery level think-alouds and interpretive comprehension ($r = 0.72$, $p < .01$). Thus, the use of think-alouds

has also been documented as an effective strategy to improve reading comprehension for at-risk students.

Laing and Kamhi (2002) also examined the use of think-aloud protocols to provide a comparison of inferencing abilities between below-average and average readers. These authors suggested that average readers had significantly more explanatory inferences than below-average readers, and the comprehension achievement as measured by story recall was significantly better for both groups in the think-aloud condition than the listen through condition. This study was performed without the use of a control group. Thus, a comparison cannon be establish with regard to the effectiveness of this think aloud protocol strategy. Also, at-risk students need to use strategies that will provide them with the greatest utility when reading difficult text to account for the discrepancy between their performance and high-ability readers' performance.

During exercises to activate student's prior knowledge, key words and previewing have been documented to influence comprehension for at-risk students (O'Donnell, Weber, & McLaughlin, 2003). These authors studied the effects of previewing and key word instruction on the rate of words read correctly and the comprehension of text by students who were identified as at-risk. Baseline data in the authors' study indicated student accuracy levels of words read correctly per minute ranged from 135-154, and correct answers to comprehension questions ranged from 0-2 correct responses. A second baseline indicated similar results with an average of 158.5 words correctly per minute with an average of 14.8 errors per minute and 1.75 answers correct with regard to comprehension items. During the intervention, the researchers introduced a previewing strategy and key word presentation. The results of the intervention phase indicated an

average of 172 words per minute correct with an average of 3.7 errors during a one-minute timed reading. Furthermore, correct response to comprehension items increased to 3.7 answers correct. Thus, although the results may not indicate a significant difference between baseline and intervention phases, the use of previewing and presentation of key words assisted students with words read correctly and comprehension errors.

The previous study used an explicit verbal intervention with at-risk students. Johnson-Glenberg (2000) performed a study to determine if verbal strategies or visual strategies are more effective for students who had specific difficulties comprehending text. The results suggested that students who participated in the reciprocal teaching (RT) group significantly improved their performance on several of the key measures that were assessed. Furthermore, the RT group significantly outperformed the untreated control group on the measures word recognition, question generation, answering explicit open-ended questions; they marginally outperformed the control group on answering implicit open-ended questions. On the other hand, the visually-based (VV) group significantly outperformed the control group on answering implicit open-ended questions and demonstrated a marginal gain over the group on word recognition. Thus, RT strategies seem to be effective for at-risk students' gain in knowledge with the exception of inferential questions, but VV activities can supplement RT for comprehending inferred open-ended questions.

Guastello, Beasley, and Sinatra (2000) studied the effects of concept mapping on science content comprehension for students at-risk. In their study, one group was instructed using a read and discuss teacher-directed method, and the experimental group followed a model of concept mapping that connected minor and major concept ideas. The

results from the present study indicated the two groups scored similarly on the pretest and on the standard achievement test that is administered in every public school system. However, results also showed a strong and statistically significant treatment main effect favoring the experimental group ($F(1,121) = 1,261.56$, $p < .0001$). Thus, the use of concept maps was them more effective strategy than traditional methods of teacher-directed readings and discussions.

In relation to struggling students' comprehension of text, Jacobson et al. (2001) examined the effectiveness of cross-age tutoring. The focus of their study was on higher-order thinking skills that students use to analyze and interpret text. The authors thought that struggling older students under the guidance of a teacher/supervisor could substantially improve their comprehension abilities by tutoring younger students regardless of the younger students' ability levels. Of the seventh-graders that participated in the study, the mean gain in comprehension was 1.1 years growth that was statistically significant when compared to the control middle school that averaged .65 years growth in their comparison group. This allowed the researchers to document the effectiveness of tutoring information that was presumably difficult for the struggling seventh-graders. This intervention took considerable teaching time in order for students to perform the necessary tutoring groups.

Another study conducted by Fisher (2001) suggested the use of peer tutoring to increase the comprehension skills of poor readers. Like the previous study, this author suggested that peer tutoring can be an appropriate educational intervention for young struggling readers. The outcomes of tutors with below average comprehension abilities suggested that peer tutoring was beneficial. In fact, data suggested that the increase in

reading comprehension ability may be due to authentic reason for literacy, regular feedback and modeling, and integration of writing into the curriculum. Other studies have suggested specific strategies that may enhance the comprehension outcomes for students at-risk.

One study assessed the use of think-alouds in the public education classroom. Thinking aloud during the process of reading has been recommended as a strategy for improving students with learning and behavior problems comprehension of text (Caldwell & Leslie, 2003). The study involved a prior knowledge measure, as well as a think-aloud marker that was strategically placed throughout three different texts. The purpose of the think-aloud markers was to allow generalization of relevant comment in order for the subjects to see connectivity within the text. Results suggested that think-alouds may affect student's comprehension ability depending on the difficulty of the selection and how comprehension is measured. Also, prior knowledge was minimal for the selection of text chosen by the research group and produced little to no effect on comprehension.

Earlier, Biemiller and Siegel (1997) examined the longitudinal effects of an experimental reading program and whole language for students at risk for reading failure. The authors found no significant differences between groups on decoding and comprehension measures, but mean raw scores equaled 6.1 (*SD* =8.5) for the whole language group and mean raw score of 7.9 (*SD* = 8.9) for the experimental reading program. Furthermore, the reading comprehension measure indicated average raw scores of 23.1 (*SD* = 17.6) and 27.5 (*SD* = 15.3) for the whole language group and experimental reading group, respectively. Thus, although no significant differences were found

between the two groups, authors should further investigate the use of the Bridge program, the experimental group, for at-risk students. There is an unclear description of the experimental condition in this research. The authors did not present the experimental program as strategic instruction.

Other research has been conducted to determine the effects of strategy instruction on the comprehension performance of at-risk students in reading (Dole, Brown, & Trathen, 1996). Students in this study were assigned to one of three conditions including (a) strategy instruction, (b) story content instruction, and (c) basal control instruction. The results suggest that the strategy group performed just as well as the story content and basal control groups when students read texts after receiving instruction. On the other hand, the strategy group did outperform the other two groups when students were asked to read selections of their own. This conclusion lead the researchers to further analyze the use of interest stories in content reading instruction.

Another form of strategy instruction, direct instruction, has been examined to assist students in understanding unreliable narrators (Smith, 1992). Smith's study also used the think-aloud protocols of five successful and five less-successful readers. Findings from the present investigation suggested that teachers who require students to reread texts cannot presume that all students will broaden their understanding of the passage. Also, helping students become mature responders is a difficult task that changes slowly over time. The last finding of the present study suggested that direct instruction in interpretive strategies is a promising instruction technique that has an impact on students' comprehension outcomes.

Homan, Klesius, and Hite (1993) also studied repeated reading effect on at-risk students' comprehension and fluency. The authors found a significant difference between pre- and post-test scores for all subjects; however, no significant main effect for the treatment was found. On a more positive note, the researchers did find a significant (p <.05) gain in comprehension when repeated readings were used and assisted through nonrepetitive reading methods. Thus, when narratives were rewritten in a different format, the subjects benefited from the repeated readings.

Some teachers use flashcards for students at-risk for reading comprehension failure. Tan and Nicholson (1997) examined the use of flashcards to improve the comprehension of text for at-risk readers. Participants in the experimental group were taught to decode target words fluently using flashcards, while participants in the control read passages aloud and then were tested on comprehension measures. The students from the trained condition had better comprehension than the control condition when questioned about the passages. The authors contended that the use of flashcards provides effective instruction to increase rapid word recognition for at-risk readers. Questions remain unanswered about the generalizability of the word training to other reading context.

Levy, Abello, and Lysynchuk (1997) reported an examination looking at the relationship between word identification speed, story reading fluency and comprehension for at-risk readers. The authors findings suggested the effect of repetitions is significantly related to reading times and number of errors. Also, the authors suggested that after the first and final readings, the children were no better at recalling the story that contained

the trained words than the story without trained words. Thus, the results contradicted the work of Tan and Nicholson for students at-risk for reading failure.

On a similar note, Gambrell, Koskinen, and Kapinus (1991) investigated the effects of practice in retelling on text comprehension for four practice sessions. The research finding suggested that proficient readers recall significantly more text based propositions, and included more positive elaborations in session four than in the first session. There were also significant differences found for both explicit and implicit questions. For less proficient readers, the findings suggested that there were statistically significant differences for propositions recalled, but no significant differences for positive elaborations or negative intrusions. The authors suggested that there are potential benefits for using oral retelling with average and below-average ability readers. However, the strategy is not equally justifiable for both groups. Thus, the length of the intervention may not have sufficiently provided participants enough time to practice the aforementioned strategy.

Meloth (1990) performed a study examining the effects of instruction designed to improve metacognition of at-risk students' performance. The author found significant differences between groups on six different measures including (a) knowledge of cognition, (b) concepts of reading interview, (c) graded oral reading paragraph, (d) supplemental achievement measures, (e) The Stanford Achievement Test-Word Study, and (f) The Michigan Educational Assessment Measure-Reading Comprehension. The findings suggested that poor readers benefit from explicit instruction. However, no significant between-group differences were found until 16 weeks after initial explicit teaching took place. The effectiveness of explicit instruction, therefore, was not apparent

until 4 months of instruction had already been presented to students at-risk for reading failure.

Prior knowledge may have impacted the previous studies performance related to student achievement gains on comprehension tasks. Recht and Leslie (1988) investigated how prior knowledge influences the amount of short-term verbal and non-verbal memory and long-term retention in students with high- and low-levels of reading comprehension. Using 32 seventh- and 32 eighth-graders, results suggested the main effect of prior knowledge is significant ($F(8, 53) = 20.8$, $p < .001$). However, the main effect of ability and interaction between knowledge and ability were not significant. Students that were asked information to obtain accurate prior knowledge were given passages referring to their background knowledge. Those students were able to comprehend at higher level of accuracy on the passages. Similarly, Yuill and Joscelyne (1988) found that providing integrative cues improved comprehension by poor readers, but not good readers. However, providing the cues had no effect on verbatim recall. Thus, strategies for at-risk students with reading problems continue to be an area that needs further investigation.

In conclusion, there appears to be a great deal of knowledge to be learned from previous research on reading comprehension practices for students at risk for reading failure. Some strategies (i.e., think alouds, explicit instruction, etc.) have proven to be more effective than others by using control groups in researchers' analyses. A summary of the preceding studies can be found in Table 3. Strategies that work with general education students and students considered at-risk may be insufficient when working with students with disabilities. The following section describes studies that have been performed on improving reading comprehension outcomes for students with disabilities.

Table 3

Review of the Literature for At-Risk Students

Authors	Participants	Setting	Procedures	Results
Shippen, M. E., Houchins, D. E., et al.	Students were 2-4 years behind in reading ability levels (N = 55)	intervention period of six weeks; middle school setting.	treatments consisted of two direct instruction programs and the REWARDS program	all students regardless of overt or covert direct instruction programs made significant gains
Mason, L. H.	32 fifth-grade students who struggle with reading	small group instruction during the intervention period One intervention group 5 lessons; 6 lessons for the other group	TWA (Think before reading, think While reading, think After reading) vs. reciprocal questioning (RQ)	no significant differences between groups on 3 comprehension measures, self-efficacy, or motivation
Rashotte, C. A., MacPhee, K., & Torgesen, J. K.	115 students from a low socioeconomic school	50 minute daily lessons for a total of 35 hours (6 weeks)	Spell-Read program vs. no treatment control	Spell-Read program superior to the traditional group.
Gest, S. D., & Gest, J. M.	17 subjects selected by their respective teachers	tutored for three 30-min. sessions	tutoring condition vs. nontutored condition	individual reading tutoring may enhance reading skills
Hitchcock, C. H., Prater, M. A., & Dowrick, P. W.	Four first grade students that were experiencing delays	Two 2-min. self-modeled videotapes in a small group or individual training session	community partner-tutoring vs. video self-modeling	measures reached the pre-established criteria for the study
Ghaith, G., & Obeid, H.	Thirty-two eighth grade children	Four weeks; Specific amount of time was not given	think-aloud condition vs. no treatment condition	Think-alouds is positively related to reading comprehension

(table continues)

Table 3 (continued)

Authors	Participants	Setting	Procedures	Results
Laing, S. P., & Kamhi, A. G.	40 participants were divided into groups	Students participated in three 45- to 60-min sessions	listen through condition vs. think aloud condition	Average readers generated more correct inferences than students with disabilities
O'Donnell, P., Weber, K. P., & McLaughlin, T. F.	a single student; regular education classroom	a six month period; time allocated each day was not included.	discussing of key words in the context of a passage vs. practicing/listening to the passage to be read	the material was previewed and the key words were discussed demonstrated higher results
Johnson-Glenberg, M. C.	A total of 45 students and 14 students served as a control.	small groups for 28 session for 30 minutes each	reciprocal teaching vs. visually based visualizing/verbalizing program; control group	Between group comparisons favored the reciprocal teaching on explicit, factual material
Guastello, E. F., Beasley, T. M., & Sinatra, R. C.	Two equally sized groups of 62 students	a duration of 8 school days with 50-minutes devoted each day	teacher directed method vs. concept mapping method	Concept mapping can be expected to improve comprehension scores
Biemiller, A., & Siegel, L. S.	A total of 106 students participated in the study	duration of intervention was unspecified	whole language vs. Bridge program	Bridge group had higher achievements
Dole, J. A., Brown, K. J., & Trathen, W.	67 fifth- and sixth-grade students	one of the three treatments in the general education classroom	strategy instruction vs. story content instruction; control group design	The strategy group performed as well as the story content and basal control groups

(table continues)

Table 3 (continued)

Authors	Participants	Setting	Procedures	Results
Smith, M. W.	5 high-ability students and 5 below average ability students	The study lasted for 6 weeks	direct instruction using think alouds vs. control group	instruction did not substantially affect the interpretive operations that students used
Homan, S. P., Klesius, J. P., & Hite, C.	A total of 28 students 26 of these students were below average ability	total of 7 weeks in a chapter one resource setting	repeated reading and nonrepetitive strategies vs. unison reading	equivalent benefits for repetitive and nonrepetitive methods
Tan, A., & Nicholson, T.	42 below-average readers	Five training sessions lasting 20 minutes long	single word-, phrase training, vs. no training	trained children had better comprehension
Levy, B. A., Abello, B., & Lysynchuk, L.	28 students with poor reading ability	four stories at the third grade level; five weeks	single word practice condition vs. control group condition	enhanced results form the practice condition
Gambrell, L. B., Koskinen, P. S., & Kapinus, B. A.	48 fourth-graders were involved in the study	During four sessions, subjects read silently	proficient reader group vs. less proficient reader group	Practice in retelling resulted in significant improvements
Meloth, M. S.	number of subjects was 177 low group students	general education classroom for approximately one year.	treatment condition reading strategies vs. no treatment	subjects' knowledge of cognition increased moderately
Recht, D. R., & Leslie, L	64 students in junior high were divided in four equal-sized groups	read a passage therefore, no intervention phase was present	low ability readers vs. high ability readers and low ability readers with prior knowledge	There was a significant main effect for prior knowledge on all measures
Yuill, N., & Joscelyne, T.	24 subjects were involved in the analysis	individually in a quiet room; read eight short stories	integration of titles and pictures vs. no titles and pictures	Providing the cues improved comprehension by poor, not good comprehenders

Students in Special Education Comprehension Outcomes

Students with disabilities do not use appropriate comprehension strategies when presented informational and narrative passages as do their general education counterparts. Therefore, specific instructional techniques are needed to teach students with disabilities appropriate strategies that can be used to comprehend difficult passages. The proceeding section will analyze current reading comprehension research practices that have been used with students with disabilities.

