UNIVERSITY OF CALIFORNIA
RIVERSIDE

Improving Reading Comprehension for Students With Intellectual Disability: The Effectiveness of the Main Idea and Self-Monitoring Strategy

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

Doctor of Philosophy

in

Education

by

Emad Abdulwahed A Alussaif

June 2020

Dissertation Committee:
Dr. Rollanda O'Connor, Chairperson
Dr. Asha K. Jitendra
Dr. Michael Solis

The Dissertation of Emad Abdulwahed A Alussaif is approved:

_____

_____

_____

Committee Chairperson

University of California, Riverside

ABSTRACT OF THE DISSERTATION

Improving Reading Comprehension for Students With Intellectual Disability:
The Effectiveness of the Main Idea and Self-Monitoring Strategy

by

Emad Abdulwahed A Alussaif

Doctor of Philosophy, Graduate Program in Education
University of California, Riverside, June 2020
Dr. Rollanda O'Connor, Chairperson

Introduction: Students with intellectual disability (ID) experience reading difficulties that can be a result of ineffective reading instruction. Although much research on reading instruction for students with ID has been done, most of this research has focused on sight words and isolated skills, and limited attention has been paid to other literacy skills such as reading comprehension, which is the ultimate goal in literacy. The main idea strategy is one of the reading comprehension strategies that has been found to be effective in improving students' reading comprehension. It has been widely investigated among students with learning disabilities (LD), but little attention has been given to this strategy in improving reading comprehension for students with ID. This study aimed to address this gap in the literature.

Objective: This study examined the effectiveness of a main idea and self-monitoring strategy for improving reading comprehension of expository text of students with ID.

Method: Three students with ID who were in third, fourth, and fifth grade were selected to participate in the main idea strategy instruction. A multiple baseline, across participants, single-case design was utilized for 10 weeks, with four days of reading instruction sessions per week. After baselines had been established, the main idea and self-monitoring intervention phase was implemented for students as follows: student 1, 16 sessions; student 2, 10 sessions; student 3, 6 sessions. Students were taught for 30 minutes in each session how to generate the main idea from the passage by naming the subject and telling the important things about it. Sixty expository passages were randomly assigned to be used in baseline, intervention, and maintenance.

Results: Results revealed the effectiveness of the main idea and self-monitoring strategy in improving reading comprehension for students with ID. All three students' main idea identification mean score increased from the baseline to the intervention phase. Furthermore, during the maintenance phase, results showed all three participants continued to demonstrate an improvement in main idea identification over baseline performance. This suggested that the effects of the main idea intervention were sustained even after two weeks with no instruction.

Conclusions: Main idea intervention combined with a self-monitoring strategy was found to be effective in improving reading comprehension of expository passages for students with ID. The findings of this study are promising and provide evidence that students with ID can benefit from reading interventions that have been found to be effective for students with other disabilities (e.g. LD).

Table of Contents

List of Figures

List of Tables

Chapter 1: Introduction

Reading is considered one of the most significant academic skills that all students, including students with intellectual disabilities (ID), need in order to succeed in their academic and work lives as well as to integrate into society. However, the ability to learn to read has been identified as challenging for students with ID who demonstrate a variety of reading difficulties that require systematic reading instruction (Allor, Mathes, Roberts, Jones, & Champlin, 2010; Browder, Wakeman, Spooner, Ahlgrim-Delzell, & Algozzinexya, 2006; Hill & Lemons, 2015). Indeed, reading difficulties are considered one of the most common conditions among those with ID. These reading difficulties are a result of a lack of effective reading instruction and stem from the belief that students with intellectual disabilities cannot benefit from reading instruction designed for students with typical development and learning abilities because of the limitation of their cognitive abilities (Wise, Sevcik, Romski, & Morris, 2010).

However, studies have demonstrated that most student with ID can obtain fundamental literacy skills and learn to read (Channell, Loveall, & Conners, 2013). Yet, the ability to read words does not guarantee that students will comprehend what they read because reading comprehension needs more than reading or recognizing words from the text, but also, it is the ability to understand and connect meaning from those words (Stagliano & Boon, 2009). Having problems or difficulties with reading comprehension can negatively affect students' academic achievement. It is a challenge for most of the students in general education and for students with ID in particular.

The Simple View of Reading model (Gough & Tunmer, 1986) proposed that decoding and listening comprehension are two main components for reading comprehension. Although these two components are important for reading comprehension, they vary across grades. In early grades, decoding skill plays a crucial role in fostering reading comprehension, and when this skill becomes automatized, listening comprehension becomes more essential in reading comprehension (Hogan, Bridges, Justice, & Cain, 2011). Based on this view of reading, students should be able to comprehend what they read when they have decoding and oral language skills, and deficits in these skills lead to difficulties in reading comprehension. However, it has been demonstrated that even students with proficient decoding ability may struggle with reading comprehension because of the lack of reading strategies (Gajria, Jitendra, Sood, & Sacks, 2007).

Unfortunately, it has been demonstrated that students with intellectual disability experience difficulties in decoding skills (Soltani & Roslan, 2013). When students struggle in decoding words, they are more likely to read slowly and inaccurately, which in turn affects their ability to comprehend what they read. Nevertheless, studies have shown that decoding skills can be improved in students with ID (Heller, Fredrick, Tumlin, & Brineman, 2002; Tucker Cohen, Wolff Heller, Alberto, & Fredrick, 2008). Despite the critical role that decoding ability plays in influencing reading comprehension ability, it has been found that reading comprehension is not only related to decoding (Narkon & Wells, 2013; Rouse, Alber-Morgan, Cullen, & Sawyer, 2014); limitations in cognitive ability are related to inference making, working memory, and selecting and

applying strategies, which may also be linked to reading comprehension problems (Jitendra, Burgess, & Gajria, 2011). Good readers implement a variety of comprehension strategies that help them to comprehend what they read, for example, recalling essential information, using their prior knowledge to draw inferences, using a monitoring strategy to check their understanding (Gajria et al., 2007). In contrary, students with intellectual disability show reading difficulties that are a result of the lack of the knowledge of reading strategies as well as the lack of experience in monitoring their understanding (Alfassi, Weiss, and Lifshitz (2009).

Although much research on reading instruction for students with intellectual disability has been done, most of this research has primarily focused on sight words and isolated skills (Coyne, Pisha, Dalton, Zeph, & Smith, 2012; Erickson & Koppenhaver, 1995; Katims, 2000) and limited attention has been paid to other literacy skills such as reading comprehension, which are essential in literacy. In one study, Browder et al. (2006) analyzed 128 studies on reading instruction for students with ID. Results indicated that two-thirds of these studies focused on sight words (functional words) and most of the studies focused on teaching one or two reading skills. The authors also noted that most of the studies measured sight word comprehension and few studies have measured text comprehension or have used systematic intervention to teach comprehension strategies. Similarly, in their review of the literature on effective sight word intervention, Al Otaiba and Hosp (2004) found no studies that examined reading skills related to reading comprehension, fluency, and vocabulary, which indicates limited knowledge about teaching these complex reading skills to students with ID (Coyne et al., 2012). As a result

of low attention to more complex reading skills such as reading comprehension, students with ID's reading ability lags increasingly behind compared with their peers (Coyne et al., 2012).

The reauthorization of The Individuals with Disabilities Education Act of 2004 (IDEA) as well as the No Child Left Behind Act of 2002 (NCLB) Act require schools to include students with disabilities in general education curriculum. To obtain this goal, a potentially promising approach to allowing students with ID access to general literacy curricula is through improving their reading comprehension because comprehension of the text is crucial for academic success (Browder, Hudson, & Wood, 2013).

Several reading comprehension strategies have been found to be effective in improving students' reading comprehension. One of these comprehension strategies is identifying the main idea, which has been widely investigated among students with learning disability (LD) (Gajria et al., 2007; Graves, 1986; Graves & Levin, 1989; Jitendra, Cole, Hoppes, & Wilson, 1998; Jitendra, Kay Hoppes, & Xin, 2000; Malone & Mastropieri, 1992; Solis et al., 2012), but little attention has been given to this strategy in improving reading comprehension for students with ID. Identifying the main idea of the text help students to better comprehend what they read, to think critically, and to study effectively (Jitendra et al., 1998). To identify the main idea from the text, students need to make a connection between sentences, eliminate irrelevant information, and draw inferences. Students with ID who are struggling in reading and lack reading comprehension strategies may face difficulties finding main ideas from the text, especially when they move from learning to read to reading to learn. Teaching students

with ID how to identify the main idea from expository text is paramount because it facilitates their access to the general literacy curriculum and integration in general education classes.

Research has revealed that students with ID can benefit from reading approaches that involve high-quality reading instruction (Browder, Ahlgrim-Delzell, Courtade, Gibbs, & Flowers, 2008; Coyne et al., 2012; Hedrick, Katims, & Carr, 1999), especially when reading instruction is provided intensely and with adequate individualization (Allor, Gifford, Al Otaiba, Miller, & Cheatham, 2013). Also, researchers have suggested that students with ID my benefit from reading instruction that has been found to be effective in promoting reading ability in general education (Hudson & Browder, 2014). Obviously, the need exists for more research to develop systematic reading instruction that focuses on improving reading comprehension for students with intellectual disability. One promising strategy is by teaching them how to identify a main idea from expository text. To the author's knowledge, no study has attempted to investigate main idea strategy instruction for students with ID. This study seeks to fill this gap in the literature.

The purpose of this experimental study is to determine the effectiveness of a main idea and self-monitoring strategy for improving reading comprehension of expository text of students with mild intellectual disability. I also evaluated whether students with ID who were taught a main idea strategy would show retention of the strategy after the completion of the study. The study aims to address the following questions: Does main idea plus self-monitoring strategy instruction improve reading comprehension of expository text of students with intellectual disability? Do students with ID who were

taught a main idea and self-monitoring strategy maintain the main idea identification skills two weeks following the end of the intervention?

Chapter 2: Review of the Literature

Reading Difficulties of Students with Intellectual Disabilities

Individuals with intellectual disabilities (ID) suffer from a variety of educational problems related to their cognitive limitations. One of these educational problems is reading difficulties, the most common among those with ID (Channell et al., 2013). Reading difficulties among those with ID start at an early age with decoding problems and continue to later ages with reading comprehension problems. A large body of research has been conducted to explore why they are struggling to learn to read. Unfortunately, most of these studies have mainly focused on sight words as an essential component in reading instruction (Alfassi et al., 2009; Allor, Mathes, Roberts, Cheatham, & Champlin, 2010; Browder & Xin, 1998; Cologon, Cupples, & Wyver, 2011) with the belief that their cognitive limitations reduce their opportunity to benefit from reading instruction created for students with typical development (TD), as well as for students with learning disabilities (LD) (Wise et al., 2010). One study that supports this belief and affects the literacy research on individuals with ID was conducted by Cossu, Rossini, and Marshall (1993) with children with Down syndrome. The researchers stated that these children performed significantly worse on phonological awareness measures, phoneme segmentation, oral spelling, phoneme deletion, and phoneme blending tasks than typically developing children. One critique of this finding is that tasks that were used to measure phonological awareness were beyond participants' working memory (WM) (Verucci, Menghini, & Vicari, 2006). Although, a variety of reading skills may affect students' reading performance, decoding deficits and working memory limitations have

been identified to play a role in reading ability among students with ID. In the following section, these two main areas will be discussed.

Decoding (Phonological Decoding)

Students with ID experience difficulty with decoding, an ability that refers to the "conversion of printed letters into equivalent speech sounds" (Soltani & Roslan, 2013). When students with ID have a deficit in decoding, they are more likely to read slowly and incorrectly, which affects their fluency as well as their reading comprehension. The ability to decode words has been found to be one of the foundations of reading fluency and comprehension (Ayala & O'connor, 2013). To decode words, readers must attend to a word's grapheme details, identify word phonemes, blend the phoneme string, and ultimately read the word. While typically developing readers acquire these stages successfully, students with ID have difficulty mastering these stages and perform poorly in decoding compared with their chronological age (Soltani & Roslan, 2013).

Deficits in phonological decoding are related to poor reading performance among students with ID (Tucker Cohen et al., 2008). To understand phonological decoding, we must consider its subskills: phonological awareness and phonological memory. Phonological awareness includes skills that allow students to distinguish between speech sounds, segment sounds, and combine them to pronounce and create words. It is found to be associated with nonword reading and word recognition measures (Channell et al., 2013). In one study, Wise et al. (2010) examined word and nonword recognition among 80 students with mild ID who were struggling to read. After controlling vocabulary

knowledge and chronological age, the results indicated that a large and significant amount of variance was accounted for by phonological processing. The study findings also demonstrated a significant correlation between phonological awareness and both vocabulary knowledge and reading performance. Similarly, Saunders and DeFulio (2007) investigated the relationship between phonological awareness and single-word reading skills among 30 students with mild ID. The results showed that phonological awareness was significantly correlated with word and nonword reading measures.

The second phonological decoding subskill is phonological memory, which is the ability that allows the reader to hold speech sounds in short-term memory during decoding and remember them later to sound words. Students with ID demonstrate difficulties in phonological memory compared with mental-age children, and a relationship has been found between the deficit in phonological memory and decoding ability among those with ID (Channell et al., 2013). In a comparison study, Conners, Atwell, Rosenquist, and Sligh (2001) investigated the cognitive similarities and differences between children with ID who are strong decoders and those who are weak decoders. The results showed that the strong decoders were significantly better than the weaker decoders in phonemic awareness, phonological memory, and language ability, but no differences were found between the two groups in intelligence. Importantly, the findings indicated that the ability to refresh phonological codes in WM has a more important role in children's success in learning to read than language ability, intelligence, and phonemic awareness.

However, research has demonstrated that students with ID are able to decode unknown words using a phonics approach. In one study, Heller et al. (2002) reported that students with ID using a multiple-stage strategy were able to decode words successfully as well as decode unknown words that have a similar phonics structure. Importantly, the results showed that students with high phonics skills were able to read unknown words without instruction with 80% accuracy. In another study, Tucker Cohen et al. (2008) used three-step decoding strategies to teach word reading and decoding to students with mild and moderate ID. The strategy included six-word pairs for each student. Constant time delay (CTD) was used to teach the three steps of decoding. The first step was the attention-getting step "Touch the card." In the second step, the students identified the sound of the words (decoding), and when students failed, the instructor says, "No, the sounds are ____. Say them with me, ____." For step three, the student had to read the word, and if he or she failed, the instructor said, "No, the word is ____. Say the word with me, ____." The participants were five students, three in elementary school and two in middle school. Their IQs were between 40 and 61. The results indicated that those with IDs using the three-step decoding strategy were able to learn the words and decode unknown words. Although decoding skills were found to be important in enhancing students' reading ability and comprehension, studies have demonstrated that decoding skills can be improved among students with ID.

Working Memory

A relationship has been found between working memory (WM) and reading ability. Children who have a deficit in working memory struggle in reading and reading

comprehension. Poor comprehenders have impairments in working memory that are a result of inefficient control of working memory (Pimperton & Nation, 2014). However, much research has revealed that individuals with ID have WM problems (Jarrold, Baddeley, & Phillips, 2002; Numminen, Service, & Ruoppila, 2002; Schuchardt, Maehler, & Hasselhorn, 2011). WM is a system where information is temporarily stored and operated to underpin cognitive activities, such as reading (Van der Molen, Van Luit, Jongmans, & Van der Molen, 2007). Most of the studies that have investigated WM and its effects on learning were guided by Baddeley's model (Baddeley, Logie, Bressi, Sala, & Spinnler, 1986), which serves as a theoretical tool in working memory studies. According to this model, WM consists of three components: the phonological loop, the visuo-spatial sketchpad, and the central executive (CE) (a fourth component has been added to this model called an episodic buffer, Baddeley, 2000). A phonological loop, which comprises a phonological store and a rehearsal process, is responsible temporarily for storing and processing auditory and verbal information. It has been found to be highly associated with early reading development and language comprehension (Conners et al., 2001). The second component of WM, a visual-spatial sketchpad, refers to the ability to process and remember visual and spatial information. Third, the CE is responsible for manipulating as well as retrieving information from long-term memory (Van der Molen et al., 2007). The CE also coordinates the visual-spatial sketchpad and phonological loop systems. In other words, these two systems (the visual-spatial sketchpad and phonological loop) are fully controlled by the CE.

