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Thesis Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Arts in Education

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The Read 180® Program and Reading Comprehension Strategies for Students with Disabilities

Brianna Griffith

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Abstract

Many students with disabilities at the middle school level struggle to develop literacy skills. As a result, these students are placed in special education classes for remediation. Read 180® Next Generation is a comprehensive reading program designed for students with disabilities, English Language Learners, and struggling readers; although, there has been little outside research conducted as to its effectiveness. This study implemented the Read 180® over a five-week period. Specifically, it supplemented the intervention with 20-minute mini-lessons on direct reading strategies to the 90-minute block of Read 180® in order to determine if the added instruction would improve the reading lexile score of the participants in the study. This study used a quantitative quasi-experimental design using pretest and posttest. Independent and paired samples t-tests were conducted to determine if there were statistically significant differences between the means of both groups on the Read 180® Reading Inventory. The results indicated that there was no added benefit to the development of reading comprehension ability by incorporating direct reading strategies to the Read 180® program.

Keywords: reading comprehension, Read 180®, special education, explicit reading strategy instruction

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Literature Review

Literacy skills are essential to every student's education. Being able to read, write, speak, and listen in the English language is crucial for American students across grade levels and across curriculums (Goldman, 2012; Solis et al., 2012). Yet, learning to read is a complex task for many students. For example, some students struggle to process material, whereas others are unable to draw conclusions based on what was read (National Joint Committee on Learning Disabilities, 2008). Other struggling students may have difficulty with decoding skills that can affect their ability to derive meaning from words in the text (Berkeley, Scruggs, & Mastropieri, 2010). According to the National Reading Panel (NRP; 2000), there are five components required in the development of literacy skills: phonemic awareness, phonics (decoding), comprehension, fluency, and vocabulary.

Reading Skills

Phonemic awareness is the ability to recognize individual sounds in a spoken word (Morris, Bloodgood, Lomas, & Perney, 2003; NRP, 2000). For example, the word *cat* has three separate phonemes, or sounds, and when put together form a word. Students learning to read must understand phonemic awareness in order to apply the phonemes to both oral and written language (Malmgren & Trezek, 2009). Phonics is the ability to recognize that graphemes, or letters in the alphabet correspond to the phonemes in oral language (Cirino et al., 2012; Malmgren & Trezek, 2009; NRP, 2000). In returning to the example above, the word *cat* has three graphemes that are attached to three separate phonemes, a student learning phonics would be instructed in this concept. Becoming proficient in phonics skills allows learners to progress from reading words to sentences and then to short passages (Malmgren & Trezek, 2009). Both

phonological and phonemic awareness contribute to word recognition skills that are essential in developing proficient readers (Cirino et al., 2012). The more efficient a reader becomes at phonological awareness the more they are able to continue to develop adequate fluency and comprehension skills.

Another important component to developing and improving reading ability is reading comprehension. Reading comprehension is the ability to understand and process what one reads (NRP, 2000). More specifically, it is the ability to extract meaning from a text or passage (Berkeley, Mastropieri, & Scruggs, 2011). Moving towards obtaining proficient comprehension skills is the central goal of becoming a competent reader (Malmgren &Trezek, 2009). The comprehension of reading material is vital for learning for students of any age or situation. Additionally, developing fluency skills allows students to read words more quickly and more accurately with the correct expressions and inflections (NRP, 2000). Readers who have developed proficient fluency skills and can read words easily are able to free cognitive energy to focus on content and comprehension (Malmgren & Trezek, 2009; Rasinski, 2012; Walczyk & Griffith-Ross, 2007). For example, if a student is spending extra time to decode a multisyllabic word like *beneficial* they have been distracted from the meaning of the word within the sentence; the focus is solely on decoding the word correctly.

Vocabulary development is another component and refers to learning the meaning of new words that will contribute to both reading comprehension and fluency skills (Cirino et al., 2012; NRP, 2000). As in the example of the word *beneficial*, if a student already knows both the meaning of the word and how it is decoded then the student's fluency will improve. This can provide more cognitive energy to deciphering the meaning of the sentence rather than focusing

on one word. All of these individual components contribute to the overall development of literacy skills needed for success in the classroom.