Mastropieri, Scruggs, and Mushinski-Fulk (2001) studied a keyword mnemonic condition and an experimenter-directed rehearsal condition relative to difficult taught vocabulary for students with disabilities. The study results indicated that the mnemonically instructed students outperformed the rehearsal condition students on both the production test ($F(1, 23) = 47.69$, $p < .000$) and the comprehension test ($F(1, 23) = 5.66$, $p < .026$). Thus, the authors suggested using mnemonic strategies to teach students with learning disabilities difficult vocabulary.

Other research on vocabulary instruction for teaching students with disabilities examined the use of constant time delays. Schuster, Stevens, and Doak (1990) examined a 5-second constant time delay procedure for 3 students with mild disabilities in a resource milieu. In this study, each student was subjected to a 5-second constant time delay procedure used during 30-trials in the instructional sessions. During the no treatment condition, a 0-second time delay was incorporated. Using a single subject A-B-A-B design to measure the effectiveness of the constant time delay, two students maintained 100% correct responding to all the definitions taught during the instructional period. The third student responded with at least 93% accuracy during these sessions.

Similar results were obtained with the second intervention phase of the study. The authors noted the importance of the 5-second constant time delay when teaching students with learning disabilities vocabulary definitions. However, single-subject design research is difficult to generalize to the population of students with learning disabilities. Therefore, further investigation is needed to establish the effects of constant time delay procedures.

Similarly, a research-translation project incorporated a precision-teaching vocabulary intervention over a 2-year period for students with disabilities (Stump et al. 1992). Stump et al. suggested that precision teaching strategies are effective for developing the vocabulary skills required by students with disabilities. Results suggested that 22% of the students with disabilities worsened, whereas 55% of students receiving special education assistance remained consistent across testing sessions. Also, 69% of the students in the general education curriculum improved. This study expanded the work of Bos and Anders (1990), who studied the use of interactive vocabulary instruction for middle school students with learning disabilities. The authors compared the effectiveness of interactive vocabulary techniques. Results from this study suggested prior knowledge is a significant covariate for vocabulary and comprehension ($F(1, 54) = 20.43$, $p < .001$; $F(1, 54) = 20.00$, $p < .001$, respectively). Furthermore, the authors documented a significant effect for the interactive vocabulary condition ($F(3, 54) = 5.37$, $p < .003$). These studies provided insight for the need to instruct students with disabilities in vocabulary knowledge.

Vallecorsa and DeBettencourt (1997) examined the use of mapping to teach reading and writing to middle school students served in special education. Their study investigated the effectiveness of direct instruction of text structure procedures in reading.

The authors used an A-B-C single-subject design to investigate the effectiveness of story mapping. The first intervention phase (B) consisted of the teacher introduction of the story-mapping procedure to improve students' comprehension, and the second intervention phase (C) instructed students to use the story-map as a guide for developing written stories. Two of the three students who participated in this study demonstrated gains in reading comprehension and continued to gain reading comprehension skills when the second intervention phase was presented. The third student demonstrated a decline in reading comprehension with the introduction of the third-phase; but, the student did achieve minimal gains with regard to the first intervention phase. Again, single-subject research should be considered with caution, due to the inability to generalize to the entire population.

Kim, Vaughn, Wanzek, and Wei (2004) documented the effects of graphic organizers on reading comprehension for students with learning disabilities in a synthesis of research. The authors documented the various types of graphic organizers that demonstrated positive effects for students with learning disabilities reading comprehension achievement including (a) semantic organizers, (b) cognitive maps with a mnemonic, (c) cognitive maps without the use of a mnemonic, and (d) framed outlines. One particular study of interest was conducted to determine the use of graphic organizers to comprehend relational knowledge from expository prose (DiCecco & Gleason, 2002). DiCecco and Gleason suggested that many students with disabilities experience problems making relationships from information found in expository text. Hence, the researchers developed graphic organizers designed to make implied relationships more explicit for students with disabilities. Results from their study showed that students with disabilities

in both groups had significantly higher posttest scores (p <.0001). Thus, the use of graphic organizers did not significantly improve students' abilities to recall and connect information from expository text. Specifically, the group that did not have the graphic organizer instruction improved from a mean of 4.25 (22%) to a mean of 12.58 (63%), whereas the group that received the graphic organizer instruction scored a mean of 6.08 (30%) to an average of 13.42 (67%). This study involved expository material only; therefore, additional information is needed to determine the effectiveness of graphic organizers for narrative texts.

One such study was performed to investigate the effectiveness of explicit instruction of an advanced story map procedure on the reading comprehension performance of sixth-grade students with disabilities (Gardill & Jitendra, 1999). The authors used a multiple-baseline design across participants to assess the effects of advanced story mapping. The researchers recorded varied results from each dyad. The average number of sessions for all students was 8.3, 12.7, and 10.0, respectively. In essence, the individuals that participated in the study did not significantly differ in the number of trials it took to reach criterion performance.

Similarly, Boyle (1996) studied the effects of cognitive mapping on the literal and inferential reading comprehension of students with mild disabilities. Particularly, the author used students with mild learning disabilities and mild mental retardation. Using difference scores from the dependent measures, a statistical significance was obtained; however, there was no interaction to the type of disability. Thus, literal questions in the experimental group ranged from 24% points with on grade level passages to 26% points

with below-grade level passages. Interestingly, gains on inferential measures ranged from 19% to 39% on-grade level and below-grade level passages, respectively.

Chan, Cole, and Morris (1990) studied readers with and without disabilities on word-recognition ability for three different conditions (i.e., visualization instruction only, visualization instruction with visual displays, and read-reread). Results from reading comprehension measures suggest that among third-grade students, those taught the visual instruction with graphic displays significantly outperformed those receiving imagery instruction only during one of the sessions. Thus, both the subject group and testing occasion were significant; however, the training condition effect was not significant. Other authors have further studied the effects of reading fluency instruction on the academic and behavioral success of students with disabilities (Scott & Shearer-Lingo, 2002). Scott and Shearer-Lingo study consisted of three students with emotional/behavior disorders in a self-contained classroom. Using a single-subject design, the researchers compared the effects of two reading programs. The results indicated that during the "Teach Your Child" intervention students showed little to no increase; however, students with disabilities demonstrated a consistent increasing trend in reading fluency with the Great Leaps intervention. For instance, two of the three subjects participating in the study demonstrated near 90% accuracy during the Great Leaps phase of the intervention. Thus, although not generalizable to the entire population, students with disabilities appeared to gain more skills with the Great Leaps intervention.

In a comparison of text difficulty, O'Connor et al. (2002) investigated the reading growth of students with disabilities over an 18-week period with one-on-one tutoring. The experimental treatments consisted of the reading-level matched (RLM) approach,

and the classroom matched (CM) approach, as well as a no treatment control group. The participants in both interventions scored significantly higher than those in the control for segmenting words. Furthermore, students within the RLM intervention performed significantly better on fluency measures than both the CM and control groups. However, the authors documented significant improvement for all the conditions including segmenting, word identification, word attack, and passage comprehension. Hence, although all the interventions were effective methods for delivering instruction, the RLM intervention was superior for students with disabilities that have targeted weaknesses.

Vocabulary is critical for gaining meaning from printed text. One study compared the effects of a constant-time delay (CTD) procedure for instructing students with disabilities in the area of vocabulary. The researchers used an adapted alternating treatment design to compare the effects of group versus individual written responses. The analysis of variance indicated a significant correlation between the condition students were assigned and time interaction ($F(3, 36) = 17.43$, $p < .001$). When examining the data on an individual basis, 15 students met the criterion correct for the group condition versus seven students that reached criterion correct for the individual condition.

Swanson and Hoskyn (1998) examined experimental interventions for students with disabilities. The researchers found that instructional intervention was positive and of high magnitude, averaging 0.79. The authors noted that effect sizes were more positive for combined intervention models that included strategy instruction. One such study examined the effects of teaching character motive with explicit rule-based instruction or a basal reader activity-based approach (Rabren, Darch, & Eaves, 1999). This study compared three text types including textual explicit, textually implicit, and scriptually

implicit. Results suggested the explicit group outperformed the basal reader group on their respective abilities to recall character motive without regard to the type of text ($F(1, 119) = 8.10$, $p < .007$). However, there was also a significant effect for the type of text ($F(1, 119) = 3.26$, $p < .044$). In fact, students taught explicit comprehension strategies had a mean correct of 87% for textually explicit stories and 77% for implicit stories. On the other hand, the basal reader group performed poorly on the motive recall measure with 71% correct for explicit texts and 62% and 67% on the implicit textual measures. The authors did not find a significant main effect on the maintenance measure ($F(3, 40) = 1.23$, $p > .05$). Thus, the data suggested that mastery learning did not occur for these students with disabilities in order for them to continue using the strategy. It is also possible that the students did not find the strategies modeled by the teachers to be effective in multiple situations.

Sargent (1994) examined two language treatments (direct instruction vs. whole language) to determine the effectiveness for receptive and expressive vocabulary improvement made by students with disabilities. Results from this author's study revealed little variability among students' vocabulary growth. In fact, the mean obtained for increased frequency of vocabulary usage was 9.2 ($SD = 6.2$). On the other hand, the direct instruction group obtained 3.8 ($SD = 2.3$). Hence, both experimental groups made vocabulary growth, but the direct instruction group displayed a greater increase in frequency of vocabulary used by students with disabilities. The authors did not use a control group to establish a comparison between the two treatment groups. Thus, results about the effectiveness of this study should be considered carefully when choosing programs for students with disabilities.

Johnson, Graham, and Harris (1997) examined the involvement of goal setting and self-instruction separately and combined on the acquisition, maintenance, and generalization of a reading comprehension strategy. Specifically using 47 randomly assigned students with learning disabilities, each instructor taught at least one or two instructional groups. Results suggested that the use of a story grammar strategy has positive effects on students with learning disabilities reading comprehension. Since each group received some level of strategy instruction, students in all four conditions were able to recall significantly more main ideas, details, and story parts in the stories that were assigned. Again, the authors of this research choose not to use a control group to establish a comparison group to assist to determine the effectiveness of treatments.

Similarly, Carlisle (1999) investigated students with learning disabilities recall on science passages when differences in passage understanding and vocabulary were controlled. Using topics from sixth- and eighth-grade science text, results indicated that students without disabilities perform better on recall measures from science text than students with disabilities. However, there were no significant effects for grade. Meaning students with learning disabilities in the eighth-grade, although older students have had more educational experiences, did not outperform sixth-graders without disabilities on recall measures on science related topics.

A similar study differed only in the context of instruction. Hudson (1997) investigated the application of teaching strategies and instructional sequences for instructing students in social studies. The initial teaching strategy focused on lecture format followed by guided practice and teacher feedback. Also, the units were broken down into smaller units. Differing from the previous study, results from this analysis

found no significant difference between treatment and performance over time on curriculum-based measures ($F[1] = .21$, $p = .65$). Also, there were no significant differences between the groups, responses relating to lecture presentations, and responses related to satisfaction with the practice time. Hence, this particular intervention period did not significantly affect the student responses to social science context.

The previous study focused on students with mild disabilities participating in the general education science curriculum. Rankhorn, England, Collins, Lackavitch, and Algozzine (1998) performed an investigation of students with severe reading disabilities on word recognition and comprehension utilizing the failure free reading program. After a 7-month intervention period, improvements from pretest to posttest revealed significant gains ($p < .001$). Specific improvements in each area were letter-word identification (12% gain), word attack (10% gain), comprehension (15% gain), and dictation (17% gain). Although the students that participated in the study made significant gains in each area, the participants within the study remained severely discrepant from their peers.

Brown and Dunne (1996) used three conditions (different listening, repeated listening, and repeated listening with immediate retells) to investigate retention and fluency of middle school students with developmental disabilities. Using ten students from a self-contained setting, the different listening group remained stable for correct and incorrect retells for five students, worsened for two students, and demonstrated growth for three students. Similarly, the repeated listening strategy sustained results for correct and incorrect retells that remained stable for two students, worsened for one student, and increased for seven students. The results suggested that students in the repeated listening with immediate retell condition demonstrated improvement for all students. Thus, from

the data presented in the current study, instruction interventions that consist of repeated listening coupled with immediate retells are effective for students with disabilities in middle schools.

Mastropieri, Scruggs, and Whedon (1997) investigated student learning of 32 United States presidents using a modified mnemonic keyword strategy. The study involved a within-subject design. Each student was his or her own control by receiving both mnemonic and traditional interventions. For the mnemonic intervention, the students' average score of 11.27 (SD = 5.75) for recalling the presidents name and 9.64 (SD = 7.26) for the correct number associated with each president. The comparison, traditional, group averaged 3.82 (SD = 2.60) for recalling presidents' names and 5.00 (SD = 3.82) for placing the presidents in the correct order. Thus, the mnemonic group scored significantly higher than the control condition on both recall and order.