Unfortunately, there is little information available about the operation of WM across children with ID. In other words, few studies have examined the Baddeley model of WM and its role in children with ID. According to Van der Molen et al. (2007), three studies have investigated this model in the ID population. In the first study, Henry (2001) found that children with a lower IQ range demonstrated a low capacity in the phonological loop as well as lower CE performance. The second study has revealed that children with ID showed deficits in automatic rehearsal (Rosenquist, Conners, & Roskos-Ewoldsen, 2003). In the third study, Henry and MacLean (2002) examined the differences in memory performance between children with a mild intellectual disability (MID) and children with typically development (TD). Both groups were similar in chronological or mental age. The study findings indicated that children with MID performed significantly lower on phonological-loop and CE tests than the control group with the same chronological age.

An association has been found between WM performance and general ID (Henry, 2001). Children who have a borderline ID demonstrate difficulties in WM related to the phonological loop. On the contrary, children with moderate ID are more likely to show deficits in different components (e.g., CE and visuo-spatial sketchpad) of WM (Maehler & Schuchardt, 2009). Nevertheless, studies have suggested that children with ID might demonstrate good performance on tasks related to visuo-spatial simple WM, but they are more likely to demonstrate deficits or perform poorly on tasks related to the verbal WM (Danielsson, Henry, Messer, & Rönnberg, 2012). The poor performance in verbal WM is not limited to children with ID in their early ages, but it also continues later in their lives.

In a study examining the association between everyday memory and WM, Van der Molen, Van Luit, Van der Molen, and Jongmans (2010) compared adolescents with an MID and those with TD. The study results indicated that adolescents with MID performed poorly on all memory measures compared to the control group. Similarly, Henry and MacLean (2002) investigated the WM performance among children with ID between 11 and 12 years old. Their results showed that children with ID achieved weak scores on WM tasks compared to children of the same chronological and mental ages. However, the authors provide one possible explanation for the weak performance of children with ID, which is linked to the fact that they are very slow in processing information and thus their slow rate of speed of processing leads to constraints in some of their executive tasks.

The deficits in WM among children with ID affect their reading ability. In the early ages, decoding is a fundamental skill that is crucial for skilled reading, including reading words, fluency, and reading comprehension (Channell et al., 2013; Tucker Cohen et al., 2008). Children with ID might display problems in decoding that are associated with phonological processing limitations. In one study, Soltani and Roslan (2013) examined the contribution of phonological WM, phonological awareness, and rapid automated naming, which are all known collectively as phonological processing, on decoding skills in 60 children with MID. Results demonstrated that phonological processing is correlated with decoding ability. Moreover, the results revealed that phonological short memory significantly predicts decoding skills. In another study, Schuchardt et al. (2011) went beyond examining the role of phonological WM on reading

for children with ID and instead investigated whether particular components of phonological WM (phonological store and subvocal rehearsal process) affect the storage capacity among children with ID. The study included three groups: children with mild ID with IQs between 50 and 69 and an average age of 15 years old; children in borderline ID and IQs between 70 and 84 with an average age of 10; children with average intelligence with IQs between 85 and 115 and an average age of seven. The tasks used to test the phonological store involved word length in testing the subvocal rehearsal process while repeating nonwords tasks. The study results demonstrated general deficits in the phonological store, especially with the length of the words, but only in children with ID. The deficits in the phonological store were found to be associated with language impairments in children with ID.

However, the contribution of phonological WM to decoding ability is controversial. Some studies have revealed that when phonological awareness and other types of phonological processing are controlled, phonological WM has no impact on decoding ability (Soltani & Roslan, 2013); alternatively, other researchers have found that phonological WM significantly affects decoding ability (Hansen & Bowey, 1994). Nevertheless, the results from the previous study (Soltani & Roslan, 2013) support the notion that phonological WM plays an essential role in decoding ability. Additional evidence indicates that, to decode words, children have to hold the letters in their mind while they are decoding or reading and then combine these letters with sound to read the words. Thus, phonological WM contributes to decoding ability.

Nevertheless, WM has also been found to be associated with reading comprehension. While children with ID demonstrate difficulties in reading comprehension, one hypothesis that might explain their poor comprehension is WM limitations. The association between reading comprehension and deficits in WM has been found not only across children with ID but also across children with typical development (Pimperton & Nation, 2014). The differences between poor and strong comprehenders are related to the differences in verbal WM (Nation, Adams, Bowyer-Crane, & Snowling, 1999). The notion is that the impairments in WM can constrain children's ability to hold the words in their mind while they are reading the text and thus affects their reading comprehension.

In summary, individuals with ID experience reading difficulties that are related to decoding and working memory. In terms of decoding and its association with reading ability, findings from previous studies support the idea that phonological decoding plays an essential role in improving reading skills of students with ID, including reading words, fluency, and reading comprehension (Heller et al., 2002; Tucker Cohen et al., 2008; Wise et al., 2010). Researchers, educators, and practitioners should consider reading instruction that is based on phonological decoding as an important approach in teaching reading skills for students with ID. Working memory has also been found to be associated with reading ability among students with ID, and children with ID demonstrate deficits in reading skills that are related to WM limitations. It is possible this is because there is an assumption that a low IQ in children with ID explains their reading problems and so no more research is needed (Soltani & Roslan, 2013). However, studies have revealed that

there are reading differences between groups who had the same intelligence, which suggests that WM plays an essential role in reading ability. Much more research is needed to explore the role of WM in the reading ability of children with ID. It is crucial for any instructional design, especially those for students with ID, to consider WM limitations in teaching reading skills for those with ID.

Reading Comprehension in Students with Intellectual Disability

Over the past few decades, improving students' reading skills has been a growing interest around the nation. In general, students demonstrate reading difficulties particularly in reading comprehension. Reading comprehension, which is extracting meaning through interaction with written language (Duke, Cartwright, & Hilden, 2004), is one of the crucial reading skills that students need in order to be successful in school and beyond that in their work life. Having problems or difficulties with reading comprehension can negatively affect students' academic achievement. To comprehend what they read, students need to develop a variety of reading skills that help them to extract and construct the meaning from the text. They have to decode words, know their meaning, and connect the meaning from these words to the information from the text (Kim, Linan-Thompson, & Misquitta, 2012). Additionally, they have to use their prior knowledge to draw inferences and link the ideas in the text (Sliva & Chin, 2014).

Nevertheless, students with ID exhibit deficits in basic reading skills that make reading comprehension challenging for them, especially when students move from lower grades to upper grades, and as they move to upper grades the materials they have to read become harder and more complicated (Kim et al., 2012; Stagliano & Boon, 2009). It is a

challenge for many students in general and for students with ID in particular, since comprehension requires more than reading or recognizing words from the text, but instead, requires the ability to understand and link meaning from those words (Stagliano & Boon, 2009).

Several models have explained the mechanism of reading comprehension, as well as the essential reading skills for comprehension. One of these models is The Simple View of Reading (Gough & Tunmer, 1986), which identified decoding and listening comprehension as the two main elements for reading comprehension. Based on this model, students' reading comprehension is influenced by their ability to decode words from the written text and their ability to comprehend oral language. While these two comprehension components have been found to affect students' reading comprehension, it has been demonstrated that their relative importance varies across grades. During the early grades, decoding skills play an essential role in improving students comprehension, but when decoding become more automatic, oral comprehension becomes more important in reading comprehension (Hogan et al., 2011). However, it has been demonstrated that even students with proficient decoding ability may struggle in reading comprehension because of the lack of reading strategies (Gajria et al., 2007). That is, students with sufficient decoding and listening comprehension skills may face reading comprehension difficulties due to other aspects that are not related to these two components.

Factors that Affect Reading Comprehension

In the literature, several factors have been proposed to explain students' reading comprehension difficulties, including but not limited to prior knowledge and text structure. In the following section, these two reading factors will be discussed in terms of their impact on students' comprehension.

Prior knowledge plays an essential role in improving students' reading comprehension. In general, when students read about a new topic, they use their prior knowledge to understand the ideas in the new topic and to remember what they read. Studies have demonstrated that students who have much knowledge about particular subjects understand the information from the text better compared to students who have little prior knowledge (Duke et al., 2004; Watson, Gable, Gear, & Hughes, 2012). Good reading comprehenders use their prior knowledge to connect ideas as well as to draw inferences from the text. However, researchers have asserted that too much prior knowledge may also hinder their understanding of the text because high expectations might interfere with explicit information and ideas from the text (Davey & Kapinus, 1985). In general, it is helpful for students to have some knowledge about the topic, and when they do not, teachers should help them to build background knowledge (Klingner, Morrison, & Eppolito, 2011).

Teachers can enhance students' prior knowledge by engaging them in prereading activities. These prereading activities can help them to obtain the necessary information about the topic they will read. Several publications have documented the influence of prior knowledge on students' comprehension. In one study, Caillies, Denhière, and

Kintsch (2002) examined the impact of prior knowledge on reading comprehension in three different groups who were classified as “beginner readers,” “intermediate readers,” and “advanced readers.” The results showed that the students’ prior knowledge influenced their reading comprehension. Advanced readers’ comprehension ability was significantly greater than beginner readers. In another study, Sachs (1983) examined the effect of providing prereading activities on reading comprehension of students with reading disabilities. The results showed improvement in students’ ability to integrate their prior knowledge to extract the meaning from the text. Also, Tarchi (2015) investigated the impact of prior knowledge on reading comprehension to test inference making among secondary school students. Results indicated that prior knowledge intervention generates improvement in reading comprehension among students in the experimental group. Students with reading difficulties were also found to benefit from activities that target prior knowledge engagement. Moreover, modeling how to activate prior knowledge was found to be effective in improving students with ID’s inference making (van Wingerden, Segers, van Balkom, & Verhoeven, 2014).

Another factor that has been identified to affect students’ comprehension is text structure. Understanding text structure is crucial for reading comprehension. Text can be organized in two different structures, narrative and expository structures. Narrative text usually follows the same pattern, which is to tell a story, while the focus in expository text is to connect and link between the ideas and information, so the reader learns something (Jitendra et al., 2011). Expository structure is more difficult than narrative structure because the text is organized in many different ways such as cause-effect,

compare-contrast, and description. Without knowledge or understanding of how each type is structured, it will be difficult for students to follow the ideas and extract valuable information from the text. Knowledge of text structure can help students to understand and remember the important information and ideas from the text (Williams, 2005). Students with ID experience difficulty understanding various text structures and how ideas are organized.

Researchers emphasize the importance of teaching students explicitly how text is structured (Boulineau, Fore, Hagan-Burke, & Burke, 2004; Narkon & Wells, 2013; Ness, 2011; Watson et al., 2012) because it facilitates their understanding of the text. Teachers should teach students directly and explicitly reading comprehension strategies to help them to understand the text including how different text is structured. Evaluating the effect of teaching text structure on reading comprehension, Williams (2005) examined the effectiveness of teaching text structure to second and third grades students who were at-risk on reading comprehension. Students in the experimental group were taught to identify clue words that help them to recognize a comparison/contrast structure. Also, students were asked to answer some questions that helped them to concentrate on the essential information in the text. The results showed that students' comprehension in early grades can be improved when they are provided with instruction that is text-structure based. It has been also shown that students were able to transfer what they learned to novel text. In a between-group experiment study, Taylor and Beach (1984) randomly assigned 114 seventh-grade students into three different conditions: (1) An experimental group where students received instruction in a hierarchical summary

approach as they read social studies materials, (2) A conventional group where students received instruction that included answering and discussing questions after reading the same social studies materials used in the experimental group, and (3) A control group where students received no special instruction. Results indicated that students in the experimental group who received instruction focused on text structure outperformed students in the conventional group and control group in posttest recall scores.

In summary, prior knowledge and text structure have been identified to affect students' comprehension. Skilled readers utilize their prior knowledge to understand and connect ideas as well as to draw inferences from text. It has been shown that students with much prior knowledge comprehend the text better compared with students with less prior knowledge (Duke et al., 2004; Watson, Gable, Gear, & Hughes, 2012). Importantly, research has revealed that teachers can enhance students' prior knowledge when they provided them with prereading activities (Sachs (1983). Text structure also has been found to play role in students' comprehension. Understanding text structure types assist students to understand and remember the essential information from the text. Studies have demonstrated that teaching text structure promotes students' reading comprehension (Williams (2005).

Evidence-Based Instruction to Improve Reading Comprehension

Although intensive research has examined The Simple View of Reading model in reading comprehension and the critical role that decoding skills play in fostering students' comprehension, especially in early elementary, studies have revealed the importance of teaching comprehension strategies that involve cognitive skills for

comprehension difficulties. In other words, some researchers have proposed that decoding and listening comprehension do not assure reading comprehension (Fajardo et al., 2014). That is, students may face comprehension difficulties even if they have decoding and oral comprehension skills.

However, many evidence-based strategies have been identified to be effective in enhancing students' comprehension skills, including story mapping, graphic organizers, reciprocal teaching, and a comprehensive approach (Allor, Mathes, Roberts, Cheatham, et al., 2010; Browder et al., 2013; Duttlinger, Ayres, Bevill-Davis, & Douglas, 2012; Lundberg & Reichenberg, 2013). In their summarization article of studies designed to improve reading comprehension of expository text in students with LD, Gajria et al., (2007) categorized comprehension instruction as content enhancement or cognitive strategy instruction. Content enhancement (i.e., graphic organizers and mnemonic illustrations) refers to instruction that promotes students' comprehension of essential content area information (Lenz, Bulgren, & Hudson, 1990). The notion is that this instruction can facilitate students' understanding of the material through the selection and organization of the important information. The emphasis in cognitive strategy instruction (i.e., reciprocal teaching, main idea identification, and summarization) is to teach students how to learn rather than teach them how to master particular content information (Gajria et al., 2007). Moreover, studies have provided strong evidence that the use of content enhancement and cognitive strategy instruction improves students' reading comprehension, with high effect sizes (mean *ES* = 1.06, *SD* = 0.63) for content enhancement instruction and for cognitive strategy instruction (mean *ES* = 1.83, *SD* =

1.05) (Gajria et al., 2007). In the following section, graphic organizers, reciprocal teaching, and comprehensive instruction will be discussed.

The story-mapping procedure, which involves a graphic organizer that includes elements such as events, character, setting, theme, problem, and solution, was found to be effective in improving students' reading skills. In this strategy, students read the story, and while they are reading, they have to identify the afore-mentioned elements. Story maps help students to extract the important information from the story. They also direct students to identify the main events and information in the story and work as a guide to help the students to review their recorded information after reading (Boulineau, Fore Iii, Hagan-Burke, & Burke, 2004). According to Watson et al. (2012) and based on Idol's work (1987), three phases are recommended when teaching story mapping. These three phases are a *Modeling* phase, a *Lead* phase, and a *Test* phase. In the Modeling phase, the teachers read the story, and while they are reading, they show the students how to use story mapping by filling in the story elements (e.g., setting, events, and character) and helping the students to complete their own story maps. In the Lead phase, the teacher asks students to read the story independently and then complete their story map. The teacher's role in this phase is to help and direct students to identify story elements and write them down. In the Test phase, teachers test the students' story-mapping performance by asking them to read the story, fill out the story map, and then answer comprehension questions.

Story-mapping procedures have been found to improve reading comprehension across all grade levels and for students with learning disability and students with

intellectual disability. In one study, Stagliano and Boon (2009) investigated the impact of using story-mapping strategies on students' reading comprehension. The participants were 3-fourth grade students with learning disability who were taught how to fill in story-map elements (e.g., theme, setting, characters, and problem) while they read the expository text. After they had completed the story-map components, they had to answer five questions to assess their reading comprehension. Results indicated that story-mapping strategies had a positive effect on reading comprehension among all three students and that performance was improved immediately from the baseline. Students with ID have been found to also benefit from graphic organizer instruction. In one study, Browder et al. (2013) used a graphic organizer to teach comprehension skills to students in grades 6-8 with moderate ID WH questions (i.e., who, what, where, when, why, how). The graphic organizer had three parts: the WH words, definitions, and examples. The results indicated improvements in all participants in terms of the number of correct responses to comprehension questions.