These five reading components outlined by NRP (2000) are intertwined. For a student to improve reading comprehension skills he or she would need to practice improving reading fluency skills (Rasinski, 2012). For instance, less fluent readers focus more on the decoding of each word rather than the meaning of each sentence causing the reader to spend more cognitive energy upon decoding instead of comprehension (Malmgren & Trezek, 2009; Rasinski, 2012). This is not true, however, for all developing readers. Some readers can improve their reading comprehension by improving their fluency, but there continue to be students that have comprehension difficulties not related to poor reading fluency (Walczyk & Griffith-Ross, 2007). Additionally, there is evidence to show that proficient decoding skills do not always improve reading fluency (Guthrie et al., 2009). In order for improvements in reading to take place each reading component must be addressed. Comprehensive reading programs that address all five components are needed to instruct students who are learning to read and students who continue to struggle to read at grade level.

Of the five components, reading comprehension is vitally necessary in order to understand the increasingly difficult curriculum for students at the middle school level (National Joint Committee on Learning Disabilities, 2008; Ness, 2007). To exhibit successful reading comprehension skills a student must move past what the text says to what the text means (Goldman, 2012). Moreover, reading textbooks and other curricula is essential to success in education in both primary and secondary grades. Once a student has reached middle school the reading material becomes increasingly more complex (Solis et al., 2012); thus students are expected to first learn to read and then, as they mature, read to learn (Goldman, 2012).

Furthermore, there are five characteristics a student should have in order to read across curriculums successfully (Goldman, 2012). They are first, to be actively engaged. Second, have the ability to explain concepts that were discussed throughout the text. Third, reflect upon what they are reading and offer self-explanation of the content. Fourth, use cues to understand the logic of the text, and fifth, to rely on many types of knowledge to help them improve (Goldman, 2012). These characteristics along with phonemic awareness and reading fluency are ways all readers can continue to improve their reading comprehension abilities (Goldman, 2012; Malmgren & Trezek, 2009; Rasinski, 2012; Walczyk & Griffith-Ross, 2007).

The students who begin to struggle with any of the literacy skills mentioned previously are typically those whose grades begin to decline. Struggling readers are students who are unable to acquire adequate literacy skills due to a learning disability or another contributing factor impeding their progress (Berkeley et al., 2010; Solis et al., 2012). Adequate reading comprehension skills are imperative for both formal education and lifelong learning.

Reading Comprehension and Students with Disabilities

Students with disabilities often struggle with developing reading skills (Berkeley et al., 2010). In order to be considered a student with a disability and receive special education services a student must fit the criteria outlined in the federal law, Individuals with Disabilities Education Act (IDEA, 2004). There are 13 different categories of disabilities under IDEA (2004) with disabilities ranging from a mild learning disability (LD), severe intellectual disability (ID), or speech and language impairment (SLI). An example of a student with a learning disability is a student who suffers from a processing disorder, such as visual or auditory.

Additionally, students who qualify for special education services are typically unable to meet the academic requirements of the state approved grade level standards (IDEA, 2004).

Students with disabilities are a demographic that requires attention in our education system. For example, findings from the 2013 National Assessment of Educational Progress (NAEP) reading assessment, 62% of eighth grade students with a disability read at a below basic level (National Center for Education Statistics, 2013). In stark contrast, only 19% of their nondisabled counterparts were considered to be reading at a below basic level (National Center for Education Statistics, 2013). There is an increasing need to help struggling readers with disabilities reach a basic reading level before they reach high school. As a result of the low achievement rates, students with disabilities are two times more likely to drop out of high school than the general education population (Blackorby & Wagner, 1996).

According to the National Joint Committee on Learning Disabilities (NJCLD, 2010) there are many factors that can contribute to the lack of reading development in students with LD. Students with LD are often susceptible to receptive and expressive oral language deficits as well as neurological deficits, such as auditory processing (Berkeley et al., 2010; NJCLD, 2010). As a result, students with LD struggle to have a literal understanding of the text, identify specific aspects of the text, make simple inferences, and draw conclusions based on text evidence (NJCLD, 2010). Other factors influencing LD students' struggles in reading include: not using background knowledge appropriately, a lack of vocabulary development and common text structures, passive reading, and poor reading fluency (Berkeley et al., 2010). As students with LD transition from elementary school to middle school and then on to high school, there are increased expectations for greater: output within a more restricted time limit, complexity of assignments, and demand of working memory for problem solving (NJCLD, 2010). Due to these struggles students with disabilities are unable to progress in reading at the same rate as their non-disabled peers.

