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Using Reciprocal Teaching Strategies to Improve Reading Comprehension For English as a Second Language Students With Learning Disabilities

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USING RECIPROCAL TEACHING STRATEGIES TO IMPROVE READING

COMPREHENSION FOR ENGLISH AS A SECOND LANGUAGE STUDENTS WITH

LEARNING DISABILITIES

by

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ABSTRACT

USING RECIPROCAL TEACHING STRATEGIES TO IMPROVE READING COMPREHENSION FOR ENGLISH AS A SECOND LANGUAGE STUDENTS WITH LEARNING DISABILITIES

Hana M. Almohamadi
Old Dominion University, 2023
Director: Dr. Peggy Hester

Students who have problems comprehending textual material tend to experience failing grades, peer rejection, and even social isolation. Furthermore, students with poor reading comprehension demonstrate poor academic performance in all subjects, not due to difficulty in learning specific subject content (i.e., math, history, etc.), but rather their inability to comprehend reading passages related to that subject knowledge. Reciprocal teaching (RT) is an effective tool for teaching children with Learning Disabilities (LD) to improve their reading comprehension abilities. These multiple cognitive strategies can meet the needs of many students in terms of more deliberate, directed, and self-regulated learning through students' interaction with reading texts. Still, gaps in the research warrant further investigation as many studies on this topic were published over 20 years ago. Additionally, most studies that looked at reciprocal teaching strategies have not investigated the impact of these strategies with English as a Second Language (ESL) students with LD. This research study investigated the effectiveness of using RT for a group of ESL students with LD and reading comprehension delays for whom English is a second language. A multiple-probe design across three different types of reading texts was used to assess the effectiveness of the RT interventions.

I dedicate my dissertation to my family, friends, and parents, who instilled in me a strong sense of discipline from a young age and provided unwavering support during my postgraduate studies. I now dedicate my dissertation to the educators and practitioners who actively tackle students' problematic behaviors and lack of academic interest.

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This work is a dedication to my wonderful boys. Because of you, I am now much more powerful, capable, and content than I could have ever dreamed possible. Furthermore, I would like to express my heartfelt gratitude to my parents for their unwavering support and encouragement during my journey to pursue my graduate degree. Additionally, I extend my

appreciation to my friends, brothers, and husband for their invaluable assistance and encouragement. I would like to extend my dedication in this dissertation to the educators and practitioners who provide valuable assistance to kids experiencing challenges in reading.

I would like to take this opportunity to once again convey my heartfelt gratitude to the members of the committee, namely Dr. Peggy P. Hester, Dr. Jonna L. Bobzien, Dr. Lisa Morin, and Dr. Kimberly A. Murphy, for their support and help. The doors to their office were always open, and they responded to all of my inquiries and concerns throughout the whole process of writing my dissertation.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure   Page

CHAPTER I

INTRODUCTION

Reading comprehension is one of the essential skills that students need to demonstrate to show academic progress and mastery of the school curriculum (Okkinga et al., 2018; Burns et al. 2017). Despite the critical role that reading plays in a student's education, poor reading comprehension is widespread across the United States (Begeny et. al., 2009). Students with a learning disability (LD) often struggle with reading comprehension more than other students without LD (Gardill & Jitendra, 1999; Therrien & Hughes, 2008; Therrien et al., 2006). Reading comprehension is a focused process—one in which the reader can extract and obtain meaning from a given text for a specific purpose (Botsas, 2017). It is the ability to decode words and understand how those words are used in passages while following predefined rules (Gardill & Jitendra, 1999). The areas in which students with LD find challenges are the text structure of stories and the text structure of expository writing; this can negatively impact their ability to acquire reading comprehension skills (Berkeley et al., 2010). Therefore, researchers and teachers have developed strategies to support students with LD to gain reading comprehension skills while considering such students' disabilities (Berkeley et al., 2010).

Learning Disability

From 2016 to 2018, 13.8% of children in America, whose ages ranged between 3 and 17-years, were diagnosed with either a learning disability (LD) or attention-deficit/hyperactivity disorder (ADHD; Zablotsky & Alford, 2020). Furthermore, Altarac and Saroha (2007) indicated that learning disabilities affect about one in ten persons overall. The term LD includes delays or difficulty with listening, thinking, speaking, reading, writing, spelling, and/or completing

mathematical calculations due to a disturbance in one or more of the basic psychological processes that affect the understanding, or use of, spoken or written language (Pullen, 2016). Reading difficulties, written language disabilities, and mathematics disabilities are the prime types of learning difficulties (Handler & Fierson, 2011). Moreover, these students may encounter problems in self-regulatory behaviors, social interaction, social perception, and motor coordination (Handler & Fierson, 2011). The symptoms of learning disabilities can occur alone or with a different combination of these symptoms, and the severity of these difficulties can vary from mild to severe (Shapiro & Gallico, 1993). However, reading disabilities are the most common type of LD since reading is dependent on language skills, such as decoding, reading comprehension, recall, spelling, writing, and speech (Chard et al., 2009; Handler & Fierson, 2011).