O'Shaughnessy and Swanson (1998) performed a meta-analysis on memory deficits for students with learning disabilities in reading. The authors indicated that their purpose was to synthesize research that directly compared students with learning disabilities and students without disabilities immediate recall performances. Children without learning disabilities in reading averaged higher effect sizes than their peers with specific learning disabilities. Thus, students with disabilities are at a disadvantage when included in intervention research with their nondisabled peers. One study presented in this analysis compared reading comprehension performance of students with disabilities and those without disabilities (Carr & Thompson, 1996). Specifically, the authors wanted to test the impact of prior knowledge by using familiar and unfamiliar topics. Their study found a statistically significant difference between the three groups for number of words

read correctly on the pretest passage ($F(3, 44) = 6.87$, $p < .01$). More importantly, a statistical significant difference existed in favor of familiar versus unfamiliar topics for students with learning disabilities and students without disabilities. Hence, students with and without disabilities benefited from instruction that is familiar to them.

Aarnoutse and Brand-Gruwel (1997) investigated the possibility of teaching students with severe decoding problems four text comprehension strategies when students were provided with oral information. Results indicated no significance in the selection of test for the experimental or control groups. However, a statistical significant difference existed between good and poor listeners, listening level of students, and between poor and good comprehenders within the experimental group. In essence, while listening comprehension for poor readers did produce positive results, nondisabled peers are at a greater advantage when listening to informational context. This leads to the question, "What instructional prompts are necessary for poor readers to be successful at comprehending informational text?"

Baber and Bacon (1995) explored the use of emphasizing specific meanings in sentences or in word lists with specific affect on phonic cues. The authors found that the difference between the two methods (phonics vs. context) was statistically significant ($F[1, 9] = 166.55$, $p < .001$); however, no significant differences for repeated tests nor interaction methods and tests. Students remembered more words on the four tests after phonic cues compared to context cues. Thus, the authors recommended phonics cues as a suitable accommodation for students with disabilities that have poor decoding and comprehension skills.

Students with more severe reading disabilities may have a greater need for specific accommodations to be successful in the general education curriculum. Sixty participants with reading disabilities were used to investigate two instruction techniques of effective instruction that differed in depth and extent of instruction in phonemic awareness and decoding skills (Torgesen, et al., 2001). Results from this study suggested no statistical significant difference between the two methods of instruction for children who entered the program with different abilities. This would suggest that the program could have been more effective for classrooms grouped around student ability levels. Teacher rating did indicate that the best predictor of long-term growth was their rating of attention, verbal ability, and level of prior knowledge.

Lovett and Steinback (1997) examined students with severe reading disabilities on randomly assigned word identification programs. One hundred twenty-two students from 7 to 12 years in age were used to examine the effectiveness of the word identification programs. A statistically significant effect for the program was identified in the results for the posttest performance. Specifically, the word identification strategy training (WIST) program demonstrated superiority over the other training programs (p <.001). This may be due to the nature of the programs presented to students with disabilities. The WIST program was specifically designed to assist children with disabilities in the area of word attack, whereas, other programs within the analysis also contained other skills not relevant to the results of the study.

A peer-assisted learning strategy (PALS) was also examined with regard to its effectiveness in students' literacy development (Fuchs, Fuchs, & Kazdan, 1999). Results indicated no significant difference between the PALS group and control students in terms

of their general attitudes toward reading with secondary students with disabilities. Results for student achievement also indicate that the PALS group improved their reading comprehension scores statistically significant more than students in the contrast group. This produced a medium effect size of .34 standard deviations. However, students did not improve differentially for either group. Hence, the PALS strategy is a suggested technique for teaching students reading comprehension skills, but not for improving student fluency.

Marston, Deno, Kim, Diment, and Rogers (1995) examined multiple strategies consisting of peer tutoring, reciprocal teaching, effective teaching principles, computer-assisted instruction, and two methods of direct instruction used to influence students with disabilities reading achievement were looked at through quantitative methods. Using 176 students with various disabilities, the authors attempted to discover the most effective and efficient means of delivering reading instruction. Results indicated that the six instructional groups varied in effects from 6.6 for the peer-tutoring group to 15.8 for the direct instruction group. Results from this study also indicate that differences among instructional groups were significant ($F = 3.37$, $p<.01$). These differences suggested varied progress among different instructional groups. The direct instruction groups revealed the greatest percent correct on curriculum-based measures of reading achievement.

Peer help may also aid some students attain a level of comprehension skill that traditional instruction has failed to meet for students with disabilities. Ezell and Kohler (1992) studied peer-tutoring interventions for students with disabilities. This study was conducted to specifically examine the effects of peer tutoring on reading accuracy,

fluency, comprehension, and vocabulary development. The authors used 14 students with disabilities in their study that resulted in statistically significant results between average academic responding during various settings, between reading tutoring and traditional reading instruction. The researchers used the average score for 14 students that can be considered a weakness in this study. This does not give quantitative information for individual subjects. Also, only using 14 subjects makes this study difficult to generalize to the larger population.

Another study that used a very small sample size was conducted to examine the effects of a summary skills learning strategy on comprehension. Summary skills are useful for students who cannot automatically use comprehension strategies (Nelson & Smith, 1992). Nelson and Smith suggested that the results present clear evidence that the summarization strategy the authors incorporated improved the percentage of vital information when students used the summarization skills learned throughout the study. The authors also learned that students maintained the summarization strategy over time. However, the authors only used five students with disabilities in their sample. Thus, the limited number of subjects hinders the ability to generalize to the entire population. Also, the authors did not provide a control comparison. Therefore, results from this study should be analyzed carefully when choosing to use the summarization strategy over traditional instruction.

Malone and Mastropieri (1992) studied summarization and self-monitoring on student reading comprehension. The researchers used 45 students with learning disabilities included in 3 conditions including (a) summarization training condition, (b) summarization training with monitoring condition, and (c) traditional condition. Students

participating in the study yielded differing accuracy percentages according to their intervention. Students in the summarization condition recalled 63% of the details from the passage, and students in the summarization with monitoring condition recalled 69% compared to the treatment condition that recalled only 32%. Thus, the results indicated a significant main difference ($F[2, 42] = 28.63$, $p < .000$). Unlike the previous study, Malone and Mastropieri used a larger sample ($N = 45$) and designed their study to establish a comparison between an experimental treatment condition and control group.

Similarly, Gajria and Salvia (1992) studied the effects of summarization instruction on text comprehension for students with learning disabilities. These authors used a sample of 30 students with learning disabilities to be included in what the authors refer to as a "mastery learning paradigm" (p. 511). The researchers used the mastery learning paradigm to ensure the experimental group acquired the summarization rules for this study. Results from this study suggested that the experimental group significantly outperformed the control group on implicit questions, but equal to the control groups performance on factual questions. Hence, these authors also provided support for using summarization strategies for students with disabilities.

Interestingly, another study examined the ability of language learning disabled and normally achieving adolescents to interpret metaphors in semantically appropriate contexts (Jones & Stone, 1989). The study used 24 metaphors presented in the context of a three-sentence passage. In short, the results suggested that typically achieving peers provided significantly more correct metaphorical interpretations than students with disabilities ($F[1, 28] = 45.34$, $p < .001$). Furthermore, the results suggested that both groups of students found metaphors significantly easier to interpret by paraphrasing than

by verbal explanation ($F[1, 28] = 18.02$, $p < .001$). The last examination that pertains to reading comprehension studied the relationship between proximity of textual information and metacognitive behaviors for students with disabilities (Simmons, Kameenui, & Darch, 1988). The study incorporated six passages ranging from 210 to 269 in length. Twenty-nine students were used in the analysis that suggested a nonsignificant relationship between passage difficulty rating and textual proximity. This result indicates that students may not think differing story forms (i.e., collapsed vs. dispersed) are increasingly difficult from one another. However, participants in the dispersed did not report strategy use 54% of the time compared to 33% of the participants in the collapsed form. Hence, students in the dispersed condition reported using “brute force” (p. 391) more than students that had the collapsed text condition. A review of the research with students with disabilities can be found in Table 4.

Table 4

Review of the Literature for Students with Disabilities

Authors	Participants	Setting	Procedures	Results
Mastropieri, M. A., Scruggs, T. E., et al.	25 students with learning disabilities	Resource setting; unspecified duration	keyword condition vs. rehearsal condition	Mnemonically instructed students outperformed rehearsal condition
Schuster, J. W., Stevens, K. B., et al.	Three students with learning disabilities	15 sessions were completed	one to two sessions; approximately 30 trials	Two students maintained 100% correct responses
Stump, C. S., Lovitt, T. C., et al.	694 students of whom 125 students with learning disabilities	Five to 10 minutes devoted to vocabulary intervention	two sets of materials (vocabulary worksheets and quizzes)	upward trend in the correct rates of academic responding
Bos, C. S., & Anders, P. L.	61 junior high school students with learning disabilities	50 minute session over a seven week period	semantic mapping, semantic feature analysis, syntactic feature analysis, and definition instruction.	Written recalls indicate qualitatively and quantitatively greater comprehension and vocabulary learning.
Vallecorsa, A. L., & deBettencourt, L. U.	Three 13 year-old seventh grade boys	Three sessions approximately 30-35 minutes to complete.	Teachers were trained prior to the beginning.	Students produced increasing performances through each phase
DiCecco, V. M., & Gleason, M. M	26 students with learning disabilities t	a pullout resource program	implicit vs. explicit graphic organizer conditions and a control	Both groups demonstrated attainment of facts and concepts
Gardill, M. C., & Jitendra, A. K.	Six middle school students identified with learning disabilities.	40- to 50 minute sessions for a duration of 6 weeks	multiple baseline design across participants; story map procedure	Results demonstrated an increase in the number of story elements
Boyle, J. R.	15 pairs of students were used in this study	an unspecified time period.	pretests and posttest half the students received cognitive mapping	cognitive mapping strategy gained more than the control group

(table continues)

Table 4 (continued)

Authors	Participants	Setting	Procedures	Results
Chan, L. K., Cole, P. G., & Morris, J. N.	78 participants with and without disabilities	an inclusive educational setting; 40-minute sessions	a visualization with pictoral display condition, and a read-reread condition	visualization instruction with pictoral displays outperformed the other groups
Scott, T. M., & Shearer-Lingo, A. M.	Three seventh-grade boys in a self-contained classroom	10-15 minutes of instructional time was devoted daily	teach your child to read instructional strategy vs. the great leaps program	a slight increase in the teach your child to read program
O'Connor, R. E., Bell, K. M., et al.	The study included 25 students with disabilities	1-on-1 tutoring for an 18-week period.	reading-level matched approach vs. classroom matched approach	background reading instruction favored students
Keel, M. C., Slaton, D. B., et al.	Four students from non-graded, multi-aged regular classrooms	The time intervals not documented	compared two variation of the constant time delay procedures	Majority of students scored higher on measures of oral reading
Rabren, K., Darch, C., Eaves, R. C.	40 students with learning disabilities	daily for 45 minutes for a 2-week period.	explicit rule-based approach vs. basal-reader-based approach	Rule-based instruction was superior to the activity-based approach
Johnson, L., Graham, S., Harris, K. R.	47 students with learning disabilities	one of the four different strategies or control group	strategy instruction vs. strategy instruction plus goal setting vs. combination	instruction in the reading strategy produced generalizable effects.
Fuchs, L. S., Fuchs, D., & Kazdan, S.	Nine classes teachers of students with disabilities	five times every two weeks for 16 weeks	PALS vs. contrast student group	PALS favored higher comprehension gains
Carlisle, J. F.	Thirty sixth graders and 35 eighth graders	30 minutes long; duration of two sessions	students with LD vs. students without LD	groups did not differ in productivity
Rankhorn, B., England, G., et al.	39 students with severe disabilities	the intervention program for 7 months	failure free reading program vs. traditional program	improved performance in letter-word identification, word attack, comprehension

(table continues)

Table 4 (continued)

Authors	Participants	Setting	Procedures	Results
Johnson, L., Graham, S., Harris, K. R.	47 students with learning disabilities	one of the four different strategies or control group	strategy instruction vs. strategy instruction plus goal setting vs. combination	instruction in the reading strategy produced generalizable effects.
Hudson, P.	students with mild to moderate disabilities (N = 18)	Four consecutive days of instruction	teacher guided practice condition vs. control condition	guided-practice phase on instruction led students to better performances
Brown, S. A., & Dunne, J. D.	10 junior high students with developmental disabilities	a self-contained setting for a duration of 37 sessions	different listening, repeated listening, vs. immediate retells	audio-taped instruction with immediate retell improved retells for 9 of the 10 students
Mastropieri, M. A., Scruggs, T. E., 7 Whedon, C.	19 students with disabilities	for an 8 week intervention period	mnemonic keyword- strategy vs. rehearsal and pictures	response interaction in favor of the rehearsal condition
Carr, S. C., & Thompson, B.	48 children (16 children with learning disabilities)	50 minutes of instruction was delivered over a 13 day period.	familiar and unfamiliar topics	All students benefited from the instruction activation of prior knowledge
Aarnoutse, C., & Brand-Gruwel, S.	131 subjects in four special schools for children with specific learning disabilities	Participants were involved for a duration of 20 lessons.	listening context for students with severe disabilities compared to the control condition	Results suggest significant program effects on a strategic listen comprehension tests
Baber, G., & Bacon, E. H.	12 second and third-graders with mild learning disabilities	a two-week intervention study	contextual approach vs. list/phonic approach	significant effect in favor of the list/phonics approach
Torgesen, J. K., Alexander, A. W., et al.	Sixty children with severe reading disabilities	a one-on-one session in two 50-minute sessions for 8 weeks	ADD curriculum vs. the EP program	The two methods were not differentially effective for children
Lovett, M. W., & Steinbach, K. A.	122 students with severe reading disabilities	A total of 35 sessions were completed	direct instruction vs. metacognitive instruction	intensive remediation with direct instruction had positive effects

(table continues)

Table 4 (continued)

Authors	Participants	Setting	Procedures	Results
Marston, D., Deno, S. E., et al.	176 students with mild disabilities	resource program; unspecified time	peer tutoring, reciprocal teaching, CAI	achievement was highest in the CAI group
Nelson, J. R., & Smith, D. J.	Five students with learning disabilities	Two 45 min intervention periods	summary skills strategy vs. traditional instruction	Summarization strategy was favored
Malone, L. D., Mastropieri, M. A.	45 students with learning disabilities	small group instruction; one training session	summarization with self-monitoring component vs. traditional instruction	the monitoring strategy outperformed others
Gajria, M., & Slavia, J.	30 students with learning disabilities in grades 6-9	the summarization strategy (35; 40-min training)	summarization training vs. no training	summarization strategy significantly increased reading comprehension
Jones, J., & Stone, C. A.	16 matched pairs of students with and without disabilities	Subjects were taught the 24 metaphors; 2 sessions	comparison of students with and without disabilities	Students without disabilities provided more correct responses
Simmons, D. C., Kameenui, E. J., & Darch, C. B.	29 students from 5 resource room	210 to 269 words in two different forms (2 sessions for 30 min in length)	dispersed vs. collapsed story conditions	significant relationship between text proximity and strategy deployment

Summary

Strategies for instructing students with disabilities must account for many student dimensions that are not present when educating students without disabilities such as, processing disorders or language deficits. However, effective instructional interventions can enable a teacher to maximize the amount of instructional time spent with students

with disabilities. Although there are methods that are not as effective and efficient for students with disabilities, alternatives to those programs need further investigation.