Many students in special education are also English Language Learners (ELLs; Sullivan, 2011). This is significant because there is much debate as to whether an ELL student has a language issue or a learning issue (McCardle, Mele-McCarthy, Cutting, Leos, & D'Emilio, 2005; Nguyen, 2012; Sullivan, 2011). The ELL population represented in special education from 1987 to 2002 has risen from 3.3% to 14.2% (McCardle et al., 2005). This jump in numbers could be due to several factors. For example, ELLs do not have as many opportunities for cultural and linguistic experiences compared to their native English-speaking peers (Nguyen, 2012). As a result, they have a limited vocabulary and less exposure to hearing and speaking English (Nguyen, 2012). For these reasons, many ELL students are placed in special education erroneously. This group of students is typically represented in special education under SLI and LD (Nguyen, 2012; Sullivan, 2011). Because of the increase in ELLs and students with special education services there have been many experimental research studies conducted to determine the best strategies and instructions to improve reading comprehension for both students with disabilities and ELLs (Berkeley et al., 2010; Hock, Brasseaur-Hock, A. Hock, & Duvel, 2015; Ness, 2007; Nguyen, 2012; Solis et al., 2012).

Evidence Based Reading Strategies and Instruction

In order to improve reading comprehension, best practices suggest that in addition to the use of reading strategies classroom lessons should include teacher modeling, guided practice, and independent practice (Berkeley et al., 2011; Malmgren & Trezek, 2009). Specifically, the teacher should demonstrate the task during the teacher-modeling portion of the lesson. Next, the teacher provides the necessary scaffolding for the guided practice section allowing students to begin to evaluate their own skills (Berkeley et al., 2011). Finally, independent practice allows each student to demonstrate the degree to which they have learned the skill with minimal support

(Berkeley et al., 2011). By using lessons that contain these three components of teacher modeling, guided practice, and independent practice students have the best chance of developing new skills needed for improving reading comprehension.

Although learning disabilities can make developing adequate and proficient reading comprehension skills difficult, there are many studies devoted to determining best practices for improvement (Berkeley et al., 2011; Berkeley et al., 2010; Calhoon, 2005; Hock et al., 2015; Nguyen 2012; Solis et al., 2012). One of these best practices is the use of cognitive learning strategies focused on reading. Cognitive learning strategies are procedures that allow a student to learn to problem solve and independently complete tasks by becoming actively engaged in their own learning (Berkeley et al., 2010). Two examples of these strategies include activating prior knowledge and self-monitoring (Berkeley et al., 2010; Solis et al., 2012). Activating prior knowledge is when a student references information he or she has previously learned about a particular topic. When a student has interest or knowledge about a topic it is shown to increase his or her motivation to read successfully (Guthrie, Wigfield, VoSecker, & Pressley, 2000). Further, activating background knowledge allows students to form a coherent and organized representation of the text within their mind (Taboada, Tonks, Wigfield, & Guthrie, 2009).

An additional cognitive strategy is self-monitoring. Self-monitoring is when an individual can ascertain whether or not a target behavior has been achieved (Solis et al., 2012). For example, when learning to summarize a passage the teacher can distribute a card with the steps required to write a meaningful summary, then the student checks off each step as it is completed (Solis et al., 2012). These strategies alone will not result in large growth in reading, but when coupled with multiple reading strategies growth can be achieved (Berkeley et al., 2010; Solis et al., 2012).

There are many different strategies (e.g., summarization, making inferences, identifying main idea and details) outlined in the research that contribute to improved reading comprehension for students with disabilities (Berkeley et al., 2010; Goldman, 2012; Hock et al., 2015; Solis et al., 2012). For students with disabilities summarizing text, identifying the main idea and details, and making inferences are strategies that are proven to increase reading comprehension ability (Berkeley et al., 2010; Guthrie, McRae & Klauda, 2007; Hock et al., 2015; Ness, 2007; Solis et al., 2012). Summarization is the ability to select the most important points made in a text and paraphrase them in different words (Goldman, 2012; Hock et al., 2015; Solis et al., 2012). Summarization and identifying main idea and detail are skills that are intertwined (Solis et al., 2012). For example, in order to summarize the important information from a text the student must be able to identify the main idea and supporting details. Identifying the main idea and details in a text requires students to be able to identify the overall theme and the details that support the theme (Solis et al., 2015; Steven, Slavish, & Farnish, 1991). Another reading strategy that can improve student comprehension is the ability to make inferences. Making inferences is similar to making predictions and being able to connect the content of a text to what a student understands about common sense and general reasoning (Goldman, 2012). Research suggests that developing these reading strategies will result in the improvement of reading comprehension for students with disabilities (Guthrie et al., 2009; Hock et al., 2015; Malmgren & Trezek, 2009; Solis et al., 2012).