Language Skills in Reading

Reading is a multifaceted and cognitive process that involves a systematic set of endeavors to be performed by the reader to comprehend and infer the meaning of printed texts (Gorsuch & Taguchi, 2010). As a result, most studies agree that crucial components of early reading instruction should target phonics, phonemic awareness, fluency, comprehension, and computer technology (Begeny et al., 2009; Therrien & Hughes, 2008). Consequently, "Reading difficulties often continue past third grade when students are expected to make the transition from learning to read to reading to learn" (Therrien et al., 2012, p. 309). This is also true for students with learning disabilities, who often find it difficult to acquire basic academic skills (e.g., reading) and other skills such as organizational/study skills (Dexter & Hughes, 2011). These students' difficulties include collecting main ideas, ignoring distracting information, identifying supporting details, connecting prior knowledge with new knowledge, building

effective problem-solving strategies, and expecting conclusions (Dexter & Hughes, 2011). The Gajria and colleagues (2007) study, together with another study (Paige, 2006), found that textbooks are often written at a higher level of reading ability than the student's grade level and can include new and difficult vocabulary. Therefore, as students with LD encounter more difficult and more advanced texts, their lack of comprehension skills becomes more apparent and negatively impacts their ability to excel at more complex tasks (Pedrotty et al., 1999).

Reading Comprehension

The term "reading comprehension" describes the comprehension, or understanding, of written text or messages, especially in young children (Botsas, 2017). Reading comprehension is an individual's ability to actively extract and construct meaning from a written text through understanding, analysis, and correct interpretation, according to the appropriate context (Rogde et al., 2019). Children with reading difficulties during their early years are less likely to succeed academically than those with good reading comprehension skills (Rogde et al., 2019). Intervention implementation programs are designed to help children with reading problems through instructional methods that focus on vocabulary development by having the students' read texts and listen to stories (Rogde et al., 2019). These programs help develop the children's grammatical and narrative development because they contain vocabulary and phrases in which the true meaning differs from the literal meaning (Alfassi, 1998). Reciprocal teaching, where the teacher models comprehension strategies; explains to the students where, when, and why to use these comprehension strategies; and then leaves them to act as instructors in modeling the techniques to other students, is one of the strategies that can help develop students' reading comprehension (Gilbert, 2018).

Reciprocal Teaching (RT) Strategy

The reciprocal teaching (RT) strategy was first developed by Palinscar and Brown

(1984) and was reported by Lysynchuk et al. (1990, p.469):

> "[RT is] a method of reading instruction designed to improve comprehension in children
>
> who can decode but who experience difficulty understanding text. RT also can be
>
> described as an instructional strategy based on modeling and guided practice that
>
> comprises the modeling of a set of reading comprehension skills by the instructor,
>
> followed by the instructor ceding responsibility for these instructions to the students."

Palinscar and Brown (1984) provided clear guidelines for an intervention designed for a small

group of students through the use of predicting, clarifying, questioning, and summarizing as the

foundation of knowledge acquisition. RT is comprised of three main factors: (a) the teaching and

learning of identified reading comprehension strategies; (b) the modeling of these

comprehension strategies with specifics on why, when, and where to use these strategies; (c) and

the ceding of responsibility to the student to know why, when, and where these strategies can be

applied, and to become a guide to other students (Greenway, 2002; Palinscar & Brown, 1984).

Study Rationale

Researchers have recommended using research-based strategies that focus on students'

individual needs to improve their reading comprehension skills. One strategy that can help to

develop students' reading comprehension is Reciprocal Teaching (RT), during which the teacher

models comprehension strategies, explains to the students where, when, and why to use these

comprehension strategies, and then supports the students in acting as instructors in modeling the

techniques to other students (Gilbert, 2018). RT strategies were first developed by Palinscar and

Brown (1984) and reported on by Lysynchuk and associates (1990) as a "method of reading

instruction designed to improve the comprehension of students who can decode, but who experience difficulty understanding text" (p. 469). Palinscar and Brown (1984) provided clear guidelines for the implementation of the RT intervention with a small group of students. Specifically, the RT intervention included the use of four specific RT strategies; questioning, clarifying, summarizing, and predicting as the foundations of knowledge acquisition. According to Takala (2006), RT is an effective tool for teaching children with LDs to improve their reading comprehension abilities. The reciprocal teaching strategies designed by Palinscar and Brown (1984) have been researched for over 35 years to improve students' reading comprehension skills (Gersten et al., 2001).

Unfortunately, most of the studies that have looked at reciprocal teaching strategies, in addition to those of Palinscar and Brown (1984) and Lysynchuk and colleagues (1990), have not investigated the impact of these strategies on students with learning disabilities. Given the small amount of research, there is a need to investigate the effectiveness of using RT for a group of students with learning problems (for example, students with learning disabilities, reading difficulties, or students with English as a second language (ESL). In many classrooms, children who are studying English as a second language (ESL) face significant challenges (Fung et al., 2003). Because of variations in background knowledge related to what is read in school and inadequate English language skills, these students often demonstrate greater issues with reading comprehension than proficient English speakers of equivalent aptitude (Klinger & Vaughn, 1996). Interventions that promote the development of cognitive and metacognitive processes for reading comprehension may provide an alternate method for improving the reading performance of ESL students (Fung et al., 2003). Though some students will see an increase in the use and generalization of reading comprehension skills without engaging in metacognitive strategies,

(Ledford & Gast, 2018), instructional strategies that target these processes often lead to greater improvements across subject areas (Ledford & Gast, 2018). For example, in a study by Bruce and Chan (1991), that assessed generalized effects across content, it was found that students delayed in reading comprehension by at least one year did begin to transfer intervention strategies during a training session to other types of reading materials with specific training. However, in this same study, participants with a reading comprehension delay of over a year and/or who were also diagnosed with an LD failed to generalize comprehension strategies. This points to the need for generalization training when working on comprehension skills with students with LD.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter reviews and discusses a variety of research studies that have investigated the efficacy of RT for helping elementary school students with reading comprehension delays. The findings of the literature review may also be used to identify areas where more research is needed.