Promising Practices of Instruction

There have been many emphases in instruction for all students in public education. Some instructional methods have produced better results than others as previously noted in the descriptions of instructional interventions. The following section will focus on instructional programs/methods that have been commonly found in public schools. Following each description, the advantages and disadvantages of each instructional method will be discussed.

Whole Language Instructional Methods

Description of the Teaching Method

Whole language is an instructional model that some teachers choose to use in classrooms for all students. In other places, the school or local education agency has required whole language instruction. Goodman (1986) suggested some basic principles about whole language instruction: (a) whole language learning builds around whole learners learning whole language in whole situations; (b) whole language learning assumes respect for language, for the learner, and for the teacher; (c) the focus is on meaning and not on language itself, in authentic speech and literacy events; (d) learners are encouraged to take risks and invited to use language, in all its varieties, for their own purposes; and (e) in a whole language classroom, all the varied functions of oral and written language are appropriate and encouraged. Therefore, it is probable, that whole language classrooms can be very different from traditional classrooms.

The whole language philosophy respects learners and their diversity, encouraging a child-centered, individualized approach to teaching (Fuhler, 1993). However, Baumann (1992) emphasized that all versions of whole language instruction must possess a basic organizational and management plan in order for them to be successful. Whole language programs are therefore limited only by creativity, ingenuity, imagination, and ambition of students and their teachers. Finally, "researchers, theorists, and educators emphasize the fact that learning occurs best when there is active involvement in interesting and functionally relevant learning opportunities" such as whole language (Fuhler, 1993; p. 110). The conceptual whole language approach creates potential for uniting instruction and adolescents with learning disabilities by focusing on individualized instruction to teaching students with learning and behavior problems.

Review of Research

"Over the past decade, considerable disagreement has existed over the effectiveness of whole language approaches to literacy instruction" (Bottomley, Truscott, Marinak, Henik, & Melnick, 1999; p. 115). The following section will provide a research base for whole-language instruction that will be compared to other instructional methods.

In an investigation of three literacy approaches, Bottomley et al. (1999) used the Elementary Reading Attitude Survey (ERAS) to determine how children feel about themselves as readers with respect to word recognition, word analysis, comprehension, and fluency. The researchers also used the Reader Self-Perception Scale and Writer Self-Perception Scale to determine the effects of each instructional method. The results from the study found significant differences between the literacy approaches for the Academic Reading scale and Writer Self-Perception Scale; however, no significant differences were

found on the Reader Self-Perception Scale. The findings suggested that a literature-based approach to reading and writing appears to exert superior impact on intermediate-aged children's affective literacy orientations when compared to whole language and basal reader methods of instruction.

Advantages

The whole language instructional method provides teachers with the opportunities to provide many advantages to all students. One advantage of whole language is that the focus of instruction is around the individual learner (Goodman, 1986). Hence, instruction can focus on the skill level of individual students. Furthermore, the focus of instruction is fostered through the development of meaning. Also, whole language consists of oral and written language. Thus, the process provided students with varied instruction across task dimensions.

Disadvantages

Like all instructional methods for teaching youth, whole language has its share of disadvantages. First, whole language focuses on the whole concept; therefore, many component skills that some children do not have will likely suffer in this type of instructional milieu (Fuhler, 1993). Also, whole language is characterized by students who take risks. Some students risk embarrassment and humiliation that can discourage them from instructional activities that whole language teachers incorporate into their classroom.

Problem-Based Instructional Methods

Description of the Teaching Method

Duch, Groh, and Allen (2001) described problem-based learning as a forum that allows essential skills to be developed. Specifically, in "the problem-based approach, complex, real-world problems are used to motivate students to identify and research the concepts and principles they need to know to work through those problems" (p. 6). Students are allowed to work in teams; hence, bringing forth different talents of individual children to a type of peer tutoring environment. Problem-based learning has been used through the following process: (a) students are given a challenge or presented with a problem to solve; (b) through discussion with classmates working on the same problem, students pose questions that identify the critical elements of the problem; (c) students order the questions identified and the identified information in order of importance; and (d) students explore the identified problems and learning issues, and then students integrated their newly learned knowledge to answer the questions that they have posed from the problem faced by the group.

Review of Research

Problem-based learning strategies are fairly new to the educational field. Therefore, much of the research conducted with problem-based learning strategies appears contradictory. Gordon, Rogers, Comfort, Gavula, and McGee (2001) studied problem based learning with students in the general education classroom. The authors found students actively using this strategy, responding to problems, determining goals, and conducting inquiries according to personal learning preferences. Gorden et al. suggested that the PBL strategy appeared to increase a students on-task behavior, thus

increase the amount of time students were engaged in meaningful instruction. This concluded the research found on problem-based learning strategies for students with comprehension problems.

Advantages

Group activities can be motivating for students with comprehension problems. When students understand they do not have to complete a task alone, the can rely on other students to sustain their motivation to complete the assigned task (Duch, Groh, & Allen, 2001). Another advantage of this instructional procedure is the influence that students have in the selection of topics to investigate. This process can also help motivate students with comprehension problems to complete the assigned task and maintain high levels of engagement during the instructional activity.

Disadvantages

Along with the motivational aspects linked with group tasks, group activities do not always engage high levels of active participation from each of the members of a group. Hence, some students may not participate with the group that they have been assigned to and therefore not make any progress in regard to their comprehension of expository material. Duch, Groh, and Allen (2001) documented that the PBL procedure has not been analyzed in regard to its effectiveness with narrative prose. Thus, PBL procedures require further investigation for students with and without disabilities in the general education classroom.

Explicit Teaching Instructional Methods

Description of the Teaching Method

Explicit instruction, otherwise known as direct instruction, is characterized by a specific model of the task, lead through the activity, testing condition, and delayed retesting condition (Engelmann & Carnine, 1991; Kameenui & Simmons, 1990). Engelmann and Carnine noted that teaching tasks move from highly teacher-directed tasks to student-directed activities. Explicit instruction incorporates a "bottoms-up" instructional design approach. The focus of initial instruction is on early developmental skills that are built upon in preceding instructional tasks. Teachers who use explicit instruction in their classrooms sustain student attention by using multiple tasks within single lessons. Also, the use of teaching scripts is, at times, used in lessons to teach students the individual skills they need to learn to be successful in the general education classroom.

Review of Research

Mastropieri and Scruggs (1997) identified direct instruction as a best practice in the field of education. Many researchers have studied the effects of direct instruction in public education classrooms. Though many studies have been performed with regard to explicit instruction, there have been contradictory results. Stevens, Slavin, and Farnish (1991) suggested that direct instruction alone did not significantly impact student gains in reading comprehension in their analysis. However, "Project Follow Through" indicated that students demonstrated significantly higher achievement than for local comparison participants (Darch, Gersten, & Taylor, 1987). This study was one of the largest early studies performed at the national level.

Advantages

One advantage of using explicit instruction in the classroom is the use of prior knowledge (Mastropieri & Scruggs, 1997). Students use knowledge from previous lessons in order to learn higher-order skills. Also, this allows low-ability students to have successful experiences in the classroom setting. Similarly, activities are teacher-directed until students are able to perform the necessary skill at a high criterion level. Thus, students master skills in order to proceed to skills that are more complex.

Disadvantages

One disadvantage of using explicit instruction is the demands that are placed on the teacher. Teachers are responsible for encouraging student participation, correcting errors students make on academic tasks, and presenting activities at an appropriate pace according to student achievement (Stevens, Slavin, & Farnish, 1991). Another disadvantage of using explicit instruction in the classrooms is the grouping of students. There can be as many as five different ability levels in a single class in the middle school environment. This can be a difficult instructional dilemma to solve. Teachers must find ways of grouping students to provide the best placement for them within direct instruction programs.

Traditional Instructional Methods

Description of the Teaching Method

Traditional basal reader literacy instruction was defined as a series approach whose implementation essentially centered on the skill-development view of reading designed to focus on content standards (Bottomley, Truscott, Marinak, Henik, & Melnick, 1999). Sometimes, traditional basal lessons are designed around thematic units.

Other traditional basal readers use differentiated instruction to teach students appropriate comprehension skills. Differentiated instruction is based on tiered instruction for high-, middle-, and low-ability students.

Review of Research

Many of the studies previously identified used traditional instruction as the control. In many cases, the traditional instructional group, or control, did not perform as well as the experimental group. In all of the studies reviewed, the authors did not descriptively identify the components of traditional instruction. Hence, it is difficult to comprehend the type of instructional activities students in the traditional groups participated. Knowledge of traditional instruction is therefore considered the average and most frequently cited practices in the general education classroom.

Advantages

One advantage of traditional instruction is the ease of implementation that is required from the teacher (Bottomley et al., 1999). The teacher is allowed to focus almost solely on the instructional delivery and behavior management because the instructional plans are written in many teacher editions. Another advantage of using traditional based instruction is that it can be used with all students. Students with and without disabilities receive instruction with traditional instructional materials. Hence, the method that many educators use to level the playing field for students with disabilities is to accommodate or modify the materials provided with many traditional published materials.

Disadvantages

Bottomley et al. (1999) also identified the major disadvantage of using traditional instruction dealing with its effectiveness for students with disabilities. Many traditional

instructional materials do not sufficiently meet the needs of youth with disabilities. Also, traditional instructional materials focus on the average learner. Often, it is the teachers' responsibility to modify materials for below- and above-average ability students.

Summary

In conclusion, there are many instructional materials that teachers can use with their respective classrooms. However, some teachers do not have the flexibility to choose their instructional materials when public schools adopt new textbooks. Also, there are very limited funds schools have when choosing new materials to use in classrooms. Hence, teachers and others must find new and innovative ways to modify instruction to meet the needs of all learners.

Methodological Issues in Comprehension Research

Methodological concerns will be discussed in terms of description of independent variables, length of studies, sample descriptions, and fidelity of treatments. Using research from the aforementioned sections, the concerns for conducting research in the area of reading comprehension will be analyzed. Under each heading, studies that incorporated general-, at-risk, and special education students will be discussed separately.

Description of Independent Variables

A clear description of the independent variables was included in several of the studies reviewed for this paper included in the 31 studies reviewed for general education students, 20 studies reviewed for at-risk students, and 32 studies reviewed for students with disabilities. Some of the studies that used a control group for a comparison failed to describe the instruction that took place in that condition. For example, Lionetti and Cole

(2004) compared the effects of LWR versus a control group comparison. The authors failed to describe the instruction that took place within the control condition. Therefore, it is difficult to determine if the control procedure instructed children in the skill to be measured (i.e., comprehension). Of the studies performed with general education students, 14 studies gave a clear description of at least one treatment condition used in the analysis. Thus, 17 studies with general education students did not provide enough descriptive information about the intervention.

Similarly, only 10 of the 20 studies reviewed for the at-risk student population gave a clear description of the instructional interventions used in their respective analyses. For instance, Mason (2004) gave specific descriptions of the TWA (Think before reading, think While reading, and think After reading) intervention used in the authors analysis. Similarly, the author also gave a clear description of reciprocal teaching procedures in the article. On the other hand, Gest and Gest (2005) gave an unclear description of the activities that took place in their tutored and nontutored conditions. This makes the results from the analysis suspicious because of the unclear description of what took place during the intervention sequence.

Interestingly, for the studies of students with disabilities, 18 studies performed gave specific descriptive elements of the interventions used in their analyses. This accounts for more than 50% of the studies reviewed on reading comprehension studies for students with disabilities. Similar from previous examples, clear descriptions gave the specific procedures for implementing the instructional strategies effectively and efficiently. The clear descriptions of intervention in special education may be due to the

nature of repeated measures that are needed to demonstrate effective instructional practices for students with disabilities.

Length of Studies

The length of studies varies from each grouping. For instance, the longest intervention period for working with special education students was seven months. However, the duration of time in each instructional setting was not provided (Rankhorn, England, Collins, Lockavitch, & Algozzine, 1998). For students defined as at-risk for failure in school, the longest period of intervention was approximately one year. Again, the duration within the year was unspecified by the author. Studies that incorporated general education students had longer intervention periods including two longitudinal studies lasting approximately three years, two studies for one year, and another study for a period of seven years.

Excluding studies of 6 months or longer, 21 studies of special education students reported the number of sessions that students participated. The 21 studies reported a cumulative of 485 sessions that is equivalent to a mean of 23.09 sessions per intervention study. On the other hand, studies performed with at-risk students reported sessions for 13 of the reading comprehension interventions. However, the average number of sessions per academic study was 17.61. Hence, although more studies reported the total number of sessions, the session mean per study was less than that of studies that used students with disabilities. General education students had the fewest studies reporting the number of sessions students were involved. Only 14 studies identified the number of sessions that students were involved. Of the 14 studies identified, the average session length was 15.28 sessions per intervention. This may seem unclear since five studies were not included in

the session lengths because the individual studies lasted for more than 1 year. The amount of time spent on instruction also differed across the different groups.

The average time per session spent during the instructional intervention was 39-, 37.12-, and 41-minutes for special education students, at-risk students, and general education students, respectively. Again, the studies lasting for more than 1 year were excluded in part because the authors of those studies did not clearly supply the total minutes in each instructional session. For students with disabilities, studies ranged in length from 15-minutes per session to 55-minutes per session. On the other hand, ranges for at-risk students and general education students were 2- to 60-minutes and 20- to 90-minutes, respectively. Hence, the largest amount of time given to any one instructional period was for general education students that lasted 90-minutes. On the other hand, the shortest duration of an instructional intervention lasted for only 2-minutes with students at-risk for reading comprehension failure.