In another study, Shurr and Taber-Doughty (2012) investigated the effectiveness of using texts with pictures and discussion in enhancing the reading comprehension of students in age 12-15 with moderate ID. The intervention content included 15 texts that were selected randomly from the SRA Specific Skills Series with lengths ranging from 78 to 108 words. Visual support was provided for each story in the form of color photos. These pictures represented the main elements in the story. During the intervention, students were asked to describe the photo that related to the text. Reading comprehension was improved across all students in the study. Given the difficulties that students with

IDs experience in understanding the information and events in written texts, a graphic organizer might help them to focus on the main events in the text as well as on the characters.

Reciprocal teaching (RT) is another strategy that has been found to be effective in promoting reading comprehension. It is a technique that requires students to take turns in reading the text. During the reading activity, students sit in a small group and adopt a teaching role. The teacher gives students the passage text and models the RT strategies, which involve summarizing, clarifying, questioning, and predicting. This approach is used extensively with students with LDs who are struggling in reading comprehension. However, it has also been found to be effective with students with IDs. In one study, Alfassi et al. (2009) examined the effects of using RT on the reading literacy of students with mild and moderate IDs. The participants were 35 students with IQs between 40 and 69, aged between 15 and 21. The students were identified as poor comprehenders with low decoding skills. Findings indicated improvements in reading comprehension of students with IDs using the RT strategy compared with traditional instruction.

Similarly, Lundberg and Reichenberg (2013) investigated the effectiveness of RT on reading comprehension among students with IDs. The authors argue that students with IDs need systematic instruction that drives them through social interaction settings so that they can interact with the teacher and their peers to construct meaning from the text. The intervention had two conditions: RT and inference teaching (IT). In the control group, students received IT instruction, in which they had to answer inference questions, while in the RT condition, students learned four different strategies (predicting, generating

questions, clarifying, and summarizing). The study results indicated that both intervention conditions were effective in promoting reading comprehension of students with IDs, but that RT, and particularly generating questions, was found to be more effective in enhancing students' reading comprehension.

Research has also revealed that students with ID can benefit from comprehensive reading approaches that involve high-quality reading instruction (Browder et al., 2008; Coyne et al., 2012; Hedrick et al., 1999), especially when comprehensive reading instruction is provided intensely and with adequate individualization (Allor et al., 2013). Also, combining reading skills, such as phonemic awareness, phonics, and comprehension, into traditional reading instruction will promote reading skill independence for many of those with IDs (Lemons, Allor, Al Otaiba, & LeJeune, 2016). In a two-year longitudinal study, Allor, Mathes, Roberts, Cheatham, et al. (2010) investigated the impact of reading comprehension intervention on reading development for students with IDs. The results indicated significant differences between the experimental group and the control group on several standardized measures of reading. Moreover, it has been shown that students with moderate IDs are able to integrate isolated skills in phonics and phonemic awareness to decode unknown words. Reading interventions that focus on combining multiple reading skills, including phonics, phonemic awareness, vocabulary, fluency, and comprehension, have been found to be effective in enhancing the chances that students might learn to read at grade level (Afacan, Wilkerson, & Ruppar, 2017).

In summary, a variety of reading comprehension strategies have been found to be effective in improving students' comprehension outcomes. These comprehension strategies are categorized into content enhancement or cognitive strategy instruction. Content enhancement strategies focus on content area information while cognitive strategies emphasize teaching students how to learn. Supporting evidence with large effect sizes have been found for the use of content enhancement and cognitive strategy instruction in promoting students' comprehension. Graphic organizers and reciprocal teaching have been found to be effective in improving reading comprehension not only for students with LD, but also for students with ID. Also, comprehensive reading instruction that companied a variety of reading skills in one approach has positive effects in improving students' reading skills. Findings from these studies lead to the conclusion that students with ID can benefit from comprehension strategies that have been identified to improve comprehension skills and have been designed for other students without ID.

Teaching the Main Idea Strategy to Improve Reading Comprehension of Students with Disabilities

Teaching comprehension strategies has been found to be effective in promoting students' reading comprehension. One of these strategies is teaching students how to identify the main idea from the text, which has been found to be effective in promoting students' comprehension outcomes (Gajria et al., 2007; Graves, 1986; Graves & Levin, 1989; Jitendra et al., 1998; Jitendra et al., 2000; Malone & Mastropieri, 1992; Solis et al., 2012). The use of the main idea identifying strategy was generally related to large effect sizes (mean *ES* = 2.56, *SD* = 1.09) (Gajria et al., 2007). Identifying the main idea from

the text help students to better comprehend what they read, to think critically, and to study effectively (Jitendra et al., 1998). In order to identify the main idea from the text, students need to make a connection between sentences, eliminate irrelevant information, and draw inferences. Multiple studies have demonstrated the effectiveness of teaching a main idea strategy in improving students' reading comprehension.

In one study, Gajria and Salvia (1992) examined the effects of explicit and direct instruction to teach a summarization strategy on improving reading comprehension for students with learning disabilities (LD). The participants were 30 students with LD from grade 6 to 9 who were randomly assigned into two different groups (treatment or control group). Instructional materials included a set of 10 short paragraphs that had been designed to teach summarization rules. In addition to the instructional materials, six text passages were used to test students' comprehension responses. Each passage had multiple-choice comprehension questions that included assessment of comprehension for the main ideas. Study findings indicated that students in the experimental group outperformed students in the control group on the number of comprehension questions that had been correctly answered.

In another study, Malone and Mastropieri (1992) investigated the effects of a summarization strategy plus self-monitoring approach on students' comprehension. The participants were 45 students with LD in 6, 7, and 8 grades who were randomly assigned to three comprehension conditions. Students in the first condition received summarization training while students in the second condition received summarization training plus a self-monitoring component. However, students in the third condition did not receive any

instruction. Results demonstrated that students in conditions one and two who received only summarization training or summarization training with self-monitoring performed significantly better than students in the traditional instruction condition on the dependent measures (near transfer test and far transfer measure). Interestingly, findings indicated that students who received summarization and self-monitoring significantly outperformed students who only received summarization training.

Using a single-subject design, Jitendra et al. (1998) examined the impact of explicit instruction on a main idea summarization strategy combined with self-monitoring procedures on the comprehension of students with LD. The participants were four students in sixth-grade. The main idea instructional program included seven lessons adapted from Carnine et al. (1990). Ordering from easier to harder tasks, these lessons consisted of main-idea single-subject class action; main-idea single- multiple-single class action; Multiple choice items; Passages with sentence distracters; Multiple-choice items (where and why questions); Multiple-choice items (when and how something happened); Main idea review (where all the previous lessons were reviewed). Direct instruction was used to teach each lesson, and when students finished the lesson, they were provided with a main idea comprehension worksheet to complete. After the main idea intervention phase, students started a self-monitoring phase where they were provided with a prompt card that described steps for identifying the main idea from the passages. Results demonstrated that all students' reading comprehension was increased during the main idea instruction and in all sessions. Especially, when the self-monitoring approach was provided, students' main idea responses were at a higher level.

Similarly, Jitendra et al. (2000) investigated the effects of teaching a main idea and self-monitoring strategy in improving reading comprehension of text for students with learning and behavior disabilities. The participants were 33 students from grades 6,7, and 8) who were randomly assigned to treatment and control group. Students in the treatment group received main idea and self-monitoring strategies while students in the control group received general reading instruction. Results showed that reading comprehension had been increased for students in the treatment group. Also, they significantly outperformed students in the control group on all posttests.

In summary, findings from previous studies (Gajria & Salvia, 1992; Jitendra et al., 1998; Jitendra et al., 2000; Malone & Mastropieri, 1992) have indicated that a main idea identification strategy can be effective in improving students' comprehension for students with LD and across different grade levels. Although the use of this cognitive strategy has been supported, it has been demonstrated that combining a main idea strategy with a self-monitoring approach promotes students' comprehension of the text by helping students to check their understanding of the use of the strategy (Gajria et al., 2007). Self-monitoring groups across different studies have outperformed not only control groups (Jitendra et al., 1998; Jitendra et al., 2000), but also they outperformed instructional groups that received only summarization or main idea instruction (Malone and Mastropieri (1992). Self-monitoring, which is occurring when students evaluate whether or not a target task has been achieved (Shapiro & Cole, 1994), is a promising strategy that has been found to improve comprehension. Students with IDs have reading difficulties that show a lack of knowledge of reading strategies as well as a lack of experience in monitoring their

understanding (Alfassi et al., 2009). It is possible that this combination of main idea and self-monitoring strategies could also benefit students with ID.

With the requirement of The Individuals with Disabilities Education Act of 2004 (IDEA) and the No Child Left Behind Act of 2002 (NCLB) Act for schools to include students with disabilities including those with ID in general education as well as to utilize evidence-based practice to access to general literacy curriculum, there is a need for reading instruction that improves reading comprehension for students with ID because it will facilitate their academic success and help them to integrate in general education and society. While the research on reading comprehension instruction for students with ID is promising, most of the previous research has primarily focused on sight words and isolated skills (Coyne et al., 2012; Erickson & Koppenhaver, 1995; Katims, 2000) and unfortunately, limited attention has been given to reading comprehension. Teaching students with ID comprehension strategies such as identifying the main idea from the text is paramount because it facilitates their access to the general literacy curriculum and integration into general education.

Research has revealed that students with ID can benefit from reading approaches that involve high-quality reading instruction (Browder et al., 2008; Coyne et al., 2012; Hedrick et al., 1999), especially when reading instruction is provided intensely and with adequate individualization (Allor et al., 2013). Clearly, the need exists for more research to develop systematic reading instruction that focuses on improving reading comprehension for students with ID.

Although teaching a main idea strategy has been extensively investigated among students with LD and it has been found to be effective in improving reading comprehension (Gajria et al., 2007; Graves, 1986; Graves & Levin, 1989; Jitendra et al., 1998; Jitendra et al., 2000; Malone & Mastropieri, 1992; Solis et al., 2012), little attention has been given to examining this strategy in improving reading comprehension for students with ID. To the author's knowledge, no reading instruction can be found in the litreature that has primarily targeted reading comprehension through teaching a main idea strategy for students with ID. To address this gap, the purpose of this study is to determine the effectiveness of a main idea plus self-monitoring strategy for improving reading comprehension of expository text of students with mild ID. This study also seeks to determine whether students with ID who were taught a main idea strategy would demonstrate retention in reading comprehension. This study aims to address the following questions and hypotheses:

1. Does a main idea plus self-monitoring strategy improve reading comprehension of expository text of students with ID? Given the lack of research on reading comprehension instruction that focuses on teaching students with ID how to identify the main idea from the text, it is not clear a priori whether a main idea plus self-monitoring strategy will be effective in improving students with ID reading comprehension.
2. Do students with ID who were taught a main idea and self-monitoring strategy maintain the main idea identification skills two weeks following the end of the intervention? On the basis of prior research with students with ID that suggests

these students exhibit deficits in cognitive ability, including working memory limitations (Maehler, & Hasselhorn, 2011), it is hypothesized that students with ID may demonstrate low retention of the main idea strategy following the completion of the study.

Chapter 3: Method

Participants and Setting

Three students (Dory, Eric, and Rachel) with intellectual disability from the same class were selected to participate in this study. The participants were eligible to participate in the study if they (1) met the criteria for intellectual disability, which are significant limitations in intellectual functioning, significant limitations in adaptive behavior, and onset before the age 18 (American Association on Intellectual and Developmental Disabilities, AAIDD), (2) were in grades 3 to 5, and (3) had not previously participated in the main idea or reading comprehension intervention. Demographic information was collected from the participants including age, gender, ethnicity, diagnoses, aids and services, and level of reading. Parental consent was procured before the students participated in this study. The written consent process included providing the participants' parent or Legally-Authorized representative (LAR) sufficient information concerning the study, giving adequate opportunity for them to consider all options, obtaining participant's parent or LAR voluntary agreement to participate in the study. The classroom special education teacher sent parent consents home with the students. Parents' signature was required to make sure that they received it, read it, understand it, and so signed it. When parents returned the consents to the school and the consent showed that parents approved to participate in the study, the teacher sent a copy as a reference to the parents via their child. Only parent written consent was obtained since the participants are minors. Institutional review board

approval was obtained prior to the implementation of this study. A copy of the letter used can be found in Appendix G.

Dory is a 10-year-old 5th grade girl who is Asian and English learner. She is diagnosed primarily with intellectual disability (Down Syndrome) and receives speech therapy as well as adaptive PE services. Regarding her reading ability, Dory sometimes has difficulty with ending sounds on words, but usually is able to identify and decode the initial part of unfamiliar words. Results from the Kaufman Test of Educational Achievement (3rd Edition) (KTEA-3), which was administered by the school around the same time of the study, revealed that Dory performs in the lower range in phonological processing (SS = 54), letter and word recognition (SS = 64), and reading comprehension (SS = 55). Her performance is about three standard deviations below the average in phonological processing and reading comprehension, and two standard deviations below the average in letter and word recognition.

Eric is a 10-year-old 4th grade boy who is Hispanic and a native English speaker. He is diagnosed primarily with intellectual disability and receives speech therapy, occupational therapy, and adaptive PE services. Results from the KTEA-3 revealed that Eric was able to find and name all the letters presented, but he was unable to find the letter when given the letter sound. He was able to find the associated picture with the symbol 100% of the time, but he was unable to read any words. Eric performs in the lower range in letter and word recognition (SS = 41) and reading comprehension (SS = 40).

Rachel is a 9-year-old 3rd grade girl who is Hispanic and an English native speaker. She is diagnosed primarily with intellectual disability and receives occupational therapy as well as adaptive PE services. Results from the KTEA-3 revealed that Rachel performs very low in basic reading skills (SS = 51) and reading comprehension (SS = 63). She also performs below average in oral expression (SS = 75).

The primary researcher and a special education teacher hired for the project used the Woodcock Johnson Tests of Achievement (4th edition; Schrank, McGrew, Mather, Wendling, & Laforte, 2014) to determine students' reading levels. The Letter – Word Identification (LW) and Passage comprehension (PC) subtests were administered to each of the students. All participants' reading levels were very low (Dory SS= 53, Eric & Rachel SS= <40). Dory's performance was very low on both subtests (LW: SS= 62), and (PC: SS= 45). Eric's performance was very low on both subtests (LW & PC SS= <40). Rachel's performance was also very low on both subtests (LW: SS= <40) and (PC: SS= 47) (see Table 1).

Table 1

Students Demographic Characteristics

Students	Gender	Grade	Ethnicity	Age	English Learner	diagnosis	WJ-IV Reading Achievement	
Dory	Female	5th	Asian	10	Yes	ID	LW: SS= 62	PC: SS= 45
Eric	Male	4th	Hispanic	10	No	ID	LW: SS= <40	PC: SS= <40
Rachel	Female	3rd	Hispanic	9	No	ID	LW: SS= <40	PC: SS= 47

Note. WJ-IV= Woodcock-Johnson IV Tests of Achievement; LW= Letter-Word Identification; PC= Passage Comprehension: SS= Standard Score; ID= Intellectual Disability.

Teacher. One certified special education teacher with a bachelor's degree and one year teaching experience, and two years serving as a substitute teacher was recruited for participation in the study. The teacher implemented the main idea instruction, as well as collected data during the baseline, intervention, and maintenance in one-on-one sessions.

Setting. The study took place in an elementary school in an urban, large school district. Racial demographics of the school were as follows: 81% Hispanic or Latino, 11.5% white, 2.9% Asian, 2.0% African American, 2.0% other ethnicity (American Indian, Filipino, Pacific Islander, other races). Of the students in the school, 38.2 % are English learner and 84.2 % of the students in the school came from socioeconomically disadvantaged backgrounds.

The intervention primarily took place in an empty quiet room located in the same students' classroom building. It consists of some tables with chairs at each table. The room was previously used for classes, now it was used for meetings and other activities (e.g., scholastic book fair). All three students participating in this study continued to be taught with their core reading programs in their scheduled reading classes. The participants were pulled from their classroom during morning daily work activities to receive main idea instruction.