Origins of RT Strategies

According to Rosenshine and Meister (1994), the use of RT strategies began in the late 1970s, with students receiving reading instruction that included the process of generating or summarizing questions. RT interventions were also used for teaching cognitive strategies for problem-solving in other subjects like mathematics, physics, and writing. RT falls under the category of cognitive strategy instruction, which can be defined as follows within the context of reading: (a) the emphasis is placed on instructing students in particular, concrete, comprehension-fostering strategies that they can apply to the reading of new text; and (b) this instruction takes place primarily within the context of a dialogue between the teacher and the students (Palincsar & Brown, 1984). Palincsar and Brown (1984) were the first to define RT, describing it as an instructional strategy based on modeling and guided practice that is designed to improve comprehension of children who can decode. The explanation of RT was further expanded by Palincsar and Brown (1984) who described it as an intervention that includes modeling of a set of reading comprehension skills by the instructor, followed by the instructor ceding responsibility for these instructions to the students. RT became a widely used reading comprehension intervention, being recognized as the third highest-impact method (overall effect

size of d = 0.74.) out of 49 teaching strategies, per the results of a meta-analysis of 38 worldwide research studies (Hattie, 2009).

According to studies on RT, students' understanding outcomes increased and their increased reading comprehension abilities transferred to other subject areas (Bruce & Chan, 1991; Kelly et al., 2010; LeFevre et al., 2003; Westera & Moore, 1995). Furthermore, RT may be used to help students improve their self-regulation skills, collaborative abilities, and leadership skills (Klingner & Vaughn, 1996; Lederer, 2000). It was also noted that the primary educational method used in all the research was the dialogue of RT (Bruce & Chan, 1991; Clarke et al., 2010; Gomaa, 2015; Kelly et al., 1994; LeFevre et al., 2003; Lederer, 2000), defined by Palincsar & Brown (1984) as "where the tutor and students take turns leading a dialogue centered on pertinent features of the text" (p. 117). In other words, when students take on the role of the instructor during small-group RT reading sessions, the strategy is successful in increasing reading comprehension (Bruce & Chan, 1991; Burns et al., 2017; Gomaa, 2015; Kelly et al., 2010; LeFevre et al., 2003; Lederer, 2000; Lysynchuk et al., 1990; Westera & Moore, 1995). Additionally, by using the strategies of summarizing, creating questions, clarifying, and forecasting, RT may assist students in learning how to lead group discussions (Palincsar & Brown, 1984). Klingner and Vaughn (1996) mentioned that teachers use the method of thinking out loud when modeling these four strategies in order to prepare students for self-organization; they become a guide to implement these strategies. Therefore, the use of RT as a strategy with narrative and expository texts can significantly improve the reading comprehension of students, especially when they are taught to self-regulate their learning (Botsas, 2017). Likewise, Palincsar and Brown (1984) posited the concept of using reciprocal teaching as an effective strategy for

meeting the requirements of students with strong decoding skills but poor comprehension, like many students with LD.

Children with LD struggle to catch up with their age mates in reading fluently and in their comprehension of simple texts. According to Takala (2006), RT is an effective tool for teaching children with LD to improve their reading comprehension ability. Numerous studies have been conducted to determine the benefits of reciprocal teaching (McAllum, 2014) with children with LD and many have found that it is an effective strategy (Lysynchuk et al., 1990; Palincsar & Brown, 1984; Rosenshine & Meister, 1994). Specifically, a majority of studies demonstrated the efficacy of RT in improving the overall reading comprehension ability among students with LD (Billingsley & Ferro–Almeida, 1993; Lederer, 2000), among students with LD and poor reading comprehension skills (Kelly et al., 1994; Lysynchuk et al., 1990; Westera & Moore, 1995), and among ESL students with LD and poor reading comprehension skills (Alfassi et al., 2009; Klingner & Vaughn, 1996; Okkinga et al., 2016; Schünemann et al., 2013).

Literature Search Procedures and Inclusion Criteria

The following databases were searched to identify the related literature: Scopus, Education Research Complete, ERIC, PsycINFO, and ProQuest—as well as the web-based academic search engine Google Scholar. The keywords used to identify studies were these: *reading comprehension, reciprocal teaching intervention, reciprocal teaching strategies, learning disabilities, reading difficulty, poor reading, poor comprehension, and English as second language.* By using combinations of these words, 56 articles were examined to determine whether they met the following inclusion and exclusion criteria.