Read 180® Intervention Program

Using the supplemental strategies listed above may not be sufficient to meet the literacy needs of students with disabilities. Therefore, comprehensive reading programs that address the five components of reading as outlined by NRP for students with disabilities are necessary

(Malmgren & Trezek, 2009). One example of such a program is Read 180® Next Generation. This reading program was designed for struggling readers with a focus on fourth through twelfth grade students in special education and on ELLs (Houghton Mifflin Harcourt, 2015). Read 180® incorporates direct instruction, teacher modeling, guided practice, and independent practice into its lessons. Additionally, it has many reading comprehension skill building techniques and strategies embedded into the program (e.g., read for detail, summarization, sequence of events).

The Read 180® program recommends an extended period of the school day, approximately 90-100 minutes each day for a minimum of four days a week for best results (Houghton Mifflin Harcourt, 2015; Whitford, 2011). According to Houghton Mifflin Harcourt (HMH; 2015), each lesson begins with whole group instruction, a time when all students are receiving instruction together. Whole group instruction is then followed by three rotations of small group instruction where students are broken up into three small groups according to their reading lexile score.

The lexile score is determined by the Reading Inventory (RI) that is part of the software component of Read 180® (Scholastic Inc., 2014). The RI is the measure used in the Read 180® program to determine the lexile level of each student. It was released in 2014 and consists of two subtests woven together; one of foundational reading skills and the other reading comprehension skills (HMH, 2015). The RI allows a personalized path through the student software application. The teacher is able to utilize the information gained from the RI in the form of differentiated instruction. The information gathered by the RI drives the entire program.

Each group visits the three stations for 20-25 minutes each. One station is small group that is teacher-led. Another station is the software; during this time, students practice their comprehension, spelling, writing, and reading fluency skills on the Read 180® software. The last

station is the independent reading group at which students read lexile level appropriate texts and further develop their decoding and reading fluency skills. This station gives them opportunity to practice self-monitoring and self-questioning skills independently. Read 180® comes with its own set of consumable student manuals containing each day's lesson.

The peer-reviewed research that has been conducted to measure the effectiveness of the Read 180® Program is lacking and inconclusive. Scholastic and HMH have conducted a substantial amount of research on the effectiveness of Read 180® (HMH, 2015). Of the 40 studies presented by HMH (2015) only seven target middle school students with disabilities. All seven studies show reading improvement for students with disabilities, but not all seven studies identify which category of disabilities is included. In contrast, What Works Clearinghouse (WWC, 2010) reported that of 56 studies using Read 180® conducted between 1989 and 2009, there were none that fell within the scope for students with disabilities and met their evidence standards.

Teja (2014) conducted a study to determine the effectiveness of Read 180® on oral reading fluency, linguistic comprehension, and reading comprehension for students with disabilities at the secondary level. Results indicated that for the sample of 10 ninth grade students with disabilities there was no statistical improvement in their reading comprehension scores over the 14-week intervention period (Teja, 2014). Although this was a small sample size, the results are in contrast to what the founders of Read 180® have reported. There is potential for conflict of interest on the part of HMH for conducting research on the effectiveness of a program they sell and distribute. Thus, there is a need for research from third parties to measure the impact of Read 180® as an effective comprehensive reading program for students with disabilities.

The absence of research that targets both students with disabilities and reading comprehension improvement at the middle school level is troubling. Read 180® is an expensive comprehensive reading program that is purchased by school districts to bridge the literacy gap between students with disabilities and their non-disabled peers. School districts have limited resources and should be able to purchase a reading program that research has shown to be effective. This is imperative for the well-being and welfare of both students and teachers.

The research put forth by HMH suggests that Read 180® is an effective reading program as it is outlined and does not require outside strategies incorporated in order for students to increase their reading comprehension (HMH, 2015). This study will add 20 minutes a day of instruction on top of the 90 minute Read 180® model. The additional instruction will use outside sources on the following strategies: identifying main idea and detail, summarization, making inferences, and multi-strategies. The purpose of the current study is to determine if this intervention will result in higher comprehension improvements for students with disabilities at the middle school level as measured by the Read 180® RI.

Method

Research Question

Does direct reading strategy instruction improve reading comprehension when paired with the Read180® program for students with disabilities at the middle school level?

Hypothesis

Based upon the research (Berkeley et al., 2011; Calhoon, 2005; Guthrie et al., 2009; Solis et al., 2012), the hypothesis is the progress made by the students receiving the direct reading strategy instruction will improve their reading comprehension skills according to the Read 180® RI measure.

Research Design

The research design for this study was a quantitative quasi-experimental design a control group and a treatment group. The treatment group received up to 20 minutes of direct explicit instruction in the form of five mini-lessons each week. These mini lessons focused on using direct reading strategies (e.g., identifying main idea and detail, making inferences, summarization) and were used in conjunction with the Read 180® program (Berkeley et al., 2011; Hock et al., 2015). The control group received the Read 180® program with no alterations. The study consisted of a pretest and posttest using the Read 180® RI to measure student progress in reading comprehension.