Sample Description

For the studies that worked with general education students, the largest sample size reported was over 600 students (Darch, Gersten, & Taylor, 1987) and the fewest reported was only four students (Lionetti & Cole, 2004). These may be considered outliers in the total average number of students participating in each study, but the mean number of students was 110.42 in each instructional intervention for general education students. All the studies reviewed reported the number of students in each instructional intervention group. Also, all studies reported the respective grade levels that were incorporated into their analyses. However, only 16 of the 31 studies reported demographic variables that are often reported on standardized measures.

For at-risk children, the average number of students involved in each study was 53.55. The range of at-risk students in intervention studies was between 1 student (O'Donnell, Weber, & McLaughlin, 2003) and 177 students (Meloth, 1995). Interestingly, most (13 out of 20) studies reported the demographic variables that were the predictors of students' academic failure. Thus, at-risk students' demographic variables that illustrated their risk of academic failure were identified. Interestingly, the best perceived description of at-risk students came from Shippen, Houchins, Steventon, and Sartor (2005). The authors identified specific students that had below reading level indicated that the children were 2-4 years behind grade level norms. Surprisingly, the authors did not note the possibility of disability. Hence, many studies that identified children as being at-risk for academic failure did not consider the possibility of disability.

The investigations that studied students with disabilities incorporated 1837 individual students labeled with a disability by state and federal guidelines. All of the studies used in the review of instructional interventions identified students with various disabilities by state and federal regulations. The average number of students per instructional intervention was 57.40. The fewest number of students was three (Schuster, Stevens, & Doak, 1990; Scott & Shearer-Lingo, 2002; Vallecorsa & deBettencourt, 1997). The study that had the greatest number of individuals (N = 176) included students with mild disabilities (Marston, Deno, Kim, Diment, & Rogers, 1995). Because some states use different guidelines in their identification of students with disabilities, it is unclear the severity of the disabilities that the students exhibited in the classroom.

Fidelity of Treatment

Academic characteristics that influence student progress and academic achievement should be give considerable attention when conducting intervention studies. Therefore, research in achievement in any area of student outcomes should be considered with caution. Students who exhibit one or more academic characteristics may impact results resulting in a Type I or Type II error. Also, the use of standardized testing has received some attention due to the discontinuities in testing situations. The objective of standardized test is to create a controlled environment so that differences in performance can be attributed to differences in the variables being tested.

Traditionally, reading comprehension assessment has asked students to read passages and answer question about the content (Sudweeks, Glissmeyer, Morrison, Wilcox, & Tanner, 2004). This approach is very common on standardized and criterion referenced tests. However, this approach has received some criticism with regard to the low levels of understanding text. Researchers have suggested that there is an increased likelihood for deeper student levels of understanding when performance-based reading comprehension assessments are used. This is critical for establishing the academic measure the dependent variables accurately.

For instance, in Sudweeks, Glissmeyer, Morrison, Wilcox, and Tanner's (2004) study, the results suggest the largest sources of error in variance in the ratings of students were identified as (a) the passages the students were asked to read, and (b) the student-by-passage interaction. Therefore, using standardized assessments with disregarding student performance data should be taken into consideration when examining interventions for students with learning and behavior problems. Interestingly, only seven

of the studies from all of the treatment groups considered mastery learning as a limitation to their study. Many studies do not provide sufficient amounts of teaching, practice, and cumulative review time in the studies performed with each category of student.

Also, research should account for accurate complete treatment conditions. Although each treatment condition was always identified in the reviewed research, specific components of the interventions were only given for four of the studies involving students with disabilities, two of the studies in each at-risk and general education student groups. This is surprising considering the need for scientifically based research programs in the education field.

Summary and Conclusions

National and state statistics suggest that youth with learning and behavior problems have trouble with decoding and comprehending printed text. Research studies have traditionally focused on the decoding aspect of reading. More recently, researchers have started to focus on the comprehension skills that many children do not possess in their repertoire of skills. Current research for reading comprehension has yielded mixed results. Some studies have found specific procedures to be helpful for students with learning and behavior problems while others have found dissimilar findings.

There are many variables that must be taken into account when conducting comprehension research. Many authors have focused on students with disabilities, at-risk students, and students within the general education classroom. More research is needed to ensure students are involved in programs that are validated through scientifically based research designs. In conclusion, research in the area of reading comprehension may need

to be considered with more individuals than currently available in many studies. The following section will describe a proposed research methodology to add to the body of literature in regard to students reading comprehension achievement.

III. METHOD

The purpose of this study was to investigate the effects of two instructional approaches to reading comprehension instruction for middle grade students (i.e., sixth-, seventh-, and eighth-graders). The two instructional methods implemented with the treatment groups were (a) an explicit rule-based strategy instructional method, and (b) a traditional method that is prescribed in many basal programs. This section provides a discussion of the research methods that were incorporated in this study. Included are the procedures that were used for sample selection and data collection. Also, a description of the independent variables and dependent measures is presented. Lastly, research questions are presented and a discussion of the methods of analysis is provided.

Research Methodology and Design

The study is classified as an experimental investigation by maintaining the basic requirements described by Avery (2002), which are (a) random assignment of subjects to treatment conditions, (b) manipulating of one variable on another variable, and (c) control over extraneous variables. Teachers were also randomly assigned to teach each treatment condition.

Sample Selection

The subject sample was drawn from students qualifying for special education services in one middle school in suburban area located in the southeast region. A total of 56 students with high-incidence disabilities (e.g., specific learning disabilities, emotional/ behavioral disorder, and other health impaired) were identified to participate in the study. All students were diagnosed with a disability by state and federal guidelines prior to the implementation of the study.

Before the implementation of the study, school district personnel were contacted for initial approval. Upon approval, experimental teachers were asked to participate from the pool of special educators working at the school and the cooperating principal was notified. Also, regular education teachers were contacted to gain individual support in their respective inclusion classrooms. A letter of consent was then distributed to all students identified as possible participants in the study. Forty-two students returned the permission form. Thus, a participation rate of 75% was obtained from the total sample that was available. One student was not used in the data analysis due to 6 absences during the intervention period. A demographic comparison of the two instructional groups can be found in Table 5.

Table 5

Demographics

Traditional Method (*N* = 20)		Explicit Method (*N* = 21)	
Characteristics	*N*	Characteristics	*N*
Gender		Gender	
Male	15	Male	14
Female	5	Female	7
Exceptionality		Exceptionality	
SLD	9	SLD	10
EBD	5	EBD	4
OHI	6	OHI	7
Ethnicity		Ethnicity	
African American	10	African American	5
Caucasian	7	Caucasian	12
Hispanic	3	Hispanic	4
Other	0	Other	0

Only students with the returned permission forms were administered the pretest. The purpose of the pretest was twofold: (a) to help determine group equitability, and (b) to gain an initial data point to determine statistically significant gains. The results from a t-test to determine group equitability did not find statistically significant differences ($t = - 1.368$, $p > .05$). Random assignment of students to group was done by the exceptional

education department chairperson in the local school. Treatment groups participated in the general education classroom throughout this study. There were four instructional groups. Each group was comprised of different classes. One class received instruction using the explicit teaching model and the other class received instruction using the traditional method. Each of the four different teachers taught one instructional group.

Methods and Procedures

The experimental teachers used for this study were inclusion teachers that are employed by the local education system. All of the experimental teachers had a teaching license in the state of Georgia. To control for teacher bias, teachers were randomly assigned to teach a group of students for each treatment condition (explicit and traditional). Two teachers were assigned to teach the traditional model to their first class of participants followed by the experimental model to a second class of subjects while the other two teachers taught the experimental class to their first sample followed by the traditional model to a second class.

The intervention phase of this study took place for 4 consecutive weeks, Monday through Friday, for a total of 20 school days. Each week focused on a different comprehension component including: (a) deductions, (b) analogies, (c) similes, and (d) idioms. Each treatment group was instructed in the same content. Daily instruction for each treatment group occurred for approximately 15-20 minutes. During each lesson the experimental teachers presented a reading comprehension lesson adhering to a semi-scripted format. Each lesson was presented in the regular education classroom. Regular education students were present and did participate in the intervention; however, data were only collected for students identified with a disability. On the fifth instructional day

of each week, a unit test was administered. Following the final day of implementation, a posttest was administered to all of the subjects who participated in the initial pre-test.

Finally, two weeks following the last day of the study's implementation, a maintenance test was given to the subjects who participated in the study. The purpose of the maintenance test was to determine if the students used the strategies taught after a 2-week period of time.

Control for possible extraneous variables. There are several important variables that were constant throughout the instructional intervention. First, the amount of instructional time was held constant for all groups. All instructional sessions lasted 15-20 minutes in length. The treatment groups were taught Monday through Friday for four consecutive weeks. As noted earlier, the order that each teacher instructed his or her groups was randomly assigned.

Also, this study attempted to control for potential teacher confounding variables. Experimental teachers participated in four individual training sessions conducted by the researcher incorporating the explicit model and traditional model. During the training sessions, a model was provided for the experimental teachers as well as practice sessions for the teachers. Teachers were evaluated on the fourth training session to determine the accuracy of instructional delivery. The evaluation process was comprised of a 4-point Likert-type scale. Teachers were required to perform a supervised instructional lesson with a score of 3 (meets expectations) in all the categories including: (a) instructional pacing, (b) systematic use of correction procedures, (c) use of instructional scripts, and (d) classroom management/reinforcement. More practice sessions were incorporated if teachers were not performing lessons accurately by the end of the fourth training session.

One additional training session was held for one teacher. From the initial teacher training, teachers averaged 3.150 and 3.667 for the explicit and traditional model, respectively. As noted previously, lessons for both treatments were semi-scripted. Teachers followed these scripts to ensure that each instructional method was followed accurately. To help ensure fidelity of treatment, each teacher was videotaped four times throughout the course of the study. Two independent observers rated the accuracy of the instructional delivery.

Materials

The teachers were provided with semi-scripted lessons for each treatment condition. The lessons differed only in the instructional delivery and daily activities. Identical content was taught to all subjects in the study. Handouts necessary for the lessons were provided to the teachers.

Teachers provided input on the four unit tests for each comprehension component. Items on the unit test were developed to match the content to assure validity. Unit tests items were the same for both treatment groups and graded for accuracy.

Independent Variable

The independent variable for this study was the method of instruction. There were two levels of independent variable: explicit instructional model and traditional instructional model for teaching comprehension component skills. A detailed description of each model is presented in the following section.

Explicit Instructional Model

One of the instructional models used in this study was the explicit instructional method. This approach is based on Direct Instruction. Direct instruction refers to a

teaching method that incorporates high levels of student engagement and teacher-directed instruction using carefully sequenced and structured materials (Kim & Axelrod, 2005). This instructional method was chosen because it has been suggested to be effective for students with high incidence disabilities.

Direct instruction effectiveness was assessed by a study sponsored by the Department of Education and conducted by the Stanford Research Institute as part of Project Follow Through (Kim & Axelrod, 2005). The authors noted that the Direct Instruction model was implemented in 18 school districts and was found to have superior results when student achievement was assessed. Direct instruction contains many critical features positively linked to gains in student achievement. In a review of direct instruction studies, Gersten (1985) suggested that reading and language programs that offer explicit, teacher-directed instruction tend to result in higher academic gains for students with disabilities than other teaching methods.

The explicit instructional method used in this study is primarily based on the design and implementation of specific reading comprehension components. Key features implemented in this study included: (a) rapid pace of instructional delivery, (b) unison responding from subjects, (c) high criterion level of mastery, and (d) specific correction procedures. The lessons designed for this study moved from highly teacher-directed activities to student-centered activities. Students were taught a rule followed by explicit models involving the rule. Extensive practice was used throughout the week involving the use of the rule. Students were asked to identify the reading comprehension component and identify the meaning. Students received specific feedback regarding their responses. Throughout this process, student responses were monitored carefully, and students were

given immediate feedback. When errors occurred a specific correction procedure was followed. A sample lesson can be found in Appendix A.

Traditional Instructional Model

The other instructional model included in this study is the traditional instructional model. This instructional approach is found in many commercial basal series. Many comprehension activities in traditional programs revolve around a series of narrative and expository prose. The traditional instructional method incorporated student-centered activities. Many of these instructional lessons begin by activating students' prior knowledge. Next, students read the entire passage or part of a passage that illustrated the concept. Finally, follow-up activities followed that were teacher guided or independent practice.

The McDougal-Littell (2003) series was selected as the traditional method for this study. This series contains a prereading stage called "Preparing to Read." According to the teacher's manual, activities in this stage involve: (a) connect to your life, (b) build background, (c) preteach vocabulary, and (d) focus your reading. Each of these activities involved initial teaching and an independent activity to enhance student learning. Students were provided with an interactive workbook for independent practice and used prior knowledge to better understand novel information. The traditional instructional method followed the activities described in the McDougal-Littell series, which was designed for the Georgia Performance Standards. A comparison of the two independent measures can be found in Table 6.

Table 6

Comparison of Instructional Models

	Explicit Instructional Model	Traditional Instructional Model
Teacher's Role	Teacher-directed	Teacher serves as the facilitator
Student's Role	Students are actively engaged with specific direction coming from the teacher as the primary source of knowledge	Students lead the instructional process through discussion and independent practice
Instructional Emphasis	Instruction begins with preskill knowledge and presentation of specified rule-based information	Instruction begins with activating student prior knowledge, leading to instructional discussion about the concept being taught

Description of Dependent Variables

The dependent variables in this study included the subjects' performance on unit test measures at the end of each week of the intervention. Gain Scores on the pre- and post-test measure were used as a dependent measure. Finally, a maintenance test served as the last dependent variable to determine mastery of the skills taught during the intervention phase.

Dependent Measures

This section describes the different dependent measures used to assess the subjects' acquisition of the component skills and comprehension achievement. Each measure is described and an explanation for why it was chosen, when it was used, and how it was scored.