Evaluation for Inclusion and Exclusion

All of the studies in this review met the following criteria: (a) peer-reviewed studies published between 1990 and 2023; (b) the use of RT to increase reading comprehension; (c) studies limited to single-case designs (SCD), experimental, or quasi-experimental; (d) articles that included students identified with LD, students who were poor readers, and/or students who were at risk for reading disability; (e) participants who were in elementary through high school; (f) studies that targeted reading comprehension as the dependent variable; and (h) studies that were published in English.

In contrast, the exclusion criteria were (a) studies that involved participants with disabilities besides, or in addition to, LD (e.g., autism, visual, and/or hearing impairments, or intellectual disability); (b) participants who were not in K-12 classroom settings; (c) non-English reading texts; (d) studies using technology-based RT; (e) studies published before 1990; and (f) dissertations, review articles, meta-analysis articles books, or chapters in a book.

Based on the inclusion and exclusion criteria, 12 research studies, published in eleven articles were identified for the review. Specifically, in 2003, LeFevre and colleagues published an article with two independent research studies; therefore, it was counted as two studies for this review (see Tables 1 and 2 for a summary of the reviewed empirical studies).

Overview of Research

Publication dates ranged from 1990 to 2021. The 12 reviewed studies included 487 student participants. Of those students, 154 were diagnosed with LDs and at risk of reading failure, 90 were considered to have poor reading comprehension, 153 had reading comprehension difficulties, 24 had difficulties in comprehension and decoding, and 66 were classified as reading disabled. All reviewed studies were conducted to determine the effectiveness of RT interventions for increasing reading comprehension skills for students with

LDs, or for those classified as at risk of reading failure. Six of the studies used single-subject

research designs (Bruce & Chan, 1991; Burns et al., 2017; Fung et. al., 2003; Kelly et al., 1994;

LeFevre et al., 2003a; LeFevre et al., 2003b). Of the remaining six studies, three used a pretest-

posttest experimental design (Gomaa, 2015; Lysynchuk et al., 1990; Westera & Moore, 1995),

one utilized a mixed-design multivariate analysis of variance with two group factors (Lederer,

2000), and two used a randomized controlled trial with participants (Clarke et al., 2010; Klingner

& Vaughn, 1996).

The eligibility criteria of this review included participants attending either elementary

school (Bruce & Chan, 1991; Clarke et al., 2010; Gomaa, 2015; Kelly et al., 1994; Lederer,

2000; LeFevre et al., 2003a; LeFevre et al., 2003b), middle school (Burns et al., 2017; Fung et

al., 2003; Klingner & Vaughn, 1996), high school (Westera & Moore, 1995), or a combination of

elementary and middle schools (Lysynchuk et al., 1990). The authors used different instructional

settings, sample sizes, and persons who administered the RT intervention. Eleven of the 12

studies implemented the intervention with small groups of students, which varied from two to

seven students (Bruce & Chan, 1991; Burns et al., 2017; Fung, Wilkinson, & Moore, 2003;

Gomaa, 2015; Kelly et al., 2010; Klingner & Vaughn, 1996; LeFevre et al., 2003a; LeFevre et

al., 2003b; Lederer, 2000; Lysynchuk et al., 1990; Westera & Moore, 1995). Only one study

used a large group with 46 students (Clarke et al., 2010).

Evidence-based practices. There was ample empirical evidence from this literature

review to suggest the usefulness of reciprocal teaching in improving comprehension. The

specific effects of RT with students varied because the studies focused on different student skills

and approached the RT strategy differently. One study out of the 12 applied the sequence and

content of instructions proposed by Palinscar and Brown (1984) by teaching identified RT

strategies (modeling those strategies with specifics on why, when, and where to use them and providing guided and independent practice; Lysynchuk et al., 1990). Seven of the studies applied the sequence and content of instructions proposed by Palinscar and Brown (1984) combined with other reading-comprehension strategies (Bruce & Chan, 1991; Burns et al., 2017; Clarke et al., 2010; Fung et al., 2003; Klingner & Vaughn, 1996; LeFevre et al., 2003a; LeFevre et al., 2003b). The five remaining studies used intervention procedures that allowed students to discover instructional strategies by prompting the students to read a limited passage silently, create a summary, create "teacher-like" questions, generate a prediction, and seek clarification (Gomaa, 2015; Kelly et al., 2010; Lederer, 2000; Lysynchuk et al., 1990; Westera & Moore, 1995). The differences between these approaches were not radical, yet they created differing procedural interventional strategies to support the processing of texts and their interpretations by the students.

Reciprocal teaching instruction only. Five studies used RT as an instructional support in a reading program intended to help the students' reading comprehension (Gomaa, 2015; Kelly et al., 1994; Lederer, 2000; Lysynchuk et al., 1990; Westera & Moore, 1995). All of these studies focused on using Reciprocal Teaching Strategy, which works through four strategies to help the students build their reading comprehension ability through questioning, summarizing, clarification, and prediction. Questioning is an essential method used by the instructor to give students the main idea for reading and understanding the text more deeply; it should allow them to relate the reading to the meaning of the text (Gomaa, 2015; Okkinga et al., 2018). In summarizing a text, the students must concentrate on the major content and must synthesize the significant ideas in the text (Gomaa, 2015; Lederer, 2000; Okkinga et al., 2018: Takala, 2006). As noted by Okkinga and colleagues (2018), summarizing instruction helps students to avoid

excessive and unnecessary information and to determine what is really important in what they are reading. Clarification includes the development of automatic recognition of difficult and unfamiliar words, even those that seemed very complicated to students during the first reading (Gomaa, 2015; Kelly et al., 1994). Finally, predicting means that students use both prior knowledge and new knowledge from the text to create expectations related to the text and the intention of the author in his or her writing (Lederer, 2000; Okkinga et al., 2018; Takala, 2006).