Independent variable. The independent variable in this study was the direct reading instruction intervention. The treatment group was the participants in the first double period of Read 180® each day receiving the reading intervention mini-lessons along with the Read 180® program. This group of participants also received reading strategy instruction that is not part of the Read 180® program. The reading strategy instruction they received included identifying main idea and supporting details, summarization, making inferences, and the use of multi-strategies (e.g., compare and contrast, cause and effect; Guthrie et al., 2009; Solis et al., 2012). The teacher used credible sources from readworks.org and newsela.com for the reading passages used in the mini lessons. Each week the strategy changed. These strategies were taught and reviewed regularly during this study. At the end of the study the both groups took the same RI as a posttest to determine growth in student reading comprehension skills.

Dependent variable. The dependent variable in this study was the improvement of student reading comprehension as operationalized by the Read 180® RI (Scholastic Inc., 2014).

Both groups took the RI as a pretest to assess current reading lexile level. At the end of the study

students took the RI again as a posttest to evaluate growth.

Setting & Participants

This study took place in a rural community in central California. The school district was

comprised of six elementary schools and two middle schools that include grades six through

eight. This study was conducted at one of the middle schools in a special education resource

classroom. The sample for this study was chosen using convenience random sampling. The

participants in this study included approximately 28 male and female middle school students

ranging from sixth to eighth grade. All the participants involved in this study had a disability

(e.g., learning disability, speech and language impairment) that qualified them for special

education and were placed in the Read 180® program because they had been identified as

requiring extra support in the areas of reading comprehension and written expression. Although

the disabilities vary amongst the individual participants, all students have demonstrated

difficulties with reading comprehension and required additional services through their

Individualized Education Program (IEP). Finally, of the 28 participants 19 were classified as

ELLs.

Treatment Group. The treatment group consisted of 15 participants that were randomly

selected. Of the 15 participants, 10 were ELLs, 5 were female, and 10 were male. All

participants were receiving special education services. There were four sixth-grade students, six

seventh-grade students, and five eighth-grade students in the treatment group.

Control Group. The control group consisted of 13 participants. Of the 13 participants,

9 were ELLs, 5 were female, and 8 were male. All participants received special education due to

a disability that falls under a category outlined in IDEA (2004). There were no sixth-grade

students in the control group. There were nine seventh-grade students and four eighth-grade students in the control group.

Measures

The measure used to determine student comprehension was the Read 180® RI assessment that is included in the Read 180® program (Scholastic Inc., 2014) to assess lexile level. Each lexile score indicates the reading comprehension ability level for the individual student. The RI is taken on the Read 180® software component that requires a computer and internet access. All students took the RI before the intervention phase (i.e., pretest). Then, all students took the same RI after the intervention (i.e., posttest). The reading lexile scores from both the pretest and the posttest were evaluated to measure student progress and improvement on reading comprehension. The RI consists of reading passages with one question per passage (see Appendix A). The question is a cloze statement about the passage with four word options to input into the sentence. The number of passages per RI varies with each student. The more correct answers, the more passages a student will read. Because the RI is taken on computer software it is able to change according to the student's comprehension level. The RI typically takes a student between 15 and 30 minutes to complete.

Validity. The Read 180® RI is a criterion-referenced test that is designed to measure reading comprehension. The RI gives a scale score as a lexile level. The lexile framework was developed to estimate the difficulty of an item in reference to reading ability (Scholastic Inc., 2014). The Scholastic team compared the RI to 21 standardized reading and achievement tests across the Unites States to ensure validity (Scholastic Inc., 2014).

Reliability. The RI is a unique reading assessment because it is interactive and changes the complexity of each question based on a previous answer. The RI is computer based and all

scoring is done through the software ensuring high reliability (Scholastic Inc., 2014). The RI

assessment has been shown to be highly reliable across multiple studies (Scholastic Inc., 2014).

Intervention

Read 180® is a reading intervention program designed by the Scholastic Corporation

(HMH, 2015). Read 180® was designed to help struggling readers develop their decoding,

vocabulary, and comprehension skills. Read 180® can be implemented in a variety of ways with

three different models to use. The setting of this study used the double period model. The

students were in the Read 180® program for two consecutive periods each day. The control

group received Read 180® instruction as outlined.