Independent and Dependent Variables

The independent variable is the main idea intervention that uses explicit instruction for identifying the main idea of passages. Students with ID were taught how to generate a main idea sentence by naming the subject (what) of the passage and telling the important things about it. Self-monitoring was also combined with the main idea

instruction to help students to apply and check their use of the main idea strategy. The dependent variable is the students' main idea correct identification scores. Students' main idea comprehension of expository passages was assessed with five-item tests that included: (a) reading the passage (b) naming the subject of the passage, (c) telling the important things about the subject, (d) telling the main idea, and (e) does it tell about the whole paragraph.

Measurement and Scoring of Dependent Variable

To measure participants' main idea performance, a three-point scale was utilized. The student was given a score of zero when his/her answer is wrong, a score of one when his/her answer is partially correct, and a score of two when his/her answer is completely correct. The total possible score on each item test is two with a total possible score on the dependent variable is 10. For example, when the student identified the main subject in the passage but did not identify the important things about it, he/she received a score of one because the answer is not complete.

Materials

A set of 50 passages from "*QuickReads; Hiebert (2006)"* were employed to use in this study. *QuickReads* is a reading program that was designed to enhance students' fluency, comprehension, and content knowledge. *QuickReads* passages are short and nonfiction that students can read quickly and meaningfully. The passages' length used in this study is between 78 to 113 words with an average of 94.7 words, and they are written at approximately a second to third grade reading level. The Lexile passages measure is between 200L to 760L. A set of 15 passages was used during the baseline, and another

set of 30 passages (15 passages for instruction and 15 passages for measurement) was employed to use during the main idea intervention. Also, a set of 5 passages were used during the maintenance phase. Taking into account the variability in passages levels, the passages were randomly assigned within each set to measure baseline, intervention, or maintenance. Students were provided with different passages during each session and across each phase (baseline, intervention, and maintenance), as well as to measure the dependent variable.

All the passages used in each phase have an implicit main idea, which means that students need to identify and generate the implicit main idea from each passage. This requires the students to read the passage and use the details that support the main idea.

Self-monitoring cards were developed to use during the main idea instruction (see Figure 1). Each card has five statements that students followed to generate the main idea of the passage. The five steps included: (a) read the passage, (b) name the subject (What is the passage mainly about?), (c) tell what is important about the subject, (d) tell the main idea, and (e) determine whether their main idea statement tells about the whole passage. The student has to put a check by each step. For example, when the student names the subject (what the passage is mainly about), he or she puts a check by "what is the subject?" The self-monitoring cards assist the participants to monitor and check their understanding of the main idea strategy.

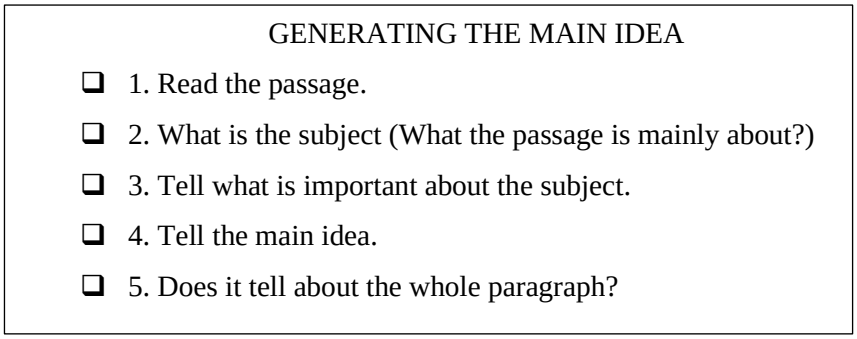


Figure 1. Self-monitoring prompt card

Experimental Design

A multiple baseline across participants' single-case design (Kazdin, 2011) was employed to examine the effectiveness of the main idea strategy plus self-monitoring training for enhancing reading comprehension of expository text for students with mild intellectual disability. Using this design allows the researcher to determine whether a functional relationship exists between manipulation of the main idea strategy and change in the students' correct responses in main idea identification. This functional relationship can be demonstrated when the design documents three demonstrations of the intervention effect at three different times across different participants (Horner et al., 2005).

When all students demonstrated stable baselines, the first student received the main idea strategy combined with self-monitoring training at specified points in the study. Once the first student's performance showed a clear accelerating trend on the dependent variable, the second student began the intervention, and so forth for the third student. Study phases included baseline, intervention, and maintenance. During each phase and for each participant, a minimum of five data points were collected.

Criterion for moving across phases. After the first student started the instructional phase and five stable data points had been gathered, the second student began to receive the main idea strategy combined with self-monitoring training. And so forth for the third student. When the second student received the intervention and four data points had been collected, the third student received the intervention. Once the student got three consecutive correct main idea statements with a score of 9 or 10 during the instruction phase, instruction was terminated.

Procedures

Testing. The special education teacher collected participants' main idea responses four times per week during baseline and intervention phases. During the baseline, the teacher collected data after each baseline session and until each student showed stable baseline and his/her future performance could be predicted. During the intervention phase, the teacher collected participants' performance on main idea identification intervention four times per week after instructional sessions. Students received main idea instruction four days a week. During the maintenance phase, data were collected two weeks following completion of the intervention phase.

Baseline. For each student, baseline data were collected prior to the main idea instruction. All students' main idea comprehension ability was assessed by measuring the number of correct main idea identification scores earned during each session. During baseline, the participant was provided with several passages and asked to generate a main idea for each passage. Passages used in this phase were selected randomly prior to the study to be used either during the intervention phase, the maintenance phase, or during

the baseline phase. The main idea was implicit and not stated in the text. Students during this phase did not receive main idea instruction nor self-monitoring training. Students' responses on the dependent variable were measured repeatedly until he or she demonstrated stable baseline that can be used to predict future performance. A stable baseline was determined when the student's performance showed little or no trend in the behavior.

Main Idea Intervention. The instructor who received training from the researcher delivered the main idea intervention four days per week for approximately 30 minutes in a one-to-one setting. The main idea instruction included teaching students how to generate a one-sentence main idea for each passage: "name the subject and tell the important things about it in all sentences" (Carnine et al., 1997, p. 248). Also, students were taught and trained to use a self-monitoring procedure to assess their use of the main idea strategy. During the intervention phase, the teacher modeled and then the student practiced the use of the main idea strategy. Next, the teacher demonstrated how to use the self-monitoring prompt card and the student practiced using it. During the training, the teacher explained to the student what the main idea is (e.g., the main idea is what the passage is mainly about) and why it is important (e.g., because it is the most important idea in the passage and it helps us to understand it). The instructor read a passage with the student individually, named the subject, told what is important about it, and finally generated the main idea.

Self-monitoring instruction was combined with the main idea strategy. There are two main benefits of using self-monitoring. First, it helps students to access cues for

recalling the strategy, which will decrease memory demands. Second, it will help students to focus on the application of the main idea strategy instead of focusing on the strategy recall (Jitendra et al., 2000). Moreover, the self-monitoring prompt card includes five steps that assist students to check their use of main idea strategy. These steps are: (a) read the passage, (b) name the subject (what is the passage is mainly about?), (c) tell what is important about the subject, (d) tell or say the main idea, and (e) does it tell about the whole passage.

The teaching sequence for main idea instruction and self-monitoring was based on the main idea comprehension strategy described by Jitendra et al. (2000) with some modification on the self-mentoring prompt card steps. For example, the second step in Jitendra's study was to use the prompt card to find the main idea. This step was modified to name the subject of the passage. Also, the fourth step in Jitendra's study was to write the main idea. This step was replaced with "tell the main idea" by naming the subject and telling what is important about it (combined between step two "name the subject" and step three "tell what is important about it".

Script:

Listen, today you will learn to tell the main idea of a passage by naming the subject and telling what's important about it. Finding main ideas can help you understand things you read, whether you are reading for school; or reading about something you are interested in. A main idea tells what the passage is mainly about. Now let's use the five steps on this card to help us identify the main idea. The first step says to read the passage [teacher reads passage aloud]. "How are beans, rice, and coconuts the same? They are all kinds of seeds. A seed is where most plants begin life. There are other ways plants can begin life, but most plants begin as seeds. Seeds come in lots of different shapes and colors. Some are small and light, like rose seeds and apple seeds. Others are large and heavy. The largest seed in the world is the coconut. The coconut has a hard shell and is

very heavy." I read the passage, so I will put a check by "read the passage" [teacher checks]. The second step tells me to name the subject (what the passage is mainly about). [Teacher and student reread the passage.] In this passage the subject is seeds, because all the sentences tell about seeds. So, I will put a check by "what is the subject" [teacher checks]. The third step reminds me to tell what's important about the subject (the important things about the subject in all the sentences). Let's read it again and see what's important things about seeds. "All sentences tell about seeds; they come in different shapes and colors and grow into plants." So, what's important about seeds? They come in different shapes and colors. Now, I will put a check by "tell what's important about the subject." [teacher checks]. The fourth step asks me to tell the main idea of the passage (what the passage is mainly about and what's important things about it). In this passage the main idea is (Seeds come in different shapes and colors and grow into plants). I will put a check by the fourth step [teacher checks]. The fifth step is the checking step. It reminds me to check whether the main idea tells about the whole passage. Here, "Do seeds come in different shapes? Colors? Grow into plants? Yes, so, the main idea for this passage is seeds come in different shapes and colors and grow into plants" [teacher checks].

During the main idea instruction, the teacher helped students with word recognition support as they needed because generating a main idea of the expository passages is the main focus of this study. Struggling in word recognition may reduce students' understanding of the passage and so prevent or hinder their ability to construct the passage's main idea.

Maintenance. For each participant, main idea identification responses were measured two weeks following completion of the intervention. Similar to baseline, students neither received main idea instruction nor self-monitoring training.

Interobserver Agreement

The interobserver agreement (IOA) training for data collection and intervention implementation was conducted one week before beginning the baseline. The training

included teaching a special education teacher (the person who implemented the main idea instruction) what to measure during the observation and how she should measure and assess participants' responses.

The IOA reliability of student responses was collected for approximately 20% of the sessions across each student as well as across each phase during the baseline and the intervention. The primary researcher calculated interobserver agreement using point-by-point agreement and dividing the number of agreements by the number of disagreements plus agreements and then multiplying by 100. The criterion for an acceptable interobserver agreement is 0.80 or above for baseline and intervention phases (Horner et al., 2005). Overall agreement averaged 87.5% for baseline (range 75% - 100%) and 95% for intervention (range 87.5% - 100%).

Fidelity of Treatment

To evaluate instruction fidelity, the implementation was measured in approximately 20% of the sessions. All study sessions included baseline, intervention, and maintenance were audio recorded and then 20% of these sessions were randomly selected to be evaluated. The primary researcher and another researcher listened to the records and evaluated the fidelity of implementation by using a treatment fidelity data sheet of the experimental steps (Appendix D). The fidelity of implementation steps included whether the teacher followed the scripted lesson, presented the object of the lesson, modeled the main idea strategy, modeled self-monitoring steps, provided independent practice, monitored student's progress, and provided corrective feedback. Each instruction step was evaluated in terms of the adherence and the quality. Adherence

refers to the extent to which the step was implemented while the quality refers to how well the step was implemented.

Regarding the adherence, the teacher was given a score of one when a step was delivered and a score of zero when a step was not delivered. To evaluate the quality of the treatment fidelity, a three-point rating scale was used. The teacher was given a score of two when she implemented the fidelity step precisely as planned, a score of one when the fidelity step was implemented acceptably with some aspects of quality, a score of zero when the fidelity step implementation did not occur or without any aspect of quality. The primary researcher calculated treatment fidelity by dividing the number of steps observed by the total number of steps and multiplying that sum by 100. Regarding the adherence, treatment fidelity was 100% for the baseline phase and the main idea intervention. Regarding the quality, treatment fidelity was 92.7% for the baseline and the intervention.

Social Validity

Using a 6-point Likert-type scale, the special education teacher (who implemented the main idea instruction) in the study was asked to complete a Usage Rating Profile (URP-Intervention) social validity questionnaire (Chafouleas et al., 2011), which was designed to assess factors that might influence the implementation of the intervention. It consists of items that measure dimensions such as acceptability, feasibility, and understanding. The questionnaire's statements include but are not limited to: (a) this intervention is an effective choice for addressing a variety of problems, (b) I understand how to use this intervention, (c) the total time required to implement the

intervention procedures would be manageable, (d) material resources needed for this intervention are reasonable, (e) this intervention would not be disruptive to other students, and (f) the intervention is too complex to carry out accurately. The teacher reported the MI intervention to be acceptable and understandable, and the materials and time needed to implement the intervention to be reasonable.

The student participants were also asked to complete a social validity questionnaire that consists of three statements including whether they liked the main idea strategy, the passages used, and the self-monitoring card. Using a 3-point rating scale, the participants evaluated each statement by answering (*I liked it, I didn't like it, I don't know).* All participants reported that they liked the MI instruction and the passages used in the study, and that they enjoyed using self-monitoring card.

Data Analysis

Visual analysis is the most traditional method used for data analysis in single subject design (Horner et al., 2005). In this study, data obtained during baseline, intervention, and maintenance was graphed and analyzed visually. Visual analysis of level, trend, and variability was used to determine whether the data documented three demonstrations of the intervention effect at three different times across different participants.

Level refers to the mean score in each phase, trend refers to the best fitting straight line for the data in each phase, where variability refers to standard deviation from the mean in each phase (Kratochwill et al., 2010 – WWC). The visual analysis of level, trend, and variability within each phase was assessed and compared with the data pattern

in adjacent phases. This comparison of data patterns between the baseline phase and intervention phase determined whether change in the dependent variable occurred or not.

The percentage of all non-overlapping data (PAND) was utilized to evaluate the effectiveness of the intervention. PAND is a procedure used to calculate the effect size of the intervention. It is a ratio of non-overlap data between phases. One advantage of using this technique compared with the percentage of non-overlapping data technique (PND) is that PAND uses all data points from both phases while PND overemphasizes a single extreme data point from phase A. PAND scores of 90% and greater = very effective treatment; 70% to 89% = moderate effective treatment; 50% to 69% = a debatable effective treatment; and below 50% = an ineffective treatment were used to evaluate effects (Scruggs & Mastropieri, 1998).

Another method used to evaluate the effectiveness of the main idea strategy is Ordinary Least Squares regression (OLS), which is a straight line of best fit for each phase. The regression line for the intervention phase was compared with the regression line for the baseline phase to determine the effect of the main idea strategy. One advantage of using regression is that it assesses the immediate effect of the intervention as well as identifies the difference in slopes between the baseline phase and the intervention phase.

Chapter 4: Results

This chapter provides the result of the intervention using visual analysis, the most traditional method used for data analysis in single subject design (Horner et al., 2005, Kazdin, 2011). Visual analysis of the data includes level, trend, and variability for each phase, which was performed to determine whether the data document three demonstrations of the intervention effect at three different times across different participants. The comparison of data patterns between the baseline phase and the intervention phase determines whether the main idea and self-monitoring strategy was successful in improving reading comprehension for students with ID. The descriptive statistics include the means, standard deviation, and effect sizes.

The scores of correctly identified main idea across each phase were displayed graphically for each student. Figure 2 shows student progress across the baseline, intervention, and maintenance phases. Overall, the main idea and self-monitoring strategy was effective in improving students' reading comprehension. All three participants' mean for the number of points earned identifying the main idea from the passages increased from baseline to intervention.

PAND was utilized to evaluate the effectiveness of the intervention, which ranged from 72% to 89% across students. Scruggs et al., (1998) proposed that PAND scores ranging from 70% to 89% are effective interventions. Table 2 presents the mean correct scores for main idea identification for baseline, intervention, and maintenance along with PAND indicating the effectiveness of the intervention.