Pre-/post-test measure. The pre-/post-test measure used in this study was the Test of Reading Comprehension – Third Edition (TORC-3; Brown, Hammil, & Wiederholt, 1995). The TORC-3 is designed to test children between the ages of 7-0 and 17-11. The test consists of eight subtests divided into two groupings: General Reading Comprehension Core and Diagnostic Supplements (Green, & Perlman, 1996). The subtests included in the General Reading Comprehension domain are: (a) general vocabulary, (b) syntactic similarities, (c) paragraph reading, and (d) sentence sequencing. The General Reading Comprehension domain was used for this study. The TORC-3's overall reliability ranges from .89 to .97. The purpose of this test in the past has been for a screening device only for students struggling with reading comprehension tasks. Green and Perlman indicated that the TORC-3 demonstrates content validity for middle school children and older, but may not be suitable for primary age children. Construct validity is also noted from a correlation between the TORC-3 and Wechsler Intelligence Scale for Children–Revised that resulted in a coefficient of .81 that is suitable for screening instruments. The TORC-3 is an untimed test, but the authors indicate that the usual test administration period is between 30 minutes and 1 ½ hours. The TORC-3 was normed with a sample containing 1,962 individuals from 19 different states. Included in the test manual, the authors indicated that internal consistency reliabilities were generally above

.90 and test-retest reliabilities ranged from .79 to .88. The authors also concluded that there is evidence of content validity because of an extensive rationale for their theoretical model and various types of items. The median point-biserials were well above .40.

This assessment device was chosen because it allowed for a group administration that met specific time demands placed on the researcher by the availability of subjects. The test could be completed in a reasonable amount of time and demonstrated adequate reliability and validity for middle school students. This test was administered before the first day of intervention and after the final day of implementation. The exams were scored by the primary investigator and an outside scorer to ensure accuracy.

Unit measure. The experimenter developed the four unit test measures with the assistance from the experimental teachers and regular education teachers. Each area (deductions, analogies, similes, and idioms) was assessed to determine the level of mastery. Item weights were equal. The assessments were first graded by an experimental teacher and then graded by the primary investigator to ensure accuracy. The unit tests were administered in the classroom where students received the instructional intervention. Items were presented in a multiple-choice format. The multiple-choice format allowed for a clear indication of correct and incorrect responses. Thus, the accuracy of the unit test was clear and unambiguous.

Maintenance measure. To assess maintenance of students' ability to understand the comprehension components, a test comprised of randomly selected questions from the intervention period, practice level items, and new items were used in the maintenance test. Twenty questions comprised the maintenance test. Five questions were drawn from each unit test and five questions were from each respective content that was taught during

the implementation of the study. Specific questions were drawn to assess the students' skill level. Two questions were chosen that the students had mastered (i.e., 90% accuracy) as well as two questions that the students had encountered, but not mastered. The other question drawn from each unit was a novel item that the students had never seen during the implementation phase of the study. The maintenance test was administered and scored in the same manner as the unit test measure.

Analysis of Data

This section contains the data analysis and research questions that were investigated by the researcher. Finally, the statistical procedures are described for the study.

Research Questions

The following research questions were under investigation in the study. The research questions include:

1. To what extent are there statistically significant differences between the treatment groups for the deductions component score?
2. To what extent are there statistically significant differences between the treatment groups for the analogies component score?
3. To what extent are there statistically significant differences between the treatment groups for the similes component score?
4. To what extent are there statistically significant differences between the treatment groups for the idioms component score?

5. To what extent are there statistically significant differences between the treatment groups for the maintenance measure score?

6. To what extent are there statistically significant differences between pre-test and post-test measures?

Statistical Analysis

The data analyzed in this study included subjects' performance on three separate measures: (a) unit tests, (b) pre- and post-test, and (c) maintenance measure. All data were analyzed using SPSS version 11.5, a computerized statistical package.

This study used the gain score for the pre- and post-test measure. After the gain score had been computed, a separate one-way analysis of variance (ANOVA) was used to determine if there was a statistically significant difference between the two interventions. This study also used an ANOVA to determine the statistical significance between the two groups for each of the four unit tests. According to Huck (2000), "a one-way ANOVA permits the primary investigator to use the data in the samples for the purpose of making a single inferential statement concerning the means of the study's population" (pg. 324). Finally, the study used a separate one-way ANOVA to determine the level of significance between the two groups on the maintenance.

Summary

This chapter provided the methodological section that was incorporated in the experimental investigation. It included a description of the measures and procedures for the sample selections and data collection. Finally, the section closed with a listing of research questions and methods of statistical analysis.

IV. RESULTS

This section presents the results from the data analysis in this study. The purpose of this study was to examine the effects of two reading comprehension instructional programs on component skills (i.e., deductions, analogies, similes, and idioms). The two treatment conditions were (a) an explicit rule-based method, and (b) a traditional method for teaching student component comprehension skills. To help ensure internal validity of the intervention groups, teachers were trained on both levels of intervention over the course of four individual sessions. An additional training session was held for one teacher who did not meet criterion on the explicit instructional method. Results from the training session averaged 3.150 and 3.667 for the explicit and traditional instructional methods, respectfully. Semi-scripted lessons were used during the intervention and observations were conducted throughout the duration of the study.

Forty-two students with learning and behavior problems were randomly assigned to one of the two treatment conditions. Forty-one students actually completed the study. Subjects in both groups received instruction from semi-scripted lessons over 4 consecutive weeks. Each week, one component (i.e., deductions, analogies, similes, idioms) was taught to the participants for approximately 20 minutes. Thus, each student received 240 minutes of instruction during the intervention phase. At the end of each

week, a unit test was administered to the subjects to measure the mastery of each component taught.

An individual's reading comprehension is affected by the readers' skill level in terms of decoding and comprehension, the text, the task, and strategies that the student can implement successfully (Kame'enui & Simmons, 1990). Subjects were assessed using weekly unit tests, a total reading comprehension quotient, and a maintenance test. The unit tests were designed to assess students' mastery over the content that was part of the instructional intervention for that week. The reading comprehension quotient test was designed to measure students' gain in reading comprehension tasks over the entire four-week period on a standardized assessment. Finally, the maintenance test was used to determine if students maintained their skills over time.

Data Analysis Results

Separate one-way analysis of variance (ANOVA) procedures were used for the unit tests, maintenance test, and gain score from the TORC-3 assessment. Data were analyzed using SPSS 11.5, a computerized statistically software program. The data collected are summarized in Table 7.

Table 7

Summary of Data Collected

Measure	Grouping	Mean	F	Sig	Observed Power
Basic Deductions	Traditional	6.300	1.001	0.323	0.164
Unit Measure	Explicit	7.047			
Analogy	Traditional	3.400	0.863	0.359	0.148
Unit Measure	Explicit	4.143			
Simile	Traditional	6.100	0.189	0.666	0.071
Unit Measure	Explicit	6.381			
Idiom	Traditional	7.762	0.555	0.461	0.112
Unit Measure	Explicit	8.250			
Maintenance	Traditional	13.500	0.082	0.776	0.059
Measure	Explicit	13.667			
Total Gain Score	Traditional	2.000	0.176	0.677	0.069
Measure	Explicit	3.000			

Unit Tests

The unit tests were answered in a multiple-choice format. Unit tests were developed by the primary researcher with input from the three experimental teachers that assisted throughout the implementation of the study. Each unit test was comprised of 10

items designed to determine if students could use comprehension strategies to answer previously introduced items; items that participants have seen, but not mastered; and items that students have not been taught throughout the week of intervention. Each unit test administered can be found in Appendix D.

Null Hypothesis 1. There is no statistically significant difference between treatment groups on the deductions unit component score. The separate one-way analysis of variance for this unit test was not statistically significant ($F(1, 40) = 1.001$, $p > .05$). Therefore, the stated null hypothesis was retained.

Null Hypothesis 2. There is no statistically significant difference between treatment groups on the analogies unit component score. The separate one-way analysis of variance for this unit test was not statistically significant ($F(1, 40) = 0.863$, $p > .05$). Therefore, the stated null hypothesis was retained.

Null Hypothesis 3. There is no statistically significant difference between treatment groups on the similes unit component score. The separate one-way analysis of variance for this unit test was not statistically significant ($F(1, 40) = 0.189$, $p > .05$). Therefore, the stated null hypothesis was retained.

Null Hypothesis 4. There is no statistically significant difference between treatment groups on the idioms unit component score. The separate one-way analysis of variance for this unit test was not statistically significant ($F(1, 40) = 0.555$, $p > .05$). Therefore, the stated null hypothesis was retained.

Maintenance Measure

The maintenance measure test was comprised of 20 multiple-choice questions. The maintenance measure was administered two weeks following the last day of

implementation. This measure was made from previous items on individual unit tests and new items in each comprehension component. The test was made by the primary researcher with the assistance of the three experimental teachers. The purpose of the maintenance assessment was to determine what the students learned during the intervention period and if they could apply the skill to a novel item. The maintenance test administered can be found in Appendix D.

Null Hypothesis 5. There is no statistically significant difference between the treatment groups on the maintenance measure score. The separate one-way analysis of variance for the maintenance measure was not statistically significant ($F(1, 40) = 0.864$, $p > .05$). Therefore, the stated null hypothesis was retained.

Reading Comprehension Composite Gain Score

The reading comprehension composite gain score was calculated by subtracting the pre-test reading comprehension quotient from the post-test reading comprehension quotient that was administered to each participant. Each reading comprehension quotient was attained by administering the Test of Reading Comprehension – Third Edition (TORC-3). This assessment was administered before the first day of implementation and after the final day of implementation. The assessment was administered by the primary investigator and one experimental teacher, who served as a proctor to ensure fidelity. The proctor was present to ensure that the test was administered as the authors intended in the examiner's manual. After each administration, the primary investigator and one experimental teacher scored the assessment. Finally, the pre-test score was subtracted from the post-test score to acquire a gain score.

Null Hypothesis 6. There is no statistically significant difference between the treatment groups for the reading comprehension composite gain score. The separate one-way analysis of variance for the gain score was not statistically significant ($F(1, 40) = 0.176$, $p > .05$). Therefore, the null hypothesis was retained.

Summary

The results of the separate one-way analysis of variances for the unit tests, maintenance measure, and reading comprehension composite gain score were presented in this section. The six null hypotheses were stated and the statistical significance of each was provided. There were no statistical significant differences found between the two treatment conditions when compared on each of the assessments that were administered to the participants. A discussion of the results is presented in the following section.

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This section presents and summarizes the present study including the purpose and procedures. The results will be presented as they directly relate to the instructional needs for students with learning and behavior problems when presented with comprehension tasks. This will conclude with a discussion of the limitations and recommendations for future research in the area of reading comprehension instruction.

Purpose and Procedures

The purpose of this study was to compare the effectiveness of two reading comprehension instructional approaches on four specific components (i.e., deductions, analogies, similes, and idioms).

For students with specific learning disabilities, reading remains the leading category for initial identification in special education (Bender & Larkin, 2000). While in the earlier grades decoding text remains an emphasis, in the later elementary and middle grades students' comprehension problems begin to arise. Some individuals with learning and behavior problems spend so much effort decoding the words that any chance for comprehension is lost. While this problem exists for students with learning and behavior problems, students are being asked not only to read more narrative text, but also to learn and recall information from what they read over long passages.

While previous research has focused on holistic approaches such as "think-alouds," "summarizing," and "SQ3R," the focus of this research has been on specific comprehension components. The two instructional methods under investigation in this study were: (a) the explicit rule-based method, and (b) a traditional basal-reader method. While the explicit rule-based method was based on the direct instruction model, the traditional basal-reader method was an extension to the regular classroom activities that students would be presented in a regular education classroom.

The explicit rule-based method lessons included a rule-statement, teacher-directed modeling of the skill, and multiple practice examples that were first introduced in a group unison-responding format followed by independent practice. The rule-statement was introduced in terms that students could understand and modeled through several examples by the teacher. The teacher then led the students through several examples providing specific feedback when errors occurred. Following the examples, students were provided practice examples that were performed orally through unison responding. Finally, students were asked to complete some independent practice examples including examples presented in the lesson and novel examples.

The traditional basal-reader method lessons included a brief introduction of the skill, student-led interactions with the examples, and independent examples. Students were first introduced to the skill and provided a rationale for the importance when reading text. This was followed by examples where students were allowed to take risks and make errors. Students were allowed to correct one another if errors were made. Teachers would interact with students freely discussing how they derived the particular meaning of the analogy, simile, or idiom or how they developed the deduction from the

evidence provided. Finally, students were given independent practice items to do on their own without support from the teacher.

Forty-one students with learning and behavior problems participated in the study from one school in an urban area. The students were randomly assigned to one of the intervention groups. Daily semi-scripted lessons lasting 20 minutes were conducted for 4-consecutive weeks. The students who participated in the study received 280 minutes of instruction throughout the intervention phase of the study. The lessons were taught by four certified teachers in the state of Georgia. Teachers were provided four individual training sessions on the instructional materials to be implemented in the study. One teacher required an additional 3-hour training session on the explicit teaching method. Teachers were required to score a 3 (adequate) on a 4-point Likert-type scale. The average from the training sessions was a 3.150 and 3.667 for the explicit and traditional instructional methods, respectfully, on the twenty-item evaluation scale found in Appendix C. Teachers were also observed during the intervention phase of the study to ensure that the materials were being followed accurately.

During each week of the intervention phase, the focus of the lessons changed to present a different comprehension component task. The same order of the interventions (i.e., deductions, analogies, similes, and idioms) was followed by all of the experimental teachers in this study. The first week focused on deductions followed by the introduction of analogies, similes, and idioms in the following weeks. At the end of each week, students were given the corresponding unit test for the component focus of the week.

On the last day of the 4-week intervention, a post-test (TORC-3) was administered to acquire the gain score for each student to measure the treatment effects in

terms of total reading comprehension ability. Finally, two weeks following the last day of intervention, a maintenance test was given to each student. The purpose of the maintenance test was to determine if students could activate and recall the strategies and rule-statements taught during the intervention phase of the study.

Results and Discussion of Findings

Deficits in reading can lead to failure in academics far beyond K-12 public education. Students with learning and behavior problems often suffer because of poor decoding skills and worse comprehension proficiency. The performance of students with learning disabilities on component comprehension skills were investigated in this study. Students with learning and behavior problems participated in the general education classroom during all parts of the intervention phase. All students in the general education class participated in the intervention, however, data was collected only for students with a diagnosed disability. Results from this study suggested that there were no significant differences between the two treatment groups when compared on unit tests, pre- and post-tests, and a maintenance measure.