It is worth noting that the methodology for modeling RT involves the use of a small group of students for whom the teacher leads the discussion using a predefined text, while modeling a reading comprehension strategy. In the first example, Gomaa (2015) conducted a study to investigate the effect of RT on reading comprehension by using a small group intervention. The study considered 66 students in the fifth grade who had been diagnosed with reading difficulties. The researcher divided the sample into an experimental (n= 33) group and a control (n= 33) group, and students in each group were divided into small groups of five students. Three training sessions were conducted for students by the researcher, and the duration ranged from 40 to 45 minutes. During the implementation of the intervention, the following RT were distributed among the students with a leader identified for each group as a teacher in managing the dialogue: prediction, questioning, summarizing, and clarification.

Kelly and colleagues (1994) used a multiple-baseline, across-groups design to investigate the impact of training focusing on summarizing, querying, clarifying, and predicting on students' comprehension of nonfiction texts. Eighteen students with poor reading comprehension in fourth and fifth grade participated in the research. Teachers demonstrated the RT process and then students practiced it. Twelve students were selected for the research and randomly assigned to one of two experimental groups (group I: six students, group II: six students); both groups

performed poorly on reading comprehension tests. To serve as a control group, six students were chosen. In order to measure how the intervention affected participants' ability to understand texts within a given genre, the researchers gathered generalization probes.

Using a mixed-design multivariate analysis of variance (MANOVA) with two group variables, Lederer (2000) investigated the effectiveness of RT in inclusive classrooms for students in fourth, fifth, and sixth grades during social studies teaching. A total of 128 students participated in the research, with 25 of them having LDs. Each set of students included one student with learning disabilities. The fourth-grade treatments lasted for 15 days, while the fifth- and sixth-grade interventions continued for 17 days. The researcher discussed RT and the four techniques (questions, summaries, text clarification, and predictions) before the intervention. The researcher planned the rollout of RT and the accompanying student monitoring for the first five days of the strategy's use. Midway through the intervention, a new team was put in place to make sure no one was taking on a negative or unhelpful role.

The effects of RT intervention on readers who could decode but not understand text were studied by Lysynchuk et al. (1990) using a pre-posttest experimental design. Sixty-six fourth graders from four schools and 36 seventh graders from two schools participated in the research. The students were split into groups of two to five, with each group consisting of either experimental (n = 36) or control (n = 36) individuals. Thirteen 60-minute training sessions were given to the students by the researcher. Prediction, summary, question creation, and explanation were taught to participants in the RT condition. Models of each teaching approach (questioning, clarifying, summarizing, and predicting) were shown to students throughout the first four days. After the first five or six days, the students were completely in charge of the teaching process

without any input from the experimenter, as they had steadily shifted the burden of responsibility for the techniques' implementation onto their students.

Westera and Moore (1995) studied the outcomes of classrooms where RT was implemented using pre- and post-testing to compare the effectiveness of a lengthy RT program to a short RT program. Forty-six students who scored lowest on an 8th grade standardized reading comprehension exam participated in the study. The study participants were split into three groups, with each group consisting of three to six students, and RT was used in small group reading lessons. After three hours of training in RT methods, four classroom teachers and two support teachers led eight RT groups. Within five weeks, 20 students across four groups participated in 12–16 sessions of an extended RT program, whereas 6–8 sessions of the shorter program were made available to 15 students across four groups. Eleven students served as a control group that received no intervention.

Reciprocal teaching in combination with other reading interventions. Six studies were identified that applied RT to improve the reading comprehension skills alongside other reading-comprehension strategies for students with LD. Using a multiple baseline design across three different instructional settings, Bruce and Chan (1991) used RT procedures, combined with trans environmental programming techniques, in the resource room to enhance students' reading comprehension skills. Three educational conditions were used to implement the two strategies for seven students identified by their class teacher as having reading difficulties. The first condition was using RT in the resource room with two small groups. The second and third conditions were generalizations of the use of RT that was mastered in the resource room as the participants engaged with reading and social studies content. Burns and associates (2017) used a pretest-posttest experimental design to study reading comprehension and evaluate the relative

effectiveness of combining two different interventions (providing performance feedback and RT). In these interventions, the students were taught the four components of RT in Sessions 5–8 through modeling, guided practice, and independent practice. As a group, the students had to summarize parts of the text and ask questions that helped them clarify the content and anticipate future events. Regarding the implementation of performance feedback, during the baseline condition students were asked to read a passage individually and answer each comprehension question.