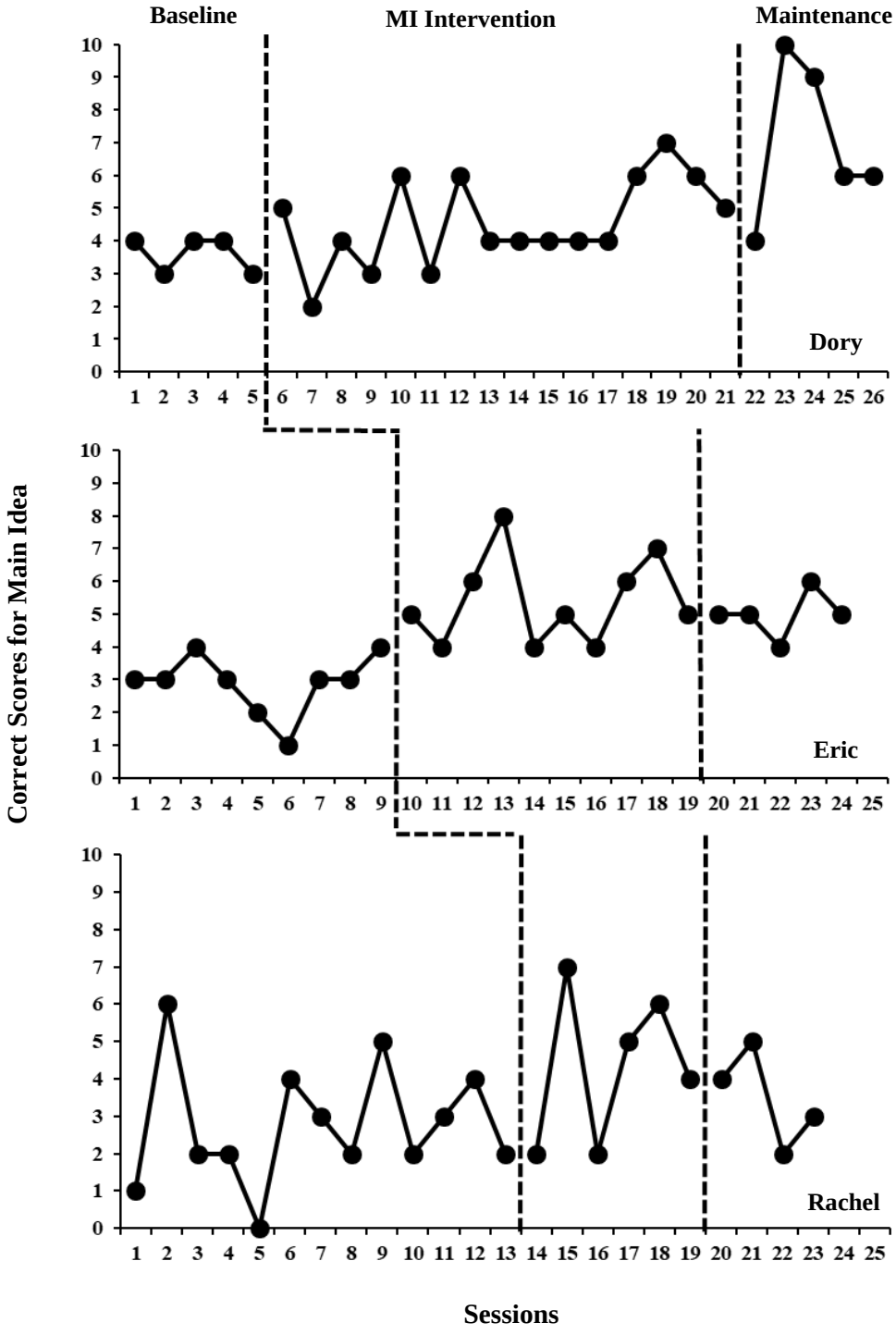


Figure 2. Students' main idea identification scores across the baseline, intervention, and maintenance phases for each student.

Table 2

Main Idea Score Means (X), Standard Deviations (SD), and PAND Across Baseline, Intervention, and Maintenance Conditions

Students	Baseline		Intervention		Maintenance		*PAND*
	X	*SD*	*X*	*SD*	*X*	*SD*	
Dory	3.6	0.54	4.42	1.39	7	2.45	76%
Eric	2.88	0.92	5.25	1.38	5	0.70	89%
Rachel	2.76	1.64	4.4	2.3	3.5	1.3	74%

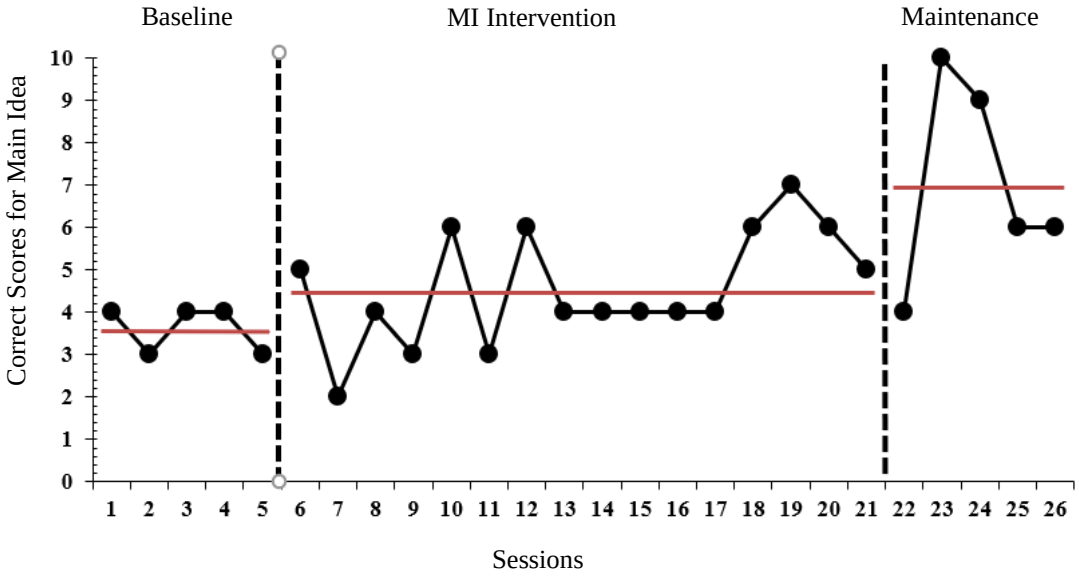
Note: PAND = percentage of all nonoverlapping data.

Dory. Dory had a total of 26 sessions over approximately six weeks, which include five sessions during the baseline phase, 16 sessions during the reading instruction phase, and five sessions during the maintenance phase. During the baseline, Dory showed a stable pattern for a minimum of three data points across five baseline sessions (*M = 3.6,* range= 3 – 4, *SD*= 0.54). After the stable baseline trend was established, the main idea and self-monitoring intervention was implemented. During the instructional phase, her main idea identification score increased (*M = 4.42*, range= 4 – 8, *SD*= 1.39). In the maintenance phase, Dory's main idea mean score for main idea identification increased over the intervention phase (*M = 7,* range= 4 – 10, *SD*= 2.45). Analysis of level was performed to determine the change in Dory's main idea identification performance. Figure 3.a shows the change in the levels between the baseline and intervention phases. Dory's mean response changed from 3.6 during the baseline to 4.42 during the instruction. Her mean performance continued to increase during the maintenance phase (*M* =7). Analysis of data trend was also performed to investigate whether Dory's data

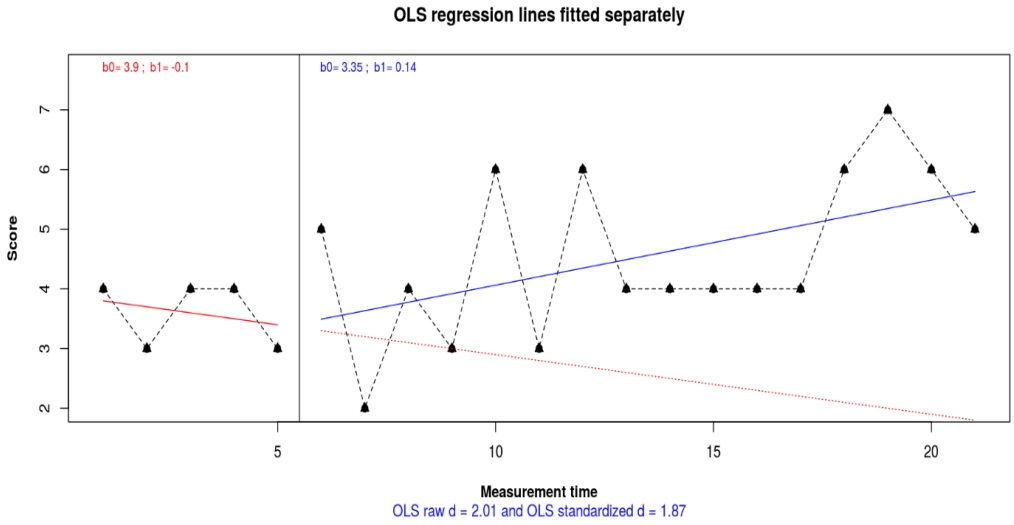
pattern changed from the baseline to intervention. As seen in Figure 3.b, the trend of the baseline responses improved from baseline (slope = -0.1 - red line) to the intervention (slope = 0.14 - blue line), which indicates the effectiveness of the main idea intervention. The PAND for Dory was 72%, which indicates the effectiveness of the intervention.

Figure 3 indicates Dory's progress over four weeks of main idea intervention.

(a)



(b)

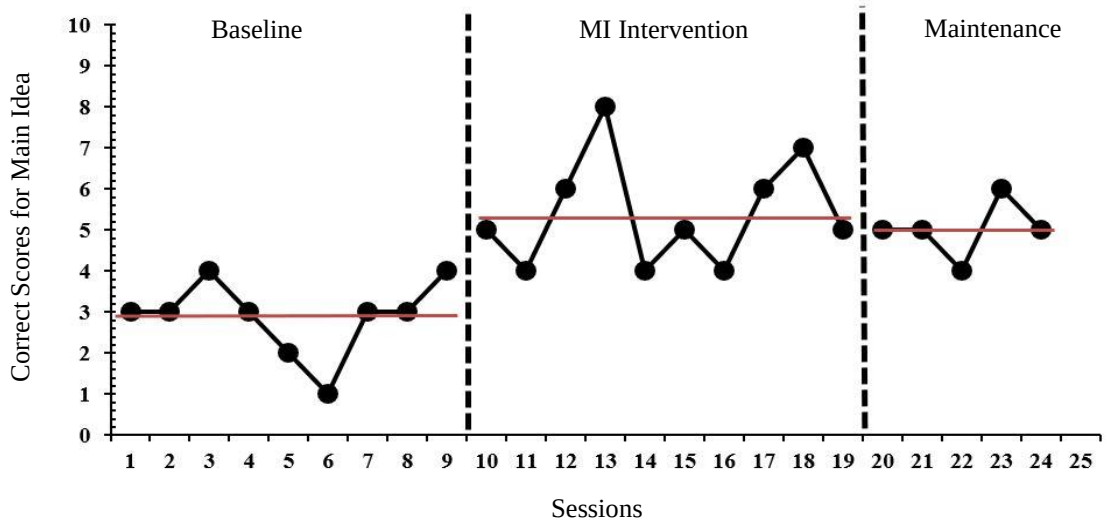


Eric. Eric had a total of 24 sessions over approximately six weeks, which include nine sessions during the baseline phase, ten sessions during the reading instruction phase, and five sessions during the maintenance phase. During the baseline, Eric showed a stable pattern for a minimum of three data points across nine baseline sessions (*M = 2.88,* range= 1 – 4, *SD*= 0.92), except for session 6, in which the score was 1. During the intervention phase, Eric demonstrated clear improvement in identifying the main idea following the introduction of the intervention (*M = 5.25*, range= 4 – 8, *SD*= 1.38). As seen in Figure 4.a, an immediate change in level occurred for main idea identification. Eric increased his performance on main idea identification from 4 to 8. During the maintenance phase, Eric's mean score for main idea identification was five (*M = 5.0,* range= 4 – 6, *SD*= 0.70), which indicates a slight loss of retention. However, his performance remained higher than the baseline phase (*M*= 5.0 – M=2.88). Also, an accelerating change in trend occurred from the baseline (b0 = 2.89 – red line) to the

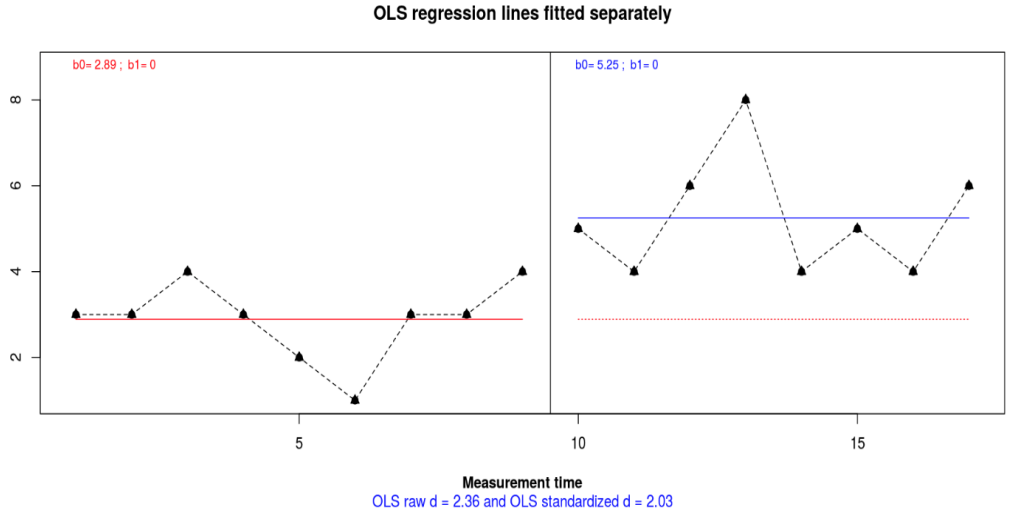
intervention (b0 = 5.25 – blue line). See Figure 4.b. The PAND for Eric was 89%, which indicates the effectiveness of the intervention.

Figure 4 indicates Eric's progress over three weeks of main idea intervention.

(a)



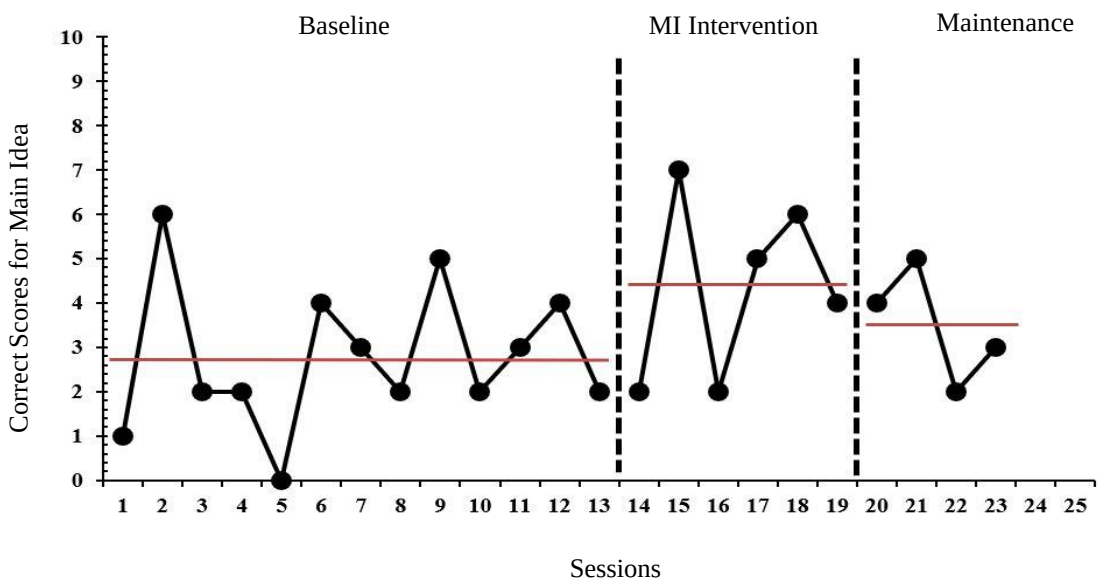
(b)