Unit Tests

The participants in this study took four unit tests at the end of each week during the intervention period. The content assessed included (a) deductions, (b) analogies, (c) similes, and (d) idioms. Individual unit tests included items that the students had mastered during the initial instructional period, items that were at a practice level for the students, and items that were novel to the students. The unit tests were used to compare the two instructional models under investigation (1) a traditional basal approach, and (b)

an explicit rule-based approach. In the present study, the unit tests were in a multiple-choice format. The teacher gave oral instructions for the unit test supported with written directions printed on the test itself. The tests were scored by the primary researcher and one experimental teacher participating in the study.

Deductions unit tests. A separate one-way analysis of variance on the raw scores was computed to determine if differences between the treatment groups exists. The results indicated that there was no significant difference between the two groups on their overall ability to identify the correct answer from the deductions unit test ($F = 1.001$, $p > .05$).

By examining the percentage correct for each group, the practical differences between the scores becomes more apparent with the traditional group mean percentage of 63% compared to the explicit groups mean percentage of 71%. This indicates that the explicit rule-based group performed at an average ability, while the traditional group performed below average when a traditional grading scale is used (A-B-C-D-F grading scale). While the percentages only differ by 8%, many parents of students with disabilities would prefer instructional practices that allow their children to build confidence. Passing a test or quiz allows children with learning and behavior problems to build confidence in their abilities on comprehension tasks.

Analogies unit tests. A separate one-way analysis of variance was utilized to determine if statistical differences within the participants' raw scores existed on the unit test measuring analogies correct meaning. The results indicated that no significant difference existed between the two groups over the course of the intervention ($F = .863$, $p > .05$). By examining the percentage for each group, a seven percent difference was

found in favor of the explicit group. While both groups still had mean scores below the passing percentages that are often used in public schools. The results indicated that the power was not sufficient. This result may suggest that larger differences may be obtained if the sample size of the study increases.

Similes unit tests. A separate one-way analysis of variance on the raw scores was computed to determine if differences within the treatment groups existed. The results indicated that no significant difference between the two groups on their overall ability to identify the correct answer from the similes unit test ($F = .189$, $p > .05$).

By examining the percentage correct for each group, the practical differences between the scores did not appear to be of any practical significance with the experimental group equaling 64%, while the traditional group equaling 61%. These results suggest that students in either group performed as well as the other group when instruction focused on similes.

Idiom unit test. A separate one-way analysis of variance was utilized to determine if statistical differences within the participants raw scores exists on the unit test measuring idioms correct meaning. The results indicated that no significant difference existed between the two groups over the course of the intervention ($F = .555$, $p > .05$).

By examining the percentage for each group, a five percent difference was found in favor of the explicit group. While both groups still had mean scores passing percentages that are often used in public schools, students in the traditional group had a percentage that would have resulted in a “B” grade while the explicit group had a percentage that would have resulted in a “C” grade on the traditional grading scale.

Maintenance Test

The purpose of the maintenance test was to determine if the treatment groups differed on their level of mastery during the four-week intervention. The maintenance measure was given 2 weeks after the last day of intervention. For the maintenance measure, the students identified as participants in the study were pulled out of a reading period in the morning. The maintenance test was comprised of 20 multiple-choice items including new items, practice level items, and items that were mastered during the intervention period. Again, the maintenance measure was scored by the primary researcher and one experimental teacher.

A separate one-way analysis of variance was used to determine if there was a statistically significant difference between the two treatment conditions. The results indicated that there was no statistically significant difference between the two groups on the maintenance measure ($F = .082$, $p > .05$). Thus, the results from the maintenance measure seem to indicate students with learning and behavior problems did not benefit in favor of one of the instructional methods used.

From an examination of the mean percentages from each instructional group, similar results were found. For the explicit rule-based group, students' average percent correct was 68%, while for the traditional basal group, students averaged 66% correct responses. Thus, instructional method was not a factor for the content taught. Students performed fairly equitably in both treatment groups.

Pre- and Post-Test Measure

The Test of Reading Comprehension (3rd edition) was used as pre- and post-test for the present study. Students were given the pre-test before the first day of

implementation began, and participants were administered the post-test following the final day of implementation. Following the post-test, the differences in the pre- and post-test scores were used to compile a gain score. The gain scores were then analyzed using a one-way analysis of variance to determine if there were significant differences in the groups.

Gain score. A separate one-way analysis of variance was used to determine if statistically significant differences existed between the two treatment conditions. The results from the statistical procedure suggest that there were no statistically significant differences between the two groups when compared using the gain score ($F = .176$, $p > .05$).

It is important to consider the practical significance of the findings on the gain score for students' total comprehension skills. In the present study, students assigned to the explicit rule-based mean gain score was +3 points compared to the traditional basal mean score was +2. These results fell into the first standard measure of error for the TORC-3. For the TORC-3, the mean score is 100 plus or minus 15 points. Therefore, the present study cannot confirm the practical significance of using one method over the other when examining students' total gain in reading comprehension skill.

Limitations and Recommendations

The topic of interest in this study was to determine the efficacy of an explicit rule-based model and traditional model for teaching students comprehension component skills. Results from this study suggest that students with learning and behavior problems performed equivalently on unit test, maintenance test, and gain score measures. There are

limitations for conducting research in public education classrooms that involves human subjects. The following section will present limitations and recommendations for future research.

Limitations

There are many important considerations when conducting experimental investigations in the public school system. For instance, the time allocated for the implementation of the study may be a potential weakness for the investigation. Students were subjected to a total of 320 minutes of instruction during the implementation of the study and only 80 minutes were spent on each of the comprehension components taught. Thus, students may have not had enough time to develop the skill necessary to perform to a high level on the assessments utilized.

Also, the number of students that participated in the study is a weakness for the investigation. Forty-one students participated in the study. Therefore, the power may not have been sufficient for statistical significance. The sample size in this study ($N = 41$) could limit the generalizability of the results. Similarly, the students participated in the regular education classroom. Hence, the students with disabilities may have been distracted by the other students in the classroom. This could have led to some loss of information during the delivery of instruction. Due to the lack of individualized time allocated per student, some of the content presented could have been diminished by other distractions that were present during the implementation of the intervention.

Finally, there are many problems when measuring comprehension with middle grade students. There is a great deal of information to learn from studies that do and do

not find statistically significant results. The following section will provide recommendations for future research.

Recommendations

There are many recommendations that can be made from the present study. For instance, more time allocated for teaching individual component skills and a discrimination set of examples may have resulted in better test results for the students with disabilities. Future research may focus on one comprehension component over the course of 4-weeks. This may allow students to perform at higher levels of accuracy and provide teachers with the opportunity to reteach if students are not at a high criterion level of proficiency. Also, only five instructional days were devoted to the instruction of the comprehension component skills that were taught during the intervention. The instructional sessions lasted for approximately 20 minutes. Therefore, students may have not been provided with enough practice examples over the intervention period. It is suggested that future studies include cumulative review sets throughout intervention periods to aid students in mastering the required skills.

The results are also limited to students with learning and behavior problems in the middle grades. This study could further be implemented with elementary aged students with adequate decoding skills. Similarly, the study could increase the statistical power by including all students in the regular education classroom, not just those identified with disabilities. It may also be beneficial to disaggregate students according to their labeled disability. Students with another health impairment (OHI) had the greatest difference in scores when compared on the analogy unit measure in favor of the explicit teaching method.

The Test of Reading Comprehension (3rd edition) is limited to measuring total comprehension achievement. Therefore, the focus of the component skills that were involved during the intervention period may not have sufficed for a large effect on the gain score. Also, students with learning and behavior problems who participate in the general education classroom may have demonstrated higher gains if they received their instruction through a resource model. The resource model, otherwise known as a pull-out model, may have been more beneficial for students with disabilities. Information delivered in the inclusion model presents some difficulty for students with learning and behavior problems. If students were taught in a resource setting, more individualized attention may have been given to individual student responses and likewise enhance the achievement of students with disabilities.

Summary

There are many problems associated with reading comprehension failure for students with learning and behavior problems. The impact that reading failure has on students lasts beyond the education offered by public schools. The focus of future research should be on specific instructional procedures to increase the success rate of students on reading comprehension tasks. There is also a need for further research that takes place in the regular education classroom. Future research on inclusion environments will either provide support for that model or provide evidence that students with disabilities do not make the same gains in the inclusion environment. Furthermore, generalizing comprehension skills to other settings should be a focus for ongoing research involving reading comprehension programs.

Further investigation in the area of comprehension instruction is warranted. This is due to the increasing demands for accountability that teachers are faced with and the increasing demands for scientifically validated instructional practices. The results of this study indicate the need for ongoing research in the field of comprehension instruction.

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APPENDICES

APPENDIX A

SAMPLE LESSONS (EXPLICIT & TRADITIONAL)

Sample Lesson

Explicit Rule-Based Strategy

Objectives: Students will identify fact through the sequential introduction of evidence.

Find Part A. (call on individual student)

Read part A.

Let's draw a conclusion about the shoes. Here's the evidence:

The shoes are in the closet.

And the closet is in the house.

Here's the conclusion we can draw about the shoes:

The shoes are in the house.

Draw a conclusion about the dogs. Here's the evidence:

The dogs are in the pen.

And the pen is in the yard.

What's the conclusion about the dogs?

Teacher: What's the answer? (signal)

The dogs are in the yard.

Here's the whole deduction: The dogs are in a pen. And the pen is in the yard. So, the dogs are in the yard.

Find Part B (call on individual student)

Read Part B

Draw a conclusion about Miami. Here's the evidence:

Miami is in the state of Florida. The state of Florida is in the United States.

What's the conclusion about Miami?

Teacher: What's the answer? (signal) *Miami is in the United States.*

Here's the whole deduction: Miami is in the state of Florida. And the state of Florida is in the United States. So, Miami is in the United States.

Find Part C

Read Part C (call on individual student)

Draw a conclusion about all carrots. Here's the evidence.

All carrots are vegetables. All vegetables are plants.

What's the conclusion about all carrots?

Teacher: What's the answer? (signal) *All carrots are plants.*

Here's the whole deduction: All carrots are vegetables. All vegetables are plants. So, all carrots are plants.

Find Part D

Read Part D (call on individual student)

Draw a conclusion about a Siamese cat. Here's the evidence:

Every feline eats meat. A Siamese cat is a feline.

What's the conclusion about a Siamese cat?

Teacher: What's the answer? (signal) *A Siamese cat eats meat.*

My turn. I can say the whole deduction. Every feline eats meat. A Siamese cat is a feline. So, a Siamese cat eats meat. Your turn. (call on individual students to say the whole deduction.)

Now we're going to read the instructions for what you have to do. Don't write anything until I tell you to do so. Read the instructions (call on individual student.) Everybody do the items. (monitor student working independently, give corrective feedback when necessary.) Let's check your work.

Worksheet 1: Deductions

Student Name:

Date:

Directions: Read the evidence and write the conclusion for each item.

1. Here's the evidence:
    a. The bird is in the nest
    b. And the nest is in the tree.

    What's the conclusion about the bird?

2. Here's the evidence:
    a. All carrots are vegetables.
    b. All vegetables are plants.

    What's the conclusion about all carrots?

3. Here's the evidence:
    a. All mammals have hair.
    b. Whales are mammals.

    What's the conclusion about whales?

4. Here’s the evidence:

    a. Every feline eats meat.

    b. A Siamese cat is a feline.

    What’s the conclusion about a Siamese cat?

Sample Lesson

Traditional Comprehension Instruction

Objectives: Students will identify fact through the sequential introduction of evidence.

Find Part A. (call on individual student)

Read part A.

Let's draw a conclusion about the shoes. Here's the evidence:

The shoes are in the closet.

And the closet is in the house.

Here's the conclusion we can draw about the shoes:

The shoes are in the house.

Draw a conclusion about the dogs. Here's the evidence:

The dogs are in the pen.

And the pen is in the yard.

What's the conclusion about the dogs?

Teacher: Pose Question to individual Students. What is the conclusion? How do we know?

The dogs are in the yard. (Student Answers may vary)

Find Part B (call on individual student)

Read Part B

Draw a conclusion about Miami. Here's the evidence:

Miami is in the state of Florida. The state of Florida is in the United States.

What's the conclusion about Miami?

Teacher: Pose Question to individual Students. What is the conclusion? How do we know?

Find Part C

Read Part C (call on individual student)

Draw a conclusion about all carrots. Here's the evidence.

All carrots are vegetables. All vegetables are plants.

What's the conclusion about all carrots?

Teacher: Pose Question to individual Students. What is the conclusion? How do we know?

Find Part D

Read Part D (call on individual student)

Draw a conclusion about a Siamese cat. Here's the evidence:

Every feline eats meat. A Siamese cat is a feline.

What's the conclusion about a Siamese cat?

Teacher: Pose Question to individual Students. What is the conclusion? How do we know? (call on individual students to say the whole deduction.)

Now we're going to read the instructions for what you have to do. Don't write anything until I tell you to do so. Read the instructions (call on individual student.) Everybody do the items. Let's check your work.

Worksheet 1: Deductions

Student Name:

Date:

Directions: Read the evidence and write the conclusion for each item.

5. Here's the evidence:
    a. The bird is in the nest
    b. And the nest is in the tree.

    What's the conclusion about the bird?
6. Here's the evidence:
    a. All carrots are vegetables.
    b. All vegetables are plants.

    What's the conclusion about all carrots?
7. Here's the evidence:
    a. All mammals have hair.
    b. Whales are mammals.

    What's the conclusion about whales?
8. Here's the evidence:
    a. Every feline eats meat.
    b. A Siamese cat is a feline.

    What's the conclusion about a Siamese cat?

APPENDIX B

UNIT MEASURE

Basic Deduction Unit Measure

1. Carrots are vegetables. All vegetables are food.

a. Carrots are vegetables
b. Vegetables are food
c. Carrots are food
d. Carrots are orange

2. The spiders are in the dirt. Some of the dirt is on the table.

a. Spiders are on the table
b. So, spiders may be on the table
c. So, all of the spiders are not on the table
d. So, none of the spiders are on the table

3. Carrots are vegetables. Some vegetables contain vitamin A.

a. Carrots contain vitamin A.
b. Carrots are vegetables
c. Carrots contain vitamin B
d. Carrots may contain vitamin A.

4. The boy was in the sand. Some of the sand was in the shade.

a. So, maybe the boy was in the shade.
b. The boy was not in the shade.
c. The boy was having fun in the sand.
d. So, maybe the boy was in the sand.

5. All cows are mammals. An Angus is a cow.

a. An angus is a mammal.
b. An angus may be a mammal.
c. A cow is an angus.
d. A cow may be an angus.