The intervention for this study consisted of additional direct reading strategy instruction

on top of the 90-minute Read 180® model. The treatment group received Read 180® instruction

and the reading strategy instruction in the form of 20-minute mini-lessons. The intervention

focused on multiple reading strategies (e.g., main idea and details, summarization, and making

inferences) throughout the study. These mini-lessons used direct instruction, guided practice,

and independent practice throughout the week in order to allow student learning (Berkeley et al.,

2011).

Procedures

The treatment group received up to 20 minutes daily of direct instruction on a

predetermined reading strategy in the form of a mini-lesson for five consecutive weeks. At the

beginning of each class instead of following the Read 180® whole group lesson plan, the

treatment group received 20 minutes of instruction on a reading strategy. Each week, within the

five-week intervention, targeted a different reading strategy: 1) identifying main idea and details;

2) summarizing; 3) making inferences; 4) using multi-strategies; and 5) reviewing all strategies.

Weeks one through four followed the same structure from week to week with a different reading strategy. Specifically, the weekly implementation of each reading strategy began with the teacher modeling how each skill is performed. The next day, students read the passage and began developing their skills in the targeted reading strategy. On the third day, the teacher engaged in modeling and guided practice, whereas the fourth day began with guided practice and transitioned into independent practice. On the last day of the week, students worked independently to read a passage using that week's strategy. Week five incorporated all reading strategies from the previous four weeks. One mini-lesson per strategy was reviewed each day. At the end of week five all students (i.e., treatment and control group) took the posttest to determine if their reading comprehension skills improved.

Data Collection. The data was collected during the pretest and posttest. Before the intervention began all students took the Read 180® RI on the same day to determine their lexile level. This gave the researcher a baseline of student ability. After the intervention had taken place the same RI was given to all participants. There was no data collected during the intervention. Once the pretest and posttest were administered the lexile level of each student was examined and compared to determine if there was any growth in reading comprehension (Scholastic Inc., 2014).

Fidelity. To ensure fidelity to intervention there was a second observer in the form of an instructional aide present in class everyday during Read 180®. This instructional aide observed and ensured that the intervention was occurring correctly and consistently and was not occurring with the control group. Thus, the implementation of the intervention of this study was 100% (see Appendix B).

Ethical Considerations

There was little risk involved in this study. Student confidentiality was maintained by using student numbers instead of student names. The treatment group received more intensive lessons to improve their comprehension skills, however they did not miss other curricular content. All participants, control and treatment, continued to receive interventions that were commensurate with recommendations in their IEP.

Validity Threats. There were validity threats that could have occurred during this study. One was the absence of some of the students. If a student missed too many class periods out of the study it could have impacted their test scores. Student attendance was monitored and if a student missed more than one lesson per week they were considered for dismissal from the study. Another threat was that many students could have had test anxiety and were not able to perform to their best ability when told they were to take a test. Test anxiety could have also had a negative impact on student scores making it difficult to evaluate their achievement with accuracy. The students had a quiet test environment with little to no distractions that could have helped with test anxiety. Researcher bias was also a threat to validity because the researcher was familiar with the participants and had a positive relationship that could have affected student outcomes. The researcher put forth extra effort to focus on the data rather than the individual student.

Data Analyses

All data were entered into the Statistical Package for Social Sciences® (SPSS®) for Windows, version 24.0.0 (SPSS, 2016). No names or identifying information was included in the data analysis. Before analyses were conducted all data were cleaned to ensure no outliers

were present (Dimitrov, 2012). After cleaning the data, the final sample size was 28 participants; 15 for the treatment group and 13 for the control group. Independent (control and treatment groups) and paired (pretest and posttest) sample t-tests were conducted to determine the significant difference in reading comprehension between the two mean scores on the Read 180® RI measure. Further, before interpreting the analytical output, Levene's Homogeneity of Variance was examined to see if the assumption of equivalence had been violated (Levene, 1960). If Levene's Homogeneity of Variance was not violated (i.e., the variances were equal across groups), data were interpreted for the assumption of equivalence; however, if the variances were not equal across groups the corrected output will be used for interpretation.

Results

Two independent samples t-tests were conducted on the whole sample ($n = 28$) for both the pre and post assessment scores. Results for the pretest indicated that Levene's Homogeneity of Variance was not violated ($p > .05$), meaning the variance between groups was not statistically different and no correction was needed, and the t-test showed significant differences between the mean scores on the pretests between the two groups $t(26) = -2.54, p < .05$. These data demonstrate that both the treatment and the control groups had variation on the pretest; with the control group having a higher lexile level than the treatment group (see Table 1). Although this was not ideal, the two groups were still considered comparable based on demographics and because lexile levels tend to differ widely from student to student.