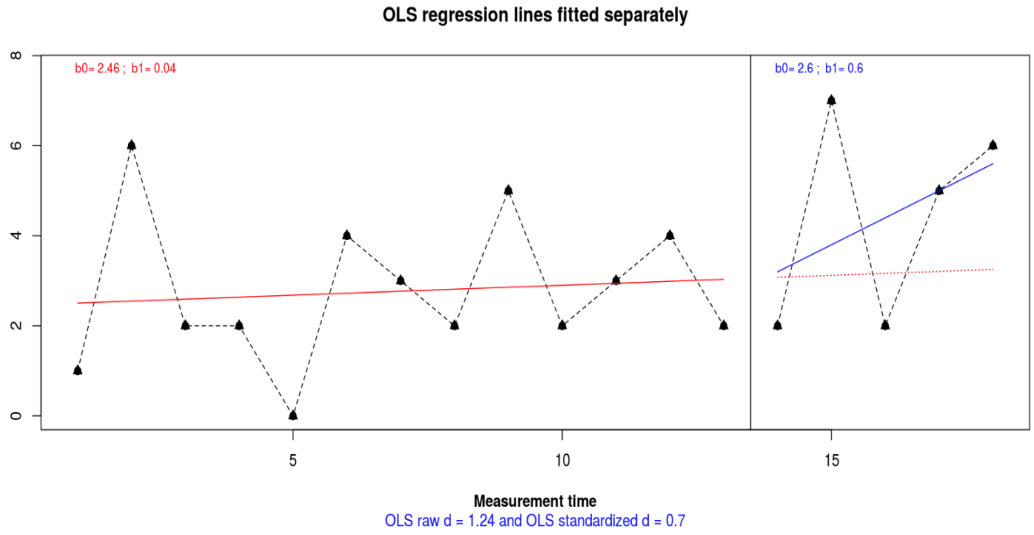
Rachel. Rachel participated in 23 sessions delivered across six weeks, which include 13 sessions during the baseline phase, six sessions during the reading instruction phase, and four sessions during the maintenance phase. During the baseline phase, Rachel showed an unclear baseline with a range between 1 – 6. However, her responses were frequently two, which was shown in five sessions (*M = 2.76*, range= 1 – 6, *SD*= 1.64). During the instruction phase, her main idea identification score increased (*M = 4.4*, range= 2 – 7, *SD*= 2.30). During the maintenance phase, Rachel's mean score for main idea identification was higher than in baseline (*M = 3.5*, range= 2 – 5, *SD*= 1.3), but lower than during intervention, which indicates a slight loss of retention. However, her performance remained higher than the baseline phase (*M*= 2.76 – *M*=3.5). Figure 5.a shows the change in levels across baseline and intervention phases. Rachel's mean response changed from 3.6 during the baseline to 4.42 during the instruction, which indicated an increase in the mean for main idea identification. Analysis of data trend was also performed to investigate whether Rachel's data pattern changed from the baseline to intervention. As seen in Figure 5.b, the trend of the baseline responses changed from baseline (slope = 0.04 - red line) to the intervention (slope = 0.6 - blue line), which indicates the effectiveness of the main idea intervention. The PAND for Rachel was 74%, which indicates the effectiveness of the intervention.

Figure 5 indicates Rachel's progress over two weeks of main idea intervention

(a)



(b)



The results of the current study indicated the effectiveness of the main idea and self-monitoring strategy in improving reading comprehension for students with ID. All three participants' mean score for identifying the main idea of passages increased from

baseline to intervention. Dory's average mean idea score increased from baseline (M = 3.6) to intervention (M = 4.42). Eric increased in the number of points earned from baseline (M = 2.88) to intervention (M = 5.25). Rachel also demonstrated improvement in main idea identification performance from the baseline (*M = 2.76*) to the intervention (*M = 4.4*). The PAND for the participants ranged from 72% – 89%, which indicates a moderate effect of the intervention (Scruggs & Mastropieri, 1998).

Dory and Eric were able to identify the subject from the expository text and tell the most important things about it. They also showed improvement in generating the main idea. Rachel also showed improvement in identifying the main idea as well as providing details about the subject, but her performance was not consistent, and she was struggling in identifying the subject from the text.

Chapter 5: Discussion

This study examined the effectiveness of the main idea and self-monitoring strategy for improving reading comprehension of expository text of students with intellectual disability (ID). The main idea strategy has been found to be effective in improving students' reading comprehension (Gajria et al., 2007; Graves, 1986; Graves & Levin, 1989; Jitendra et al., 1998; Jitendra et al., 2000; Malone & Mastropieri, 1992; Solis et al., 2012). It has been widely examined among students with learning disability, yet little attention has been given to this strategy for students with ID. This study expanded the literature on the importance of the main idea strategy by examining this strategy's effects among students with intellectual disability.

The results from this study demonstrated that teaching students with ID how to identify the main idea from expository text enhanced their reading comprehension. All three participants showed improvement in their reading comprehension from the baseline to the intervention. Dory's mean performance increased from 3.6 during the baseline to 4.42 during the instruction, Eric increased his performance on main idea identification from 2.88 during the baseline to 5.25 during the instruction phase, and Rachel also demonstrated improvement in her main idea identification performance from 2.76 during the baseline to 4.4 during the instruction.

Findings from this study are consistent with previous studies that investigated the effectiveness of the main idea strategy on improving reading comprehension. In one study, Jitendra et al. (1998) utilized a single-subject design to examine the effect of the main idea summarization strategy combined with self-monitoring procedures on reading

comprehension of students with LD. Results demonstrated that all students' reading comprehension was increased during main idea instruction when the intervention was combined with the self-monitoring strategy. In addition to teaching students with ID, another difference between Jitendra's study and the current study is that the passages used in their study were narrative and shorter than the passages used in this study. Another important change in the current study is the use of expository text only. Expository texts are considered to be more difficult than narrative text because the text is organized in many different ways (e.g., cause-effect, compare-contrast, and description). The main focus in expository passages is to link between information and ideas, so the students learn something (Jitendra et al., 2011). Teaching students with ID how to identify the main idea from expository passages is crucial because it may improve their academic achievement and facilitate their access to the general education curriculum.

The findings are also similar to outcomes reported by Gajria and Salvia (1992) who examined the effects of explicit and direct instruction to teach a summarization strategy on improving reading comprehension. Study findings indicated that students who learned the summarization strategy outperformed students in the control group on the assessment of comprehension for the main ideas. However, their passages had multiple-choice comprehension questions that participants needed to answer, while the participants in the current study generated the main idea, which may be a more difficult type of response. Also, the passages used by Gajria and Salvia were short compared with the current study.

Results are also in alignment with outcomes reported by Malone and Mastropieri (1992), who investigated the effects of a summarization strategy plus self-mentoring approach on students' comprehension. The participants were 45 students with LD who were randomly assigned to three comprehension conditions. Interestingly, findings indicated that students who received combined summarization and self-monitoring significantly outperformed students who did not receive a summarization strategy, as well as students who only received summarization training. The findings from this study emphasized the importance of the self-monitoring approach when combined with the main idea strategy.

Despite the type of design used in each prior study (single-subject design or between-group design), findings from the current study are consistent with previous studies (Gajria & Salvia, 1992; Jitendra et al., 1998; Jitendra et al., 2000; Malone & Mastropieri, 1992), which have indicated that a main idea identification strategy and self-monitoring can be effective in improving students' reading comprehension. However, all studies that investigated the effect of the main idea on improving reading comprehension involved students with LD or students with poor reading comprehension. By contrast, previous studies on reading instruction for students with ID have focused heavily on teaching them isolated skills such as sight words (Coyne et al., 2012; Erickson & Koppenhaver, 1995; Katims, 2000), and limited attention has been given to reading comprehension. To date, no published works can be found that primarily investigated the impact of teaching this strategy on reading comprehension of students with ID.

The current study builds upon previous research revealing that students with ID who are struggling readers can benefit from reading approaches that involve high-quality reading instruction (Browder et al., 2008; Coyne et al., 2012; Hedrick et al., 1999), including instruction that has been designed for other students, such as students with LD. Importantly, the current study extends the literature in several ways. It is the first study that aims to examine effects of the main idea strategy among students with ID. It is possible that including self-monitoring helped and directed students to focus their attention during reading. For students with ID who demonstrate attention deficits, which is characteristic of many students with ID, using self-monitoring may help them to focus on the tasks and to check their understanding of the strategy.

Another distinct component of the current study is that the passages used were expository text that covered a variety of different topics (e.g., Parts of Seeds, What Is an Earthquake? Weather Around You, and How Animals Communicate). I made this decision because all students, including those with disabilities, are required to improve their reading comprehension in order to succeed in school. Thus, the ability for students with ID to understand and identify the main idea from expository passages could enhance their reading comprehension as well as their academic achievement.

Lastly, the findings of the study provide some evidence that students with ID are capable of learning complex reading skills. Research should focus on teaching students with ID reading strategies that help them to become effective readers and not only teaching them isolated reading skills such as sight words.

Although the main idea intervention used in this study increased all three students' abilities to identify the main idea from expository text, it is important to highlight that Dory was the only student who could read independently compared with other students who needed the passages to be read for them sometimes. However, Dory's performance was less than Eric's or Rachel's, which is interesting. One possible explanation for this result is that she was not paying enough attention during reading, as well as skipping lines that may have included valuable information related to the topic (i.e., sometimes skipping words, sentences, and/or paragraphs). She appeared to be somewhat tired during some of the sessions. She would often have to stop to cough and sometimes made comments such as "Oh come on," when asked to complete the readings and frequently would have to be redirected to the correct passage. Another possible explanation is poor working memory, which might affect the ability to connect the information from different paragraphs. The length of passages was between 78 to 113 words divided into two to three paragraphs. The length of passages emphasizes not only decoding words and understanding their meaning, but also connecting the meaning from these words to the information from the text (Kim, Linan-Thompson, & Misquitta, 2012). Regarding Eric and Rachel's performance, which was higher compared with Dory's performance in main idea identification, a possible explanation for this result is that the passages were read for them, and so they do not spend much time on decoding and reading words, which decreases memory demands and may have enabled better focus on comprehension.

Limitations

Although the overall positive findings for increasing reading comprehension for students with ID are positive, several limitations should be considered in this study. The first limitation is that the results of this study should not be generalized to other students with ID. Each participant in this study responded differently to the main idea instruction. The second limitation of the study is the difficulty of the passages. Although all expository passages were evaluated using Lexile measures (range from 400L to 760L), passage difficulty also arises from the content and vocabulary, so it is not known whether results would differ if passages were more controlled in difficulty. This study also combined main idea with self-monitoring, so effects of either component independent of the other could not be determined.

Although longer than many studies with this population, another limitation is the duration of the study (10 weeks), which may be short when working with students with ID, who need more repetition and practice than most other students. Conducting the study for a longer time might have made a stronger effect on students' reading comprehension.

The main focus of this study was to examine the impact of the main idea strategy on reading comprehension for students with ID. However, little focus was paid here to other factors such as decoding, working memory, and prior knowledge that could contribute to possible differences. Students' deficits in decoding ability, as well as working memory, have been recognized as playing a role in reading ability among students with ID (Channell et al., 2013; Hughes et al., 2017; Tucker Cohen et al., 2008).

Future research

This study suggests several possible directions for future research. Since this study is the first research (to the author's knowledge) that primarily examined the effectiveness of teaching the main idea and self-monitoring strategy on reading comprehension of students with ID, it would be important and informative to replicate this study with similar populations. This replication could help to confirm the effectiveness of the main idea strategy on students' reading comprehension.

Another direction for future research would be to examine whether other factors, such as working memory, decoding, and prior knowledge could contribute to possible differences in reading comprehension performance for students with ID. Participants included in this study were referred by their classroom special education teacher based on their reading and performance abilities. Future research might replicate the study by selecting participants based on their reading ability on standardized measurers to determine whether effects vary by reading abilities. Additionally, future research could intentionally vary the difficulty of the passages that might affect the participants' performance.

Also, additional research is needed to determine whether students at different grade levels could benefit from the main idea strategy in reading comprehension. For example, would the main idea strategy be as beneficial for older students as it appears to be in the intermediate elementary grades?

Intervention length could also be extended in future research. Compared with typically developing students, students with ID exhibit deficits in cognitive ability that

require more time for them to master tasks. Extended intervention time could help to determine more clearly whether students with ID could benefit from the main idea strategy.

Implications for Practice

Understanding an expository text can be challenging for students with ID and so teaching them how to identify the main idea from the text may help them to better understand what they read. Although not all students who participated in this study were reading independently, they were able to benefit from the main idea intervention. Students with ID with similar characteristics may also benefit from the main idea and self-monitoring strategy used in this study.

Teachers may benefit from the intervention used in this study by using it in their classroom to enhance students with ID's reading comprehension. The main idea intervention does not require many or expensive materials in order to be implemented. The materials needed are highlighters, intervention passages, and a self-monitoring card. Teachers can afford these materials and use passages in students' textbooks.

Furthermore, results suggest that focusing on instruction that directs students with ID during reading to improve reading comprehension may be a valid practice, especially with students who exhibit attention deficits that may affect their reading ability. Using a self-monitoring card such as the one used in this study may play an essential role in keeping students focused on the application of the main idea reading strategy. In addition, this study offers teachers a strategy involving explicit instruction, which has been found to be effective in teaching students reading comprehension strategies such as this main

idea strategy (Gajria & Salvia, 1992; Jitendra et al., 1998). Using explicit instruction steps described in this study, teachers can effectively apply the intervention in their classrooms.

In summary, use of the main idea and self-monitoring strategies have been well documented in the literature as effective for improving reading comprehension (Gajria et al., 2007; Graves, 1986; Graves & Levin, 1989; Jitendra et al., 1998; Jitendra et al., 2000; Malone & Mastropieri, 1992; Solis et al., 2012). However, little attention has been given to examining this strategy in improving reading comprehension for students with ID. Overall, the results of this study provide preliminary evidence that the main idea intervention combined with self-monitoring can lead to improvements in reading comprehension for students with ID. Findings from this study also provide evidence that students with ID can benefit from reading comprehension strategies designed for students with other disabilities (e.g., LD). Importantly, the findings of the study are promising and provide evidence that students with ID are more capable of learning complex reading skills than previously supposed, when they receive appropriate, well designed, and individualized reading instruction.

References

Afacan, K., Wilkerson, K. L., & Ruppar, A. L. (2017). Multicomponent Reading Interventions for Students With Intellectual Disability. *Remedial and Special Education*. doi:10.1177/0741932517702444

Al Otaiba, S., & Hosp, M. K. (2004). Providing effective literacy instruction to students with Down syndrome. *TEACHING Exceptional Children, 36*(4), 28-35.

Alfassi, M., Weiss, I., & Lifshitz, H. (2009). The efficacy of reciprocal teaching in fostering the reading literacy of students with intellectual disabilities. *European Journal of Special Needs Education, 24*(3), 291-305. doi:10.1080/08856250903016854

Allor, Gifford, D. B., Al Otaiba, S., Miller, S. J., & Cheatham, J. P. (2013). Teaching Students With Intellectual Disability to Integrate Reading Skills. *Remedial and Special Education, 34*(6), 346-356. doi:10.1177/0741932513494020

Allor, Mathes, P. G., Roberts, J. K., Cheatham, J. P., & Champlin, T. M. (2010). Comprehensive reading instruction for students with intellectual disabilities: Findings from the first three years of a longitudinal study. *Psychology in the Schools*, n/a-n/a. doi:10.1002/pits.20482

Allor, Mathes, P. G., Roberts, J. K., Jones, F. G., & Champlin, T. M. (2010). Teaching students with moderate intellectual disabilities to read: An experimental examination of a comprehensive reading intervention. *Education and Training in Autism and Developmental Disabilities,* 3-22.

Ayala, S. M., & O'connor, R. (2013). The Effects of Video Self-Modeling on the Decoding Skills of Children at Risk for Reading Disabilities. *Learning Disabilities Research & Practice, 28*(3), 142-154.

Baddeley, A., Logie, R., Bressi, S., Sala, S. D., & Spinnler, H. (1986). Dementia and working memory. *The Quarterly Journal of Experimental Psychology, 38*(4), 603-618.

Boulineau, T., Fore Iii, C., Hagan-Burke, S., & Burke, M. D. (2004). Use of story-mapping to increase the story-grammar text comprehension of elementary students with learning disabilities. *Learning Disability Quarterly, 27*(2), 105-121.