In another study, Clarke and associates (2010) used randomized controlled trials to determine the effectiveness of three programs—text-comprehension (TC) training, oral-language (OL) training, and TC and OL training combined (COM—to address reading comprehension difficulties. The participants were randomly assigned to one of three reading comprehension training programs: (a) TC training (involving metacognitive strategies, RT with text, inferencing from text, and written narrative), (b) OL training (involving vocabulary, RT with spoken language, figurative language, and spoken narrative), or (c) COM training (involving all eight reading activities from the TC and OL programs).

Twelve English as a Second Language (ESL) students in grades 6 and 7 were studied by Fung and colleagues (2003) to determine how L1-assisted reciprocal instruction affected the students' ability to understand English texts. The intervention included switching between L1 (Mandarin) and L2 (English) teaching methods regularly. Reading skills such as asking, summarizing, clarifying, and forecasting were taught to students over the course of 15-20 days in order to cultivate and assess their understanding. The modified L1-assisted reciprocal teaching approach was used, with Chinese and English reciprocal teaching taking place on alternating days as part of the intervention. Each day, students and teachers met for 15 minutes of teacher-

led, explicit approach training before engaging in a 20-minute reciprocal teaching interaction. During the explicit strategy training, students were initially exposed to new ideas and tactics in Mandarin and then revisited the following day in English. Explicit strategy training was dropped in favor of a two-way interaction between teacher and student after day 12. Students were encouraged to look up unfamiliar terms in a bilingual dictionary or ask their instructor for the Chinese translation counterparts during English-English reciprocal teaching sessions. This allowed the conversations to concentrate more on conceptual than lexical understanding.

By contrast, in 1996, Klingner and Vaughn combined the effects of two reading interventions (RT with cooperative grouping and RT with cross-age tutoring) to improve students' reading comprehension. Participants in this study were twenty-six students diagnosed with a LD who used English as a second language. Klingner and Vaughn (1996) explained that cooperative learning is a method used to advance the comprehension skills of students with LD. The great potential of this collaborative method is that it enhances students' participation in small groups by helping them to understand content in texts or by clarifying intervention procedures for each other. The researchers also applied cross-aged peer tutoring in which, after training, the older students (eighth grade) taught RT to the younger students (sixth grade). During 12 school days, for 35-40 minutes each day, tutors taught what they had learned in ST sessions to their tutees. During the first two days, students received instruction to teach by being provided models (questioning, clarifying, summarizing, and predicting) for each strategy. In the following days, tutors made their tutees gradually take more responsibility for the use of the strategies and, thus, the tutors were managing the teaching process totally independent of the experimenter after the first three or four days.

Finally, LeFevre and colleagues (2003a) conducted two SCD studies to investigate the effects of tape-assisted reciprocal teaching in assisting such students in developing cognitive and metacognitive strategies through expository texts for students with specific decoding and comprehension skills. In Study I, during the treatment condition, students were taught conventional RT elements (i.e., questioning, clarifying, summarizing, and predicting) using clear and explicit instructions and directed and independent activities practices. After each RT lesson, students read a passage and were asked to complete a 10-item comprehension test to assess performance directly. Then, tape-assisted RT was introduced with audiotapes of explanatory texts at a level appropriate to the age and interests of the students; the students listened to these while applying the RT procedures. After each tape-assisted RT, students listened to and/or read a passage and were asked to complete a 10-item comprehension test to assess performance directly (LeFevre et al., 2003a).

Study II aimed to determine the effectiveness of a tape-assisted reciprocal teaching intervention with a larger number of students with limited decoding and comprehension skills. During the treatment condition, tape-assisted reciprocal teaching was introduced immediately after baseline data collection. In addition, traditional RT was omitted in the second study to provide a more extended treatment phase and to avoid the possibility of interference effects of order (LeFevre et al., 2003b).

Disaggregation of data in studies. The findings of this systematic review indicate that RT is an effective learning and teaching methodology for developing and improving students' reading comprehension. RT refers to an interactive classroom instruction framework in which students take the role of teachers with different assigned tasks, either as summarizers, questioners, clarifiers, or predictors. A majority of studies that have examined RT as the key

strategy for developing students' reading skills have indicated that the activity produced gains toward more accurate reading skills and reading comprehension (Kelly et al., 1994; Lysynchuk et al., 1990; Westera & Moore, 1995). RT is useful when managing students who need to improve their reading comprehension. RT strategies foster inclusivity in the classroom, and they have been shown to improve reading comprehension and metacognitive skills significantly (Clarke et al., 2010). An ideal application of RT strategies would focus on helping students navigate existential barriers to learning, including limited English fluency and distractions, on the way to comprehending course content. However, the results of the reviews show a relatively limited amount of research regarding the implementation of RT interventions among students with LDs or ESL students.

However, future studies should address the limitations of the current research and the studies included in the synthesis. Specifically, future studies need to include a larger sample size, perhaps comprising students from several schools across various states. It is critical to test RT among the pool of students representing the country's population, so the sample must be heterogeneous. It is essential to determine whether RT is helpful for students of different backgrounds (e.g., gender, race, culture), ages, grades, baseline skills, academic needs (e.g., special needs, general student population, gifted students), and language capabilities (e.g., English learners, native speakers). Studies could compare outcomes and generalize of effects in these groups over time.