6. Some cows are bred for beef. An Angus is a cow.

a. An angus may be bred for beef.
b. An angus is bred for beef.
c. A cow is an angus
d. So, maybe an angus is a cow.

7. Part of the porch was over the sidewalk. Sam was on the porch.

a. So, maybe the porch is over the sidewalk.
b. So, maybe same is over the sidewalk.
c. So, maybe same is on the porch.
d. Sam is over the sidewalk.

8. Trains are vehicles. Vehicles can transport people.

a. So, maybe trains are vehicles
b. So, maybe trains transport people.
c. Trains can transport people.
d. So, maybe people ride trains.

9. Trains are vehicles. Some vehicles have diesel engines.

a. Trains run on coal.
b. So, maybe trains run on coal.
c. So, maybe trains have diesel engines.
d. So, maybe people ride trains.

10. Some bones protect organs. The scapula is a bone.

A. So, the scapula protects organs.
B. So, everyone has a scapula.
C. So, maybe everyone has a scapula.
D. So, maybe the scapula protects organs.

Analogy Unit Measure

Write what each analogy tells.

- **What part of speech each word**
- **What verb each word comes from**
- **What each word means**
- **What ending each word has**

1. Protection is to ion as residence is to -ence.
_____

2. Protection is to noun as residence is to noun.
_____

3. Protection is to protect as residence is to reside.
_____

Write what each analogy tells.

- **What body system each thing is in.**
- **Where you find each part**
- **How many of each you have**
- **What bone each thing covers**

4. Triceps are to two as quadriceps are to two.
_____

5. Triceps are to humerus as quadriceps are to femur.
_____

6. Triceps are to muscular system as quadriceps are to muscular system.
_____

Write what each analogy tells.

- **The adjective that comes from each word**
- **What each word means**
- **The noun that comes from each word**
- **What part of speech each word is.**

7. Construct is to build as reside is to live somewhere.
_____

8. Construct is to construction as reside is to residence.
_____

9. Construct is to constructive as reside is to residential.
_____

Write what each analogy tells.

- **What part of speech each word**
- **What verb each word comes from**
- **What each word means**
- **What ending each word has**

10. Residential is to that people reside somewhere as selection is to something that is selected.
_____

Simile Unit Measure

1. His voice was like a knife.

    a. His voice was metal.
    b. He had a knife up to his mouth.
    c. His voice cut through a steak.
    d. His voice was sharp.

2. Her legs were like tree stumps.

    a. Her legs were thick.
    b. Her legs were made of wood.
    c. Her legs had bark around them.
    d. She had a cut on her leg.

3. Their hair was like the sun.

    a. Their hair was bright.
    b. Their hair was on fire.
    c. Their hair was hot.
    d. Their hair was brushed very neatly.

4. The man is like a tiger.

    a. The man eats nothing but meat.
    b. The man is big and strong.
    c. The man has a lot of hair.
    d. The man has stripes.

5. The woman is like a cheetah.

    a. The woman is quiet.
    b. The woman runs fast.
    c. The woman is in her car.
    d. Her car is fast.

6. That tells a man is strong.

    a. The man is like a car.
    b. The man is like a tiger.
    c. The man is like a computer.
    d. The man is like his wife.

7. That tells a man’s skin is rough

a. The man’s skin is like sandpaper.
b. The man’s skin is like a window.
c. The man’s skin is like a book.
d. The man’s skin is like his wife’s.

8. That tells the woman runs fast.

a. The woman is like a computer.
b. The woman is like a tree.
c. The woman is like a cheetah.
d. The cheetah is like a tree.

9. That tells her words are very sweet.

a. Her words were like bark.
b. Her voice was like a knife.
c. Her words were like honey.
d. Her voice was like chocolate.

10. That tells a man’s shoes smell.

a. The man’s shoes are like a landfill.
b. The man’s shoes are like a car.
c. The man’s shoes are like a book.
d. The man’s shoes are like a computer.

Idiom Unit Measure

1. I need money for the amusement park. I may just have to pass the hat.

    a. give my ticket to someone else
    b. collect money
    c. steal the money
    d. give up

2. It was touch and go for a while, but the vet says my rabbit will be fine.

    a. unclear outcome
    b. playing tag
    c. give it to someone else
    d. holding the rabbit down

3. When Dr. Anthony discovered that someone had sneaked a look at the report cards, he really flew off the handle.

    a. put the cards in a secret location.
    b. Changed all of the scores
    c. Had an unclear outcome
    d. Got upset or angry with his students.

4. When he asked me the way to the cafeteria, I told him to follow his nose.

    a. ask someone for directions
    b. I don't know myself
    c. Guess
    d. Go with his instincts

5. I have to remove this splinter from your finger, so just grit your teeth.

    a. walk it off
    b. get something to eat
    c. do not grind your teeth
    d. bare with the pain

6. The kid was already asleep when he went to baby-sit. What a gravy train.

    a. easy job to accomplish
    b. difficult job
    c. look at the gravy on those potatoes
    d. the parents decided to stay home to eat.

7. The business man knocked it out of the park when he gave his presentation.

    a. he was interviewing for a baseball game
    b. he performed the presentation very well
    c. he hit a homerun during a game
    d. he hit another candidate for the same job

8. He had to face the music when he was sent to the principal's office.

    a. listen to classical music
    b. put his CD player away
    c. call his mother
    d. deal with the consequences of his actions

9. The preacher decided to go off the cuff when he gave his sermon.

    a. read his sermon
    b. stared at his cuff the entire sermon
    c. let someone else perform the sermon
    d. not follow his usual format

10. She had to take a rain check when the cute boy asked her out.

    a. pay the bill with a check
    b. his pants were wet
    c. she had to accept at a later date
    d. he wrote a check for her to go out with him

APPENDIX C

EVALUATION PROCEDURES DURING TRAINING AND DURING THE INTERVENTION PERIOD

Explicit Evaluation Criteria (Training)

Teacher: _____ Lesson: _____

Rating Scale: 1 = Needs Individualized Training,
2 = Needs Improvement through informal Training
3 = Adequate
4 = Exceeds Expectations

Area Assessed	Rating
1. Materials are ready to begin – Easily accessible	
2. Formats – Fluency of Presentation	
3. Formats – Procedural Integrity	
4. Formats – Responses verified	
5. Formats – Appropriate Repetitions	
6. Signals – Start/Stop Together	
7. Signals – Pause/Think time	
8. Individual Turns – Most to Lowest Performers	
9. Individual Turns – Students Name after questions	
10. Correction – All errors immediate	
11. Correction – Consistent/Positive	
12. Correction – Specific Correction	
13. Firming Cycle – Starting over/Repeated practice on item	
14. Pacing – On Target to complete lesson	
15. Pacing – Rapid/Steady	
16. Pacing – Transitions Brief	
17. High expectations/Set up Unit of Reinforcement	
18. Specific Reinforcement	
19. Varied Reinforcers	
20 Varied Distribution/Most to Lowest Performers	

Traditional Evaluation Criteria (Training)

Teacher: _____ Lesson: _____

Rating Scale: 1 = Needs Individualized Training,
2 = Needs Improvement through informal Training
3 = Adequate
4 = Exceeds Expectations

Area Assessed	Rating
1. Materials are ready to begin	
2. Semi Scripted Format Followed	
3. Used Language Appropriate for Students	
4. Accepted student responses	
5. Maintained acceptable transitions	
6. Provided student alternatives to questioning (yes/no format)	
7. Supervised student independent work	
8. Check student independent work	
9. Indicated student name before questioning	
10. Correction – Allowed Students time to think	
11. Delayed once errors were made to give student time to think	
12. Posed questions to enhance students awareness of the skill	
13. Asked open ended questions	
14. Pacing - Able to complete the required lesson	
15. Allowed students to come up with their own examples	
16. Motivated students through the use of additional examples	
17. Redirected Student on –task behavior	
18. Reinforced various student behavior	
19. Reinforced Correct Student Responses	
20 Maintained Order	

Explicit Evaluation Criteria (During Intervention Period)

Teacher: _____ Lesson: _____

Rating Scale: 0 = Did not perform as intended
+ = Performed as intended
NA = Not applicable to the lesson observed

Area Assessed	Rating
1. Materials are ready to begin – Easily accessible	
2. Formats – Fluency of Presentation	
3. Formats – Procedural Integrity	
4. Formats – Responses verified	
5. Formats – Appropriate Repetitions	
6. Signals – Start/Stop Together	
7. Signals – Pause/Think time	
8. Individual Turns – Most to Lowest Performers	
9. Individual Turns – Students Name after questions	
10. Correction – All errors immediate	
11. Correction – Consistent/Positive	
12. Correction – Specific Correction	
13. Firming Cycle – Starting over/Repeated practice on item	
14. Pacing – On Target to complete lesson	
15. Pacing – Rapid/Steady	
16. Pacing – Transitions Brief	
17. High expectations/Set up Unit of Reinforcement	
18. Specific Reinforcement	
19. Varied Reinforcers	
20 Varied Distribution/Most to Lowest Performers	

Traditional Evaluation Criteria (During Intervention Period)

Teacher: _____ Lesson: _____

Rating Scale: 0 = Did not perform as intended
+ = Performed as intended
NA = Not applicable to the lesson observed

Area Assessed	Rating
1. Materials are ready to begin	
2. Semi Scripted Format Followed	
3. Used Language Appropriate for Students	
4. Accepted student responses	
5. Maintained acceptable transitions	
6. Provided student alternatives to questioning (yes/no format)	
7. Supervised student independent work	
8. Check student independent work	
9. Indicated student name before questioning	
10. Correction — Allowed students time to think	
11. Delayed once errors were made to give student time to think	
12. Posed questions to enhance students awareness of the skill	
13. Asked open ended questions	
14. Pacing — Able to complete the required lesson	
15. Allowed students to come up with their own examples	
16. Motivated students through the use of additional examples	
17. Redirected Student on–task behavior	
18. Reinforced various student behavior	
19. Reinforced Correct Student Responses	
20 Maintained Order	

APPENDIX D

LETTER OF SUPPORT — COOPERATING PRINCIPAL/SITE DIRECTOR & INFORMED CONSENT FOR PARTICIPATION IN THE STUDY

To Whom It May Concern:

Edwards Middle School would like to acknowledge and support the proposed research project “Reading Comprehension Instruction in the Middle Grades for Students with Learning and Behavior Problems,” that has been submitted by David Alan Crowe. The students with learning and behavior problems at EMS will positively benefit from the intervention study that has been proposed. Students have the unique opportunity to participate in an experimental investigation that will support best practices for all children. The school and school system have agreed to allow Mr. Crowe to assess our current students, implement the two levels of intervention, and provide teachers will the instructional support to clearly meet the objectives outlined in the research proposal. We will provide Mr. Crowe with the access to students that are necessary to support or reject the findings from this research and will allow a location for this study to take place. This is an excellent opportunity for our students to demonstrate their level of knowledge and to participate in an enriching experimental intervention that will help them in their future endeavors.

Best Regards,

Tonya Bloodworth
Principal/Site Director

INFORMED CONSENT
for a Research Study Entitled
Reading Comprehension Instruction in the Middle Grades for Students with Learning and Behavior Problems

Dear Parents,

Your child is invited to participate in a research study to investigate the effectiveness of two instructional programs for teaching students comprehension skills. This study is being conducted by David Alan Crowe, Special Education Department Chair under the supervision of Dr. Craig Darch, Professor, Auburn University. We hope to learn if traditional instructional approaches to teaching reading comprehension are more effective than explicit rule-based instructional methods. Your child was selected as a possible participant because your child has been identified as having a disability by the Rockdale County Public School System.

If you decide to allow your child to participate, we ask that you discuss this study with your child and allow them to give their consent. There will be no penalty if you choose not to participate. First, we will administer a pre- and post-test for a composite comprehension score to identify student gains over the four-week intervention period. Students will receive instruction in their respective inclusion language arts classroom. The lessons will be included within the overall goals of the language arts class for the duration of the intervention period. Students will be taught identical content with one of two popular instructional practices. Two weeks following the intervention period, a maintenance test will be administered to determine how well students mastered the content presented. Only the pre- and post-test will be administered outside of the regular classroom. There are no other activities designed outside of the least restrictive environment for the children that choose to participate. If you choose or your child chooses not to participate, they will receive the traditional instruction, but no data will be taken for the study.

Each student's school system identification number will be used to identify the participants in order to accurately keep track of student progress. This does present a confidentiality risk due to the identifiable number for each student. Students will receive instruction on keeping their individual identification numbers confidential in order to reduce the risk of confidentiality. Teachers will receive additional instruction to ensure that your student is being taught effectively and efficiently. This may cause potential risk if teachers are not adequately trained in the instructional program or deviate from the instructional program. Therefore, teachers will be supervised at random for the duration of the intervention phase.

This study will provide teachers, administrators and other professionals in the field of education with evidence of best practices for teaching students with disabilities comprehension skills. Your child will benefit from the specialized instruction that will be

semi-scripted for both treatment conditions. The instruction provided may help individual students in comprehending informational passages on the CRCT this year. We cannot promise you that you will receive any or all of the benefits described. You will be provided a report about your child's progress throughout the duration of this study.

Any information obtained in connection with this study and that can be identified with you will remain confidential. Individual student identification numbers will be used to organize the data obtained. The information obtained will be destroyed at the conclusion of the study. Information collected through your participation may be used to fulfill an educational requirement, published in a professional journal, and/or presented at a professional meeting, etc.) If so, none of your identifiable information will be included.

Data collected will be kept confidential under secure files inaccessible from any person not directly involved with the study. The data collected will be destroyed upon the completion of the study. As parents, you have the right to withdraw from participation at any time, without penalty, and that you may withdraw any data which has been collected about you child as long as the data is identified. Students will be provided the traditional instruction regardless of their participation in this study. The data taken from individual children will not be used without parental and student consent.

Your decision whether or not to participate will not jeopardize your future relations with Auburn University or the special education department at Edwards Middle School.

If you have any questions we invite you to ask them now. If you have questions later, please feel free to contact David Alan Crowe at 770-483-3255 or email Mr. Crowe at dcrowe@rockdale.k12.ga.us and we will be happy to answer them. You will be provided a copy of this form to keep.

For more information regarding your rights as a research participant you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334)-844-5966 or e-mail at hsubjec@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

Participant's signature Date	Investigator obtaining consent Date
Print Name	Print Name
Parent's or Guardian Signature Date (if appropriate)	