Browder, D. M., Ahlgrim-Delzell, L., Courtade, G., Gibbs, S. L., & Flowers, C. (2008). Evaluation of the effectiveness of an early literacy program for students with significant developmental disabilities. *Exceptional Children, 75*(1), 33-52.

Browder, D. M., Hudson, M. E., & Wood, A. L. (2013). Teaching students with moderate intellectual disability who are emergent readers to comprehend passages of text. *Exceptionality, 21*(4), 191-206.

Browder, D. M., Wakeman, S. Y., Spooner, F., Ahlgrim-Delzell, L., & Algozzinexya, B. (2006). Research on reading instruction for individuals with significant cognitive disabilities. *Exceptional Children, 72*(4), 392-408.

Browder, D. M., & Xin, Y. P. (1998). A meta-analysis and review of sight word research and its implications for teaching functional reading to individuals with moderate and severe disabilities. *The Journal of Special Education, 32*(3), 130-153.

Caillies, S., Denhière, G., & Kintsch, W. (2002). The effect of prior knowledge on understanding from text: Evidence from primed recognition. *European journal of cognitive psychology, 14*(2), 267-286.

Channell, M. M., Loveall, S. J., & Conners, F. A. (2013). Strengths and weaknesses in reading skills of youth with intellectual disabilities. *Res Dev Disabil, 34*(2), 776-787. doi:10.1016/j.ridd.2012.10.010

Cologon, K., Cupples, L., & Wyver, S. (2011). Effects of targeted reading instruction on phonological awareness and phonic decoding in children with down syndrome. *Am J Intellect Dev Disabil, 116*(2), 111-129. doi:10.1352/1944-7558-116.2.111

Conners, F. A., Atwell, J., Rosenquist, C., & Sligh, A. (2001). Abilities underlying decoding differences in children with intellectual disability. *Journal of Intellectual Disability Research, 45*(4), 292-299.

Cossu, G., Rossini, F., & Marshall, J. C. (1993). When reading is acquired but phonemic awareness is not: A study of literacy in Down's syndrome. *Cognition, 46*(2), 129-138.

Coyne, P., Pisha, B., Dalton, B., Zeph, L. A., & Smith, N. C. (2012). Literacy by Design. *Remedial and Special Education, 33*(3), 162-172. doi:10.1177/0741932510381651

Danielsson, H., Henry, L., Messer, D., & Rönnberg, J. (2012). Strengths and weaknesses in executive functioning in children with intellectual disability. *Research in developmental disabilities, 33*(2), 600-607.

Davey, B., & Kapinus, B. A. (1985). Prior knowledge and recall of unfamiliar information: Reader and text factors. *The Journal of Educational Research, 78*(3), 147-151.

Duttlinger, C., Ayres, K. M., Bevill-Davis, A., & Douglas, K. H. (2012). The Effects of a Picture Activity Schedule for Students With Intellectual Disability to Complete a Sequence of Tasks Following Verbal Directions. *Focus on Autism and Other Developmental Disabilities, 28*(1), 32-43. doi:10.1177/1088357612460572

Erickson, K. A., & Koppenhaver, D. A. (1995). Developing a literacy program for children with severe disabilities. *The Reading Teacher, 48*(8), 676-684.

Fajardo, I., Ávila, V., Ferrer, A., Tavares, G., Gómez, M., & Hernández, A. (2014). Easy-to-read Texts for Students with Intellectual Disability: Linguistic Factors Affecting Comprehension. *Journal of Applied Research in Intellectual Disabilities, 27*(3), 212-225.

Gajria, M., Jitendra, A. K., Sood, S., & Sacks, G. (2007). Improving comprehension of expository text in students with LD: A research synthesis. *Journal of Learning Disabilities, 40*(3), 210-225.

Gajria, M., & Salvia, J. (1992). The effects of summarization instruction on text comprehension of students with learning disabilities. *Exceptional Children, 58*(6), 508-516.

Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education, 7*(1), 6-10.

Graves, A. W. (1986). Effects of direct instruction and metacomprehension training on finding main ideas. *Learning Disabilities Research.*

Graves, A. W., & Levin, J. R. (1989). Comparison if Monitoring and Mnemonic Text-Processing Strategies in Learning Disabled Students. *Learning Disability Quarterly, 12*(3), 232-236.

Hansen, J., & Bowey, J. A. (1994). Phonological Analysis Skills, Verbal Working Memory, and Reading Ability in Second-Grade Children. *Child development, 65*(3), 938-950.

Hedrick, W. B., Katims, D. S., & Carr, N. J. (1999). Implementing a multimethod, multilevel literacy program for students with mental retardation. *Focus on Autism and Other Developmental Disabilities, 14*(4), 231-239.

Heller, K. W., Fredrick, L. D., Tumlin, J., & Brineman, D. G. (2002). Teaching decoding for generalization using the nonverbal reading approach. *Journal of Developmental and Physical Disabilities, 14*(1), 19-35.

Henry, L. A. (2001). How does the severity of a learning disability affect working memory performance? *Memory, 9*(4-6), 233-247.

Henry, L. A., & MacLean, M. (2002). Working memory performance in children with and without intellectual disabilities. *American journal on mental retardation, 107*(6), 421-432.

Hiebert, E. H. (2006). *QuickReads*: Modern Curriculum Press.

Hill, D. R., & Lemons, C. J. (2015). Early grade curriculum-based reading measures for students with intellectual disability. *J Intellect Disabil, 19*(4), 311-325. doi:10.1177/1744629515574812

Hogan, T., Bridges, M. S., Justice, L. M., & Cain, K. (2011). Increasing higher level language skills to improve reading comprehension.

Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children, 71*(2), 165-179.

Hudson, M. E., & Browder, D. M. (2014). Improving Listening Comprehension Responses for Students With Moderate Intellectual Disability During Literacy Class. *Research and Practice for Persons with Severe Disabilities, 39*(1), 11-29. doi:10.1177/1540796914534634

Jarrold, C., Baddeley, A. D., & Phillips, C. E. (2002). Verbal Short-Term Memory in Down SyndromeA Problem of Memory, Audition, or Speech? *Journal of Speech, Language, and Hearing Research, 45*(3), 531-544.

Jitendra, A. K., Burgess, C., & Gajria, M. (2011). Cognitive strategy instruction for improving expository text comprehension of students with learning disabilities: The quality of evidence. *Exceptional Children, 77*(2), 135-159.

Jitendra, A. K., Cole, C. L., Hoppes, M. K., & Wilson, B. (1998). Effects of a direct instruction main idea summarization program and self-monitoring on reading comprehension of middle school students with learning disabilities. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 14*(4), 379-396.

Jitendra, A. K., Kay Hoppes, M., & Xin, Y. P. (2000). Enhancing main idea comprehension for students with learning problems: The role of a summarization strategy and self-monitoring instruction. *The Journal of Special Education, 34*(3), 127-139.

Katims, D. S. (2000). Literacy instruction for people with mental retardation: Historical highlights and contemporary analysis. *Education and training in mental retardation and Developmental Disabilities*, 3-15.

Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings*: Oxford University Press.

Lemons, C. J., Allor, J. H., Al Otaiba, S., & LeJeune, L. M. (2016). 10 Research-Based Tips for Enhancing Literacy Instruction for Students With Intellectual Disability. *TEACHING Exceptional Children, 49*(1), 18-30. doi:10.1177/0040059916662202

Lundberg, I., & Reichenberg, M. (2013). Developing Reading Comprehension Among Students With Mild Intellectual Disabilities: An Intervention Study. *Scandinavian Journal of Educational Research, 57*(1), 89-100. doi:10.1080/00313831.2011.623179

Maehler, C., & Schuchardt, K. (2009). Working memory functioning in children with learning disabilities: does intelligence make a difference? *Journal of Intellectual Disability Research, 53*(1), 3-10.

Malone, L. D., & Mastropieri, M. A. (1992). Reading comprehension instruction: Summarization and self-monitoring training for students with learning disabilities. *Exceptional Children, 58*(3), 270-279.

Nation, K., Adams, J. W., Bowyer-Crane, C. A., & Snowling, M. J. (1999). Working memory deficits in poor comprehenders reflect underlying language impairments. *Journal of experimental child psychology, 73*(2), 139-158.

Numminen, H., Service, E., & Ruoppila, I. (2002). Working memory, intelligence and knowledge base in adult persons with intellectual disability. *Research in developmental disabilities, 23*(2), 105-118.

Pimperton, H., & Nation, K. (2014). Poor comprehenders in the classroom: teacher ratings of behavior in children with poor reading comprehension and its relationship with individual differences in working memory. *J Learn Disabil, 47*(3), 199-207. doi:10.1177/0022219412454172

Rosenquist, C., Conners, F. A., & Roskos-Ewoldsen, B. (2003). Phonological and visuo-spatial working memory in individuals with intellectual disability. *American journal on mental retardation, 108*(6), 403-413.

Sachs, A. (1983). The effects of three prereading activities on learning disabled students' reading comprehension. *Learning Disability Quarterly, 6*(3), 248-251.

Saunders, K. J., & DeFulio, A. (2007). Phonological awareness and rapid naming predict word attack and word identification in adults with mild mental retardation. *American journal on mental retardation, 112*(3), 155-166.

Schrank, F. A., McGrew, K. S., Mather, N., Wendling, B. J., & LaForte, E. M. (2014). *Woodcock-Johnson IV tests of cognitive abilities*: Riverside.

Schuchardt, K., Maehler, C., & Hasselhorn, M. (2011). Functional deficits in phonological working memory in children with intellectual disabilities. *Res Dev Disabil, 32*(5), 1934-1940. doi:10.1016/j.ridd.2011.03.022

Shapiro, E. S., & Cole, C. L. (1994). *Behavior change in the classroom: Self-management interventions*: Guilford Press.

Shurr, J., & Taber-Doughty, T. (2012). Increasing comprehension for middle school students with moderate intellectual disability on age-appropriate texts. *Education and Training in Autism and Developmental Disabilities*, 359-372.

Solis, M., Ciullo, S., Vaughn, S., Pyle, N., Hassaram, B., & Leroux, A. (2012). Reading comprehension interventions for middle school students with learning disabilities: a synthesis of 30 years of research. *J Learn Disabil, 45*(4), 327-340. doi:10.1177/0022219411402691

Soltani, A., & Roslan, S. (2013). Contributions of phonological awareness, phonological short-term memory, and rapid automated naming, toward decoding ability in students with mild intellectual disability. *Res Dev Disabil, 34*(3), 1090-1099. doi:10.1016/j.ridd.2012.12.005

Taylor, B. M., & Beach, R. W. (1984). The effects of text structure instruction on middle-grade students' comprehension and production of expository text. *Reading Research Quarterly*, 134-146.

Tucker Cohen, E., Wolff Heller, K., Alberto, P., & Fredrick, L. D. (2008). Using a three-step decoding strategy with constant time delay to teach word reading to students with mild and moderate mental retardation. *Focus on Autism and Other Developmental Disabilities, 23*(2), 67-78.

Van der Molen, M., Van Luit, J., Jongmans, M., & Van der Molen, M. (2007). Verbal working memory in children with mild intellectual disabilities. *Journal of Intellectual Disability Research, 51*(2), 162-169.

Van der Molen, M., Van Luit, J., Van der Molen, M. W., & Jongmans, M. J. (2010). Everyday memory and working memory in adolescents with mild intellectual

disability. *American journal on intellectual and developmental disabilities, 115*(3), 207-217.

van Wingerden, E., Segers, E., van Balkom, H., & Verhoeven, L. (2014). Cognitive and linguistic predictors of reading comprehension in children with intellectual disabilities. *Research in developmental disabilities, 35*(11), 3139-3147.

Verucci, L., Menghini, D., & Vicari, S. (2006). Reading skills and phonological awareness acquisition in Down syndrome. *Journal of Intellectual Disability Research, 50*(7), 477-491.

Williams, J. P. (2005). Instruction in reading comprehension for primary-grade students: A focus on text structure. *The Journal of Special Education, 39*(1), 6-18.

Wise, J. C., Sevcik, R. A., Romski, M., & Morris, R. D. (2010). The relationship between phonological processing skills and word and nonword identification performance in children with mild intellectual disabilities. *Res Dev Disabil, 31*(6), 1170-1175. doi:10.1016/j.ridd.2010.08.004

Appendix A

UC Riverside
RESEARCH INFORMED CONSENT

PARENTAL PERMISSION FORM

Title of research study: **Improving Reading Comprehension for Students with Intellectual Disability: The Effectiveness of the Main Idea and Self-Monitoring Strategy**

Investigator: ***Emad Alussaif and Rollanda O'Connor***

Researcher:	Emad Alussaif, Doctoral student Graduate School of Education 951-256-6213 e-mail: emad.alussaif@email.ucr.edu

Faculty Advisor:	Rollanda O'Connor, Professor Graduate School of Education 951-827-6052 e-mail: rollanda.oconnor@uce.edu

Introduction:

This is a research study about improving reading comprehension by teaching students how to identify the main idea of things they read. Many students face difficulty understanding what a paragraph/story is about. Teaching them how to identify the main idea of the text will help them to better understand what they read. The study researcher, Emad Alussaif, under the direction of Professor Rollanda O'Connor from the UCR Graduate School of Education, will explain this study to you.

Research studies include only people who choose to participate. Please take your time to make your decision about your child participating, and discuss your decision with your family, your child's teacher, or friends if you wish. If you have any questions at all, you may ask the researchers at any time.

Your child is asked to take part in this study because he or she is currently receiving special education services, and might have difficulty understanding what he/she reads. Since your child is younger than 18 we must have your permission to include him/her in the study.

Investigator Financial Conflict of Interest

No one on the study team has any financial interest related to this research project.

What happens if I say yes, I want my child to be in this research?

If you agree to allow your child to participate in this study, your child will be asked to participate in one-to-one reading comprehension instruction for about four days per week (40 min daily) for 20 – 25 sessions. The study will be conducted for about 10 weeks. All participants in this study including your child will continue to be taught their typical core reading program in their scheduled reading or Language Arts classes. In addition to their typical reading instruction, we will escort your child to the one-to-one setting (e.g. student's classroom, special education resource room, or any environment that offers a quiet atmosphere) where the special main idea instruction will take place.

- **Study location:** All these procedures will be done at an elementary school in an urban, large school district. Alvord, California.

Is there any way being in this study could be bad for my child?

We do not anticipate any risks or discomforts with your child participating in this study other than those encountered in day-to-day life.

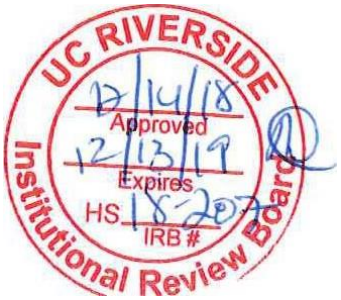
Will being in this study help my child in any way?

We cannot promise any benefits to your child from taking part in this research. However, possible benefits to your child include improving his/her reading comprehension through teaching your child how to identify and generate the main idea of what they read. Identifying the main ideas might help your child to understand the text, to draw appropriate inferences, to study effectively, and to be a better reader.

What happens to the information collected for the research?

The information collected about your child will be coded using a fake name (pseudonyms) or initials and numbers. The data will be stored for about five years after the study has been completed and then destroyed. During this time, the data will be stored in a locked file password protected computer.

We will not disclose your child's personal information. Only the researchers will have access to this information. We promise complete confidentiality.



Will information about my child be kept private?

We will do our best to make sure that the personal information gathered for this study is kept private. If information from this study is published or presented at scientific meetings, your child's name and other personal information will not be used.

- Authorized representatives from the following organizations may review your child research data for the purpose of monitoring or managing the conduct of this study:
- Advisor to the Researcher: Dr. Rollanda O'Connor
- Representatives of the University of California: Institutional Review Board

Can my child be removed from the study without my OK?

The researcher, Emad Alussaif, could remove your child from the research study without your approval. Possible reasons for removal include if your child misses many classes, or if your child does not follow instructions. The researcher will notify you if this occurs.

Can my child stop being in the study at any time?

You (or your child) can stop taking part in the study at any time. If you would like to stop, please contact the researcher Emad Alussaif at (951)256-6213 or via e-mail: emad.alussaif@email.ucr.edu.

Will I or my child receive payment for being in this study?