Results for the posttest indicated Levene's Homogeneity of Variance was not violated ($p > .05$), meaning the variance between groups was not statistically different and no correction was needed. The t-test showed significant differences between the mean scores on the posttests between the two groups $t(26) = -3.09, p < .05$. These data indicate that both the treatment group

and the control group had some variation when compared to each other. The mean of the

posttest indicates that the control group had a higher lexile level than the treatment group (see

Table 1). Thus, the treatment and control group means were statistically significantly different

for both the pretest and posttest. However, since the mean of the control group was higher than

the treatment group, the researcher's hypothesis was only partially accepted.

Table 1

Results of Independent Samples T-Tests

	Mean	SD
Pre Test		
Treatment	622.00	103.44
Control	731.38	124.14
Post Test		
Treatment	634.87	81.83
Control	750.38	115.02

Note. SD = Standard Deviation.

After determining the differences between pre and post assessment scores between

groups, two paired t-tests were run for both groups (i.e., treatment and control) to determine if

participants mean scores from pre to post were significantly different within each group (see

Table 2). Results for each group were as follows: treatment group, $t(14) = -.88$, $p > .05$; control

group, $t(12) = -1.51$, $p > .05$, therefore both groups did not have statistically significantly

different means from pretest to posttest. The negative t-value for each group indicates that both

the treatment and control groups increased their reading lexile level from pretest to posttest.

Interestingly, the growth in mean for the control group was greater than the treatment group,

implying that the intervention did not solely contribute to an improvement in reading

comprehension (see Table 2).

The hypothesis that progress made by the students receiving the direct reading strategy instruction would improve their reading comprehension skills was only partially supported, since both groups increased their scores. Further, the treatment group had a decrease in standard deviation of 21.62 points whereas the control group only decreased the standard deviation 9.13 points; thus, the treatment group scores were less varied and clustered closer to the mean. Therefore, even though the hypothesis was only partially supported, the treatment group did have scores that were more consistently centered around the mean; offering some evidence that the intervention was successful at producing more reliable data and more consistency across participants.

Table 2

Results of Paired T-Tests

	Mean	SD
Treatment Group		
Pre	622.00	103.45
Post	634.87	81.83
Control Group		
Pre	731.38	124.15
Post	750.38	115.02

Note. SD = Standard Deviation.

Discussion

The purpose of this study was to determine if adding 20 minute mini-lessons of direct reading strategy instruction (e.g., identifying main idea and detail, summarization, making inferences) in addition to the Read 180® comprehensive reading program for five weeks would improve reading comprehension in middle school special education students as measured by the Read 180® RI. There were 28 participants in this study who were placed in special education

due to a disability. The treatment group included 15 participants and the control group had 13

participants. All participants had reading difficulties and were in the Read 180® program in an

effort to improve their literacy skills.

According to the National Reading Panel (NRP, 2000) reading comprehension is one of

the five components necessary for the development of literacy skills. Thus, when a student

begins to fall behind in the development of their literacy skills it can affect their education as

they progress to more advanced curriculum (NJCLD, 2010). The results of this study indicated

that the there was no statistically significant benefit to adding 20-minute mini-lessons of direct

reading strategy instruction to the Read 180® program. Though both groups increased in their

reading lexile ability, the control group made the most growth, thus not fully supporting the

hypothesis that adding direct reading strategy instruction to the Read 180® program will result in

increased reading comprehension skills according to the Read 180® RI measure.

Both the treatment group and the control group increased their average reading lexile

score from pretest to posttest according to the Read 180® RI. These results support the claims of

Houghton Mifflin Harcourt that the Read 180® program is an effective program for students with

disabilities (HMH, 2015). Upon further examination of the results the posttest scores are

practically significant even though they are not statistically significant. In particular, the

treatment group's mean lexile score was 634.87 with a standard deviation of 81.83. Their mean

lexile score increased by 12.87 points from the pretest to posttest indicating there was growth

within the duration of the study. Additionally, the 21.61 point decrease in standard deviation for

the treatment group demonstrates that their scores were much more consistent and had less

variability between students. Therefore, although students in the treatment group did not score

statistically significantly higher on the posttest, this group was able to perform more consistently

across students (i.e., lower SD). This partially supports the hypothesis because students' scores

did increase and overall the group was able to score more consistently around the mean; however,

neither of these changes were statistically meaningful.