It is essential to determine whether RT is more effective for improving reading comprehension or is more applicable for teaching this skill. Future studies, considering this aspect, could assess RT in and outside-classroom settings to determine whether students can use this methodology when reading texts independently. Future studies should also explore the

possibility of upgrading RT to enhance its applicability to the conditions of the modern education system, such as investigating the flexibility of RT and its applicability in multiple classroom settings/subjects, as well as its use in Response to Intervention (RTI) targeted Tier 2 interventions. Future researchers could also dedicate their efforts to the specific effects of RT on students, as the included studies showed the various impacts of this methodology. Also, researchers need to address the need for reading comprehension interventions using RT to address the reading deficits of the large population of students with LD, students from high poverty neighborhoods, and English language learners. Moreover, studies need to be designed to meet the needs of individual students with measures of the effects of the various individualized RT intervention strategies in improving the reading comprehension skills and other skills not analyzed by the current review, specifically strategies for helping students to generalize intervention effects.

Empirical Gaps in the Literature

The current review has several gaps. First, only 12 studies met the review's inclusion criteria; other studies might have been identified if the parameters had been expanded. Second, many studies included in the review were published over 20 years ago, which may limit their relevance to modern teachers, students, and education in general. The educational system and many of its elements (e.g., standards, techniques, approaches) have changed over the last 20 years. Third, four of the studies tested RT with small samples of students. A small sample size decreases the generalizability of findings. Fourth, two of the SCD studies either did not report or only partially reported social validity. Fifth, most of the studies included different text structures, making it difficult to assess which types of text structure are the most effective for improving the reading comprehension of students with LDs or who are classified as at risk of reading failure.

Finally, the researchers reported on the instructional procedures that were implemented. Still, they did not report whether the implementers consistently followed the protocol for the procedures described or the steps taken to meet minimum quality requirements.

Researchers have recommended the use of research-based strategies that focus on students' individual needs to improve their reading comprehension skills. One strategy that can help to develop students' reading comprehension is RT during which the teacher models comprehension strategies, explains to the students where, when, and why to use these comprehension strategies, and then supports the students in acting as instructors in modeling the techniques to other students (Gilbert, 2018). RT strategies were first developed by Palinscar and Brown (1984) and reported on by Lysynchuk et al. (1990) as a "method of reading instruction designed to improve the comprehension of students who can decode, but who experience difficulty understanding text" (p. 469). Palinscar and Brown (1984) provided clear guidelines for the implementation of the RT intervention with a small group of students.

The main purpose of this study is to determine the effects of reciprocal-teaching interventions on improving the reading comprehension of elementary school students with learning disabilities. The reciprocal teaching strategies designed by Palinscar and Brown (1984) were researched over 35 years to improve students' reading comprehension skills (Gersten et al., 2001). Unfortunately, most of the studies that have looked at reciprocal teaching strategies, in addition to those of Palinscar and Brown (1984) and Lysynchuk and associates (1990), have not investigated the impact of these strategies on students with LD. Given the small amount of research, there is a need to investigate the effectiveness of using RT for a group of students with learning problems (for example, students with learning disabilities, reading difficulties, or students with English as a second language [ESL]). In many classrooms, children who are

studying English as a second language (ESL) face significant challenges (Fung et al., 2003). Because of variations in background knowledge related to what is read in school and inadequate English language skills, these students often demonstrate greater issues with reading comprehension than proficient English speakers of equivalent aptitude (Klinger & Vaughn, 1996). Interventions that promote the development of cognitive and metacognitive processes for reading comprehension may provide an alternate method for improving the reading performance of ESL students (Fung et al., 2003).

Though some students will see an increase in the use and generalization of reading comprehension skills without engaging in metacognitive strategies, (Ledford & Gast, 2018), instructional strategies that target these processes often lead to greater improvements across subject areas (Ledford & Gast, 2018). For example, in a study by Bruce and Chan (1991), that assessed generalized effects across content, it was found that students delayed in reading comprehension by at least one year did begin to transfer intervention strategies during a training session to other types of reading materials with specific training. However, in this same study, participants with a reading comprehension delay of over a year and/or who were also diagnosed with a LD failed to generalize comprehension strategies. This points to the need for generalization training when working on comprehension skills with students with a learning disability. This study, therefore, aims to examine the effect of RT strategies on the reading comprehension of elementary students with LD and the generalization of these effects across reading content. More specifically, the following research questions were addressed: (1) Is there a functional relation between reciprocal-teaching strategies and improved reading comprehension and generalization of effects across content for elementary school ESL students with LD? (2) How do ESL students with LD perceive the use of RT as an intervention to increase

reading comprehension skills? (3) What are the perceptions of the parents, or caregivers, of ELS students with LD regarding the usefulness, feasibility, and satisfaction of RT to increase the reading comprehension skills of their child?

CHAPTER III

METHODOLOGY

This chapter addresses the experimental design that was used to determine the efficacy of the RT intervention for increasing reading comprehension and generalization of effects across content for elementary school students with LD. This section also discussed the participants and setting, materials, single case design, independent and dependent variables, measures, and procedures of the proposed study.