You will not receive payment for taking part in this study.

What else do I need to know?

It is important that you promptly tell the person in charge (Emad Alussaif) of the research if you believe that your child has been injured because of taking part in this study. If your child is injured as a result of being in this study, the University of California will provide necessary medical treatment. The costs of the treatment may be billed to you or your insurer just like any other medical costs, or covered by the University of California depending on a number of factors. The University does not normally provide any other form of compensation for injury. For further information about this, you may contact the UCR Office of Research Integrity via telephone at 951-827-4802 or via email irb@ucr.edu.

If you are interested in receiving the research results following completion of the study, please contact the researcher via emad.alussaif@email.ucr.edu.

Whom can I talk to?

If you have questions, concerns, or complaints, or think the research has hurt your child, talk to the research team Emad Alussaif at (951)256-6213 or Dr. Rollanda O'Connor at (951)827-6052.

If you have questions about your child rights or complaints as a research subject, please contact the IRB Chairperson at (951) 827 - 4802 during business hours, or to contact them by email at irb@ucr.edu.

CONSENT

You have been given a copy of this consent form to keep.

PARTICIPATION IN RESEARCH IS VOLUNTARY. The decision to allow your child to participate, or not participate, is solely up to you. You have the right to decline your child to be in this study, or to withdraw from it at any point without penalty or loss of benefits to which you are otherwise entitled or already have.

If you wish for your child to participate in this study, you should sign below.

_____ _____

Date Participant's Signature for Consent

As the research study includes digital recordings, please specify below if you will allow your child to be recorded.

___ Yes, I consent to being Audio/video recorded
___ No, I do not consent to being Audio/video recorded

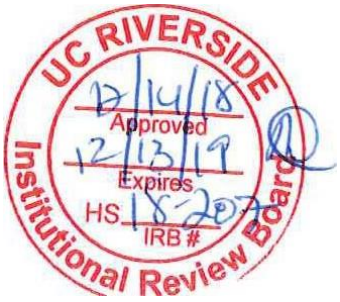
The person being considered for this study is unable to consent for himself/herself because he/she is a minor. By signing below, you are giving your permission for your child to be included in this study.

_____ _____

Date Parent or Legal Guardian

_____ _____

Date Caregiver or Legal Guardian



Appendix B

Direct Instruction Lesson

Main Idea Strategy

Week 2: Session 2

Lesson objective: **The purpose of this lesson is to introduce the main idea strategy. The teacher will model the strategy for the student.**

Listen, today you will learn to tell the main idea of a passage by naming the subject and telling what's important about it. Finding main ideas can help you understand things you read, whether you are reading for school; or reading about something you are interested in. A main idea tells what the passage is mainly about. Now let's use the five steps on this card to help us identify the main idea.

The first step says to read the passage [teacher reads passage aloud]. "How are beans, rice, and coconuts the same? They are all kinds of seeds. A seed is where most plants begin life. There are other ways plants can begin life, but most plants begin as seeds. Seeds come in lots of different shapes and colors. Some are small and light, like rose seeds and apple seeds. Others are large and heavy. The largest seed in the world is the coconut. The coconut has a hard shell and is very heavy." I read the passage, so I will put a check by "read the passage" [teacher checks].

The second step tells me to name the subject (what the passage is mainly about). [Teacher and student reread the passage.] In this passage the subject is seeds, because all the sentences tell about seeds. So, I will put a check by "what is the subject" [teacher checks].

The third step reminds me to tell what's important about the subject (the important things about the subject in all the sentences). Let's read it again and see what's important things about seeds. "All sentences tell about seeds; they come in different shapes and colors and grow into plants." So, what's important about seeds? They come in different shapes and colors. Now, I will put a check by "tell what's important about the subject." [teacher checks].

The fourth step asks me to tell the main idea of the passage (what the passage is mainly about and what's important things about it). In this passage the main idea is (Seeds come in different shapes and colors and grow into plants) I will put a check by the fourth step [teacher checks].

The fifth step is the checking step. It reminds me to check whether the main idea tells about the whole passage. Here, "Do seeds come in different shapes? Colors? Grow into plants? Yes, so, the main idea for this passage is seeds come in different shapes and colors and grow into plants" [teacher checks].

As we have discussed, a main idea tells us what the passage is mainly about. We identify the main idea by naming the subject (what) identifying the important details about the subject (What). Finding main ideas can help you understand things you read, whether you are reading for school; or reading about something you are interested in. We can identify the main idea of the passage by following the five steps in the card. These steps require us to first, read the passage; second, name the subject (what the passage is mainly about); third, tell what's important about the subject; fourth, tell the main idea: finally, check whether the main idea tells about the whole passage.

Appendix C

Instructional Lesson Plan

Lessons for Week 2 (Intervention Phase)

Session 2

The purpose of this lesson is to teach student how to identify a main idea of the expository text.

Materials

- Reading Passage #1
- Self-monitoring card
- Student notebook
- Marker

Introduction

1. The teacher begins by stating the purpose of the lesson "Listen, today you will learn to tell the main idea of a passage by naming the subject and telling what's important about it."

2. The teacher tells the student what a main idea is "A main idea tells what the passage is mainly about."

3. The teacher discusses the importance of identifying the main idea of the passage "Finding main ideas can help you understand things you read, whether you are reading for school; or reading about something you are interested in."

Instructional Practice

4. Displaying the self-monitoring card, the teacher tells the student that this card has five steps to help him/her identify the main idea “Now let’s use the five steps on this card to help us identify the main idea.”

5. The teacher reads the first step in the card “The first step says to read the passage”. The teacher asks student to read the passage. When the student finishes reading the passage, the teacher asks student to put check by “read the passage.”

6. The teacher reads the second step in the card. “The second step tells you to name the subject (what the passage is mainly about). The teacher asks the student “In this passage, what is the subject?” When the student names the subject, the teacher asks him/her to put a check by “what is the subject.”

7. The teacher reads the third step in the card “this step reminds you to tell what’s important about the subject,” the important things about the subject in all the sentences. The teacher asks the student to name what’s important about the subject. When the student answers, the teacher asks the student to put check by “tell what’s important about the subject.”

8. Reading the fourth step in the self-monitoring card, the teacher asks the student to identify the main idea of the passage. “Tell the main idea in this passage”. When the student says the main idea by naming the subject (what) and identifying the important details about the subject (What), the teacher asks the student to put check by “say the main idea.”

9. The teacher then reads the final step to the student “does it tell about the whole passage?” The teacher asks the student to read the passage again and check whether the main idea tell about the whole passage. When the student

answers, the teacher asks him/her to put check by “does it tell about the whole passage.”

Lesson Closure

10. The teacher summarizes with the student what he/she learned about identifying the main idea during the lesson by first explaining what the main idea is and why it is important, and then discussing the five steps that help to identify the main idea of the passage.

Appendix D

Treatment Fidelity Data Sheet

Observer: _____ Teacher: _____ Week: _____

Phase: _____ Session: _____ Date: _____

For each step, provide a rating of adherence (to what extent the step was covered) and quality (how well was the step implemented) based on the following rubric.

Adherence

1 = Step was delivered
0 = Step was not delivered

Quality

2 = Step delivery precisely as planned.
1 = Step delivery with some aspects of quality.
0 = Step not delivered without any aspect of quality.

Step	Adherence		Quality		
1. Teacher followed the scripted lesson	1	0	2	1	0
2. Teacher presented the objective of the lesson	1	0	2	1	0
3. Teacher modeled the main idea strategy	1	0	2	1	0
4. Teacher modeled self-monitoring steps	1	0	2	1	0
5. Teacher provided independent practice	1	0	2	1	0
6. Teacher monitored student's progress and provided corrective feedback	1	0	2	1	0

Appendix E

Dependent Variable Rubric

Student: _____ Week: _____

Phase: _____ Session: _____ Date: _____

Story/Paragraph Title: _____

Rating	Wrong	Partially Correct	Correct	Score (%)
Read the passage	0	1	2	
Identify what is the passage mainly about (the subject)	0	1	2	
Tell the main or most important thing about the subject in the passage	0	1	2	
Tell the main idea statement (what and the important thing about it)	0	1	2	
Check step (does the main idea tell about the whole passage?)	0	1	2	
TOTAL				

Student Score: Wrong = 0; Partially Correct = 1; Correct = 2. Total Score = 10

Appendix F

TIMELINE OF THE STUDY

	Phase	Days	Implementation Activities		
Week One	Baseline	Monday Tuesday Wednesday Thursday Friday	MI- Measure MI- Measure MI- Measure MI- Measure	All Students All Students	No MI Instruction
Week Two	Baseline	Monday Tuesday Wednesday Thursday Friday	MI- Measure MI Instruction MI- Measure MI- Measure	All Students 1st student 2nd & 3rd students 2nd & 3rd students	MI Instruction for 1st student, but not for 2nd & 3rd students
Week Three	Baseline	Monday Tuesday Wednesday Thursday Friday	MI Instr & measure MI Instr & measure MI Instr & measure MI Instr & measure	All Students All Students	MI Instruction for 1st student, but not for 2nd & 3rd students
Week Four	Intervention	Monday Tuesday Wednesday Thursday Friday	MI Instr & measure MI Instr & measure MI Instr & measure MI Instr & measure	1st student 1st student 1st student 1st student	Measure all S Measure all S
Week Five	Intervention	Monday Tuesday Wednesday Thursday Friday	MI Instr & measure MI Instr & measure MI Instr & measure MI Instr & measure	1st student 1st student 1st student 1st student	Measure all S Measure all S

Week Six	Intervention	Monday Tuesday Wednesday Thursday Friday	MI Instr & measure MI Instr & measure MI Instr & measure MI Instr & measure	1st & 2nd students 1st & 2nd students 1st & 2nd students 1st & 2nd students	Measure 3rd S Measure 3rd S
Week Seven	Intervention	Monday Tuesday Wednesday Thursday Friday	MI Instr & measure MI Instr & measure MI Instr & measure MI Instr & measure	1st & 2nd students 1st & 2nd students 1st & 2nd students 1st & 2nd students	Measure 3rd S Measure 3rd S
Week Eight	Intervention	Monday Tuesday Wednesday Thursday Friday	MI Instr & measure MI Instr & measure MI Instr & measure MI Instr & measure	All students All students All students All students	As students master the main idea strategy for 3 consecutive measurements, they will enter the maintenance phase for two weeks, and then terminate their participation in the study.
Week Nine	Intervention	Monday Tuesday Wednesday Thursday Friday	MI Instr & measure MI Instr & measure MI Instr & measure MI Instr & measure	All students All students All students All students	
Week Ten	Intervention	Monday Tuesday Wednesday Thursday Friday	MI Instr & measure MI Instr & measure MI Instr & measure MI Instr & measure	All students All students All students All students	

Week Eleven	Maintenance	Monday Tuesday Wednesday Thursday Friday	MI Instr & measure MI Instr & measure MI Instr & measure MI Instr & measure	All Students All Students All Students All Students	No MI Instruction

Appendix G

IRB-SB approval is effective from date of this notice and good for the date indicated. Reviews are required to keep project active.

UNIVERSITY OF CALIFORNIA, RIVERSIDE
IRB Socio-Behavioral (IRB-SB)
Office of Research Integrity
December 14, 2018

APPROVAL NOTICE

INVESTIGATOR: O'Connor, Rollanda; Alussaif, Emad **Faculty Advisor:** O'Connor, Rollanda

ACADEMIC UNIT: Education **Administrator:** O'Connor, Rollanda

PROJECT TITLE: "Improving Reading Comprehension for Students with Intellectual Disability: The Effectiveness of The Main Idea and Self-Monitoring Strategy"

IRB-SB. NUMBER: HS - 18-207 **APPROVAL:** December 14, 2018 **EXPIRATION:** December 13, 2019

FUNDING SOURCE: None listed

SPECIAL CONDITIONS: None

NOTE: Approval by the Institutional Review Board does not, in and of itself, constitute approval for the implementation of this research. Other institutional clearances and approvals may be required (e.g., EH&S, IACUC, IBC, other institutional IRBs). **Accordingly, the project should not begin until all required approvals have been obtained.**

THE UCR IRB-SB HAS REVIEWED THE PROPOSED USE OF HUMAN PARTICIPANTS IN THE REFERENCED APPLICATION AND APPROVED IT BASED ON THE FOLLOWING DETERMINATIONS:

1. Level of Review - 45 CFR 46.110 (#7) Expedited
2. Special Population - 45 CFR 45 Subpart D (Children)
3. Risk - Minimal
4. The risks to participants are minimized by using procedures consistent with sound research design that do not unnecessarily expose participants to risk.
5. The risks are reasonable in relation to the anticipated benefits to individual participants and the importance of the knowledge that may reasonably be expected to result.
6. The selection of participants is reasonable and equitable.
7. The PI has had the appropriate human subjects research training.
8. Consent - Signed Consent Approved (parents only)

Once the special conditions, if any, have been met, the protocol will be approved *through* December 13, 2019.

A "Continuing Review of the Approved Human Subjects Protocol" form will be sent to the PI three months before the expiration date, which will allow the PI to indicate whether to keep the application active or not. Please note that the expiration date is the last date that the application is approved.

THE INVESTIGATOR SHALL PROMPLTY REPORT THE FOLLOWING TO THE IRB-SB:
(1) Changes to the application (e.g., increase the number of participants, or changing the participant population, recruitment methods, procedures, documents) via an amendment, or
(2) Unanticipated problems involving risk to participants or others (please contact the IRB-SB for instructions).

DATE APPROVED December 14, 2018

DR. DERICK FAY, CHAIR, IRB-SB

Appendix H

Usage Rating Profile - Intervention

URP-Intervention

Directions: Consider the described intervention when answering the following statements. Circle the number that best reflects your agreement with the statement, using the scale provided below.

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1.	This intervention is an effective choice for addressing a variety of problems.	1	2	3	4	5	6
2.	I would need additional resources to carry out this intervention.	1	2	3	4	5	6
3.	I would be able to allocate my time to implement this intervention.	1	2	3	4	5	6
4.	I understand how to use this intervention.	1	2	3	4	5	6
5.	A positive home-school relationship is needed to implement this intervention.	1	2	3	4	5	6
6.	I am knowledgeable about the intervention procedures.	1	2	3	4	5	6
7.	The intervention is a fair way to handle the child's behavior problem.	1	2	3	4	5	6
8.	The total time required to implement the intervention procedures would be manageable.	1	2	3	4	5	6
9.	I would not be interested in implementing this intervention.	1	2	3	4	5	6
10.	My administrator would be supportive of my use of this intervention.	1	2	3	4	5	6
11.	I would have positive attitudes about implementing this intervention.	1	2	3	4	5	6
12.	This intervention is a good way to handle the child's behavior problem.	1	2	3	4	5	6
13.	Preparation of materials needed for this intervention would be minimal.	1	2	3	4	5	6

USAGE RATING PROFILE

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
14.	Use of this intervention would be consistent with the mission of my school.	1	2	3	4	5	6
15.	Parental collaboration is required in order to use this intervention.	1	2	3	4	5	6
16.	Implementation of this intervention is well matched to what is expected in my job.	1	2	3	4	5	6
17.	Material resources needed for this intervention are reasonable.	1	2	3	4	5	6
18.	I would implement this intervention with a good deal of enthusiasm.	1	2	3	4	5	6
19.	This intervention is too complex to carry out accurately.	1	2	3	4	5	6
20.	These intervention procedures are consistent with the way things are done in my system.	1	2	3	4	5	6
21.	This intervention would not be disruptive to other students.	1	2	3	4	5	6
22.	I would be committed to carrying out this intervention.	1	2	3	4	5	6
23.	The intervention procedures easily fit in with my current practices.	1	2	3	4	5	6
24.	I would need consultative support to implement this intervention.	1	2	3	4	5	6
25.	I understand the procedures of this intervention.	1	2	3	4	5	6
26.	My work environment is conducive to implementation of an intervention like this one.	1	2	3	4	5	6
27.	The amount of time required for record keeping would be reasonable.	1	2	3	4	5	6
28.	Regular home-school communication is needed to implement intervention procedures.	1	2	3	4	5	6
29.	I would require additional professional development in order to implement this intervention.	1	2	3	4	5	6