The control group posttest mean lexile score was 750.38 with a standard deviation of

115.02. The mean lexile score for the control group increased from the pretest by 19 points. The

standard deviation also decreased by 9.12 points narrowing the range of ability similar to the

treatment group. When comparing the mean lexile scores of the treatment group to the control

group, the control group had the greater increase in reading lexile levels; however, they still had

scores that were highly variable and spread out around the mean (i.e., high SD).

One explanation for the higher decrease in the standard deviation for the treatment group

could be that there were many individual students who did benefit from the direct reading

strategy instruction as suggested by research (Guthrie et al., 2009; Hock et al., 2015; Malmgren

& Trezek, 2009; Solis et al., 2012). The treatment group decreased the standard deviation twice

as much as the control group. The intervention was effective in narrowing the range of lexile

scores for this population, indicating that direct reading strategy instruction is effective in

improving reading comprehension skills for students with disabilities (Berkeley, 2010; Goldman,

2012; Hock et al., 2015).

It is important to remember that Read 180® has many direct reading strategies embedded

into the program. Although the control group did not receive the additional reading strategy

instruction intervention they did receive the reading strategy instruction included in Read 180®.

Because Read 180® is a comprehensive reading program, it has components that address all five

categories recommended by the National Reading Panel (2000). Thus, there was some overlap

between the Read 180® program and direct reading strategy instruction; which could have contributed to the control group's gains from pretest to posttest.

The results of this study suggest that the Read 180® program does not need additional instruction in direct reading strategies in order for students to experience growth in their reading comprehension skills. Both groups show growth in their reading comprehension; however, the control group experienced a higher level of growth. Thus, this study confirms that the reading strategies that have been included in Read 180® are sufficient for growth in student reading comprehension. A possible explanation for this result is that by adding the 20-minute mini-lessons to Read 180® many students may have become overwhelmed with the extra material. Read 180® already has many reading components embedded into the program (HMH, 2015) and by adding an additional component students may have become overwhelmed with the increase in work expected. The scope of this study was very limited and there were certain elements that should be considered for future studies.

Limitations & Future Studies

There were three limitations that should be discussed for future studies. First, the sample size for this study was very small and future studies should contain more participants in order to generalize the findings to a broader population. Second, reading comprehension is a skill that can take time to develop, five weeks may not be a sufficient amount of time to allow true growth in reading comprehension. Therefore, future studies should have a longer intervention period allowing more time for students to develop the desired skills. Lastly, 20 minutes may not be a sufficient amount of time to teach a reading strategy to the special education and ELL population. Because students with disabilities who are also ELLs tend to learn at a slower pace, more time may be warranted for the teaching and learning of a new skill. Future studies should take extra

time when introducing new reading strategies to slower learners. Addressing these limitations in future studies would allow a more accurate evaluation of the effectiveness of the Read 180® program on reading comprehension skills and could provide more generalizable results.

In conclusion, this study demonstrated positive results regarding the effectiveness of the Read 180® program on reading comprehension. Both the treatment group and the control group made positive progress on their reading comprehension skills. The intervention of adding direct reading strategy instruction did not statistically significantly improve the reading lexile of the treatment group. Although growth was experienced by both groups, further investigation into the Read 180® program as a means of improving reading comprehension may be beneficial for future analysis, particularly in regards to special education students and ELLs.

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Appendix A

Sample questions from the Read 180® Reading Inventory.

I went out to see why he was barking and you know what? That old dog was in a mud puddle. He's so old that when he went to drink some rain water from the puddle, he got stuck in it. I laughed and laughed.

The dog was _____.

- loud
- lost
- pretty
- funny

Once it was hard for people to travel through the Amazon rain forest. So Brazil built a long road to help travelers. The road is called the Trans-Amazon highway. It crosses through the huge rain forest.

The road makes traveling _____.

- dirtier
- friendlier
- easier
- slower

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A coral has a mouth at the top end of its body. A coral's body is shaped like a tube. A coral uses its tentacles to catch food. The tentacles can sting prey. Small arms grow around a coral's mouth. The arms are called tentacles. Tiny plants called algae live inside a coral. The algae make food for the coral. A coral eats small sea animals that float in the water. It also eats small fish.

Algae help to feed coral.

feed

carry

remove

wash

Appendix B

Fidelity Checklist

Date	Treatment/Control	Signature/Initial
Tuesday February 28, 2017	Treatment	
Thursday March 2, 2017	Control	
Monday March 6, 2017	Treatment	
Friday March 10, 2017	Control	
Tuesday March 14, 2017	Treatment	
Thursday March 16, 2017	Control	
Monday March 20, 2017	Treatment	
Thursday March 23, 2017	Control	
Tuesday March 28, 2017	Treatment	
Thursday March 29, 2017	Control	