Institutional Review Board and Consent Procedure

After obtaining a letter of approval from the Head of the Saudi Students Club at Old Dominion University (ODU) to recruit participants from the Saudi Club, the researcher requested approval from ODU's Institutional Review Board (IRB). A research protocol was submitted to ODU's Institutional Review Board for approval. Once approved, consent, assent, and parent permission were received from all participants.

Recruitment, Participants, and Setting

Recruitment. To aid in recruitment, the principal investigator contacted the Director of the Saudi Participants Club community to discuss the research study and the recruitment process. The Saudi Participants Club Community is an officially recognized campus organization that was created by ODU Saudi participants. Since all members of the Saudi Participants Club are active participants at ODU, they all have functional English-language skills as indicated by passing scores on the Test of English as a Foreign Language (TOEFL), International English Language Testing System (IELTS), or Graduate Requirement Exam (GRE), translated materials were not necessary.

The recruitment process began when the principal investigator met with the Director of the Saudi Participants Club community via Zoom to share information about the research project. The principal investigator asked the director to a) make an announcement at a weekly club meeting that a research opportunity was available, and b) provide an area to display recruitment flyers so interested individuals could freely access them. To facilitate the recruitment process, the principal researcher prepared informational flyers regarding the research opportunity, sponsored by the ODU Special Education Program. These flyers were provided to the Saudi Participants Club director, who made them available to club members. Neither the principal investigator nor any member of the research team attended a gathering at the club or actively recruited participants to prevent coercion. Additionally, no club member information was shared by the director with the research team. The recruitment flyers instructed all interested individuals to contact the principal investigator directly for more information regarding the research study. The director was not actively recruiting for the study, just providing access to the flyers; as such, if he was questioned about participation in the study, the director also instructed interested individuals to contact the principal investigator directly.

Using specific inclusion and exclusion criteria, the principal investigator initially screened interested individuals to determine whether they were potential candidates for participation in the study. Once individuals were deemed eligible, the principal investigator sent an information packet of materials, including physical copies of the welcome letter, parental consent for the child's participation form, participant consent form, and child assent form, in a sealed envelope to the potential participants. The information packet also included a stamped return envelope addressed to the principal investigator. The welcome letter directed interested individuals to contact the principal investigator directly to discuss the research study prior to

signing and returning the forms. Once contacted, the principal investigator set up a Zoom meeting with the potential participants to provide an overview of the research study and review all aspects of the recruitment materials, including the right not to participate and/or to withdraw at any time without any negative consequences. The study sessions were video recorded for the purpose of data analysis only. Finally, parents were given the opportunity to ask questions. At the conclusion of the Zoom meeting, parents of potential participants were instructed to sign and submit all recruitment forms using the return envelope provided by the researcher if they wished to participate.

Participants. The proposed study included five children and their parents and/or caregivers (See Table 1). All child participants spoke English as a second language (ESL), demonstrated marked delays in reading comprehension based on STAR Reading score and WIDA English Language Proficiency, received special education services and related services based on federal and state law and regulations for classification as learning disabled, and received most of their academic instruction in the regular classroom. Specifically, all child participants met the following inclusion criteria: a) possessed functional use of the English language but were considered ESL with the primary language being Arabic; b) attended public school and were enrolled in a second, third, fourth, or fifth-grade general education classroom; c) were between the ages of eight and 11-years; d) diagnosed or classified as having a learning disability (LD) and/or difficulty with reading comprehension; e) received special education services under the disability category LD; and f) read at least one year below grade level as indicated by reading comprehension assessment scores. Reading proficiency results showed a deficit of at least one year below the predicted grade level, as shown in the reading test report conducted by the school for participants during the current academic year.

Consequently, child participants were excluded if a) they were not considered ESL and/or did not have functional English language skills, b) did not attend public school, c) were not between the ages of eight and 11-years and were not currently in second through fifth grade, d) were not diagnosed or classified as having an LD, e) were diagnosed with a disorder in addition to LD (e.g., autism, visual and/or hearing impairments, or intellectual disability), f) did not receive special education services under the category of LD, and g) possessed grade-level reading comprehension skills.

Setting. This study took place on the campus of a moderately-sized urban public university. Specifically, the study was conducted in a university building that housed both the children's learning and research center and the special education program. Permission to use the building was obtained from the department chair of the special education program. The study took place during the summer session, when the number of university students on campus was reduced.

Table 1

Student Participant Demographics

Participant	Age	Gender	Ethnicity	Primary Diagnosis	Grade	WIDA Screener	STAR Reading
1	9	Female	Middle East	Difficulty with reading	3	2.0	GE 3.4
2	10	Female	Middle East	Difficulty with reading	4	1.0	GE 2.8
3	9	Male	Middle East	Difficulty with reading	3	2.0	GE 3.0
4	9	Male	Middle East	Difficulty with reading	3	2.0	GE 3.3

5	8	Female	Middle East	Difficulty with reading	2	1.0	GE 2.9

Note: WIDA Screener = WIDA English Language Proficiency; GE = Grade Equivalent.

Experimental Design

This research study evaluated the effects of the reciprocal teaching intervention on the comprehension of a group of five participants with LD or those whose reading comprehension skills were at least one year below their grade level. It used a multiple-probe design across three different text subjects, specifically passages from reading, science, and social studies. This multiple-probe design allowed for replication over time because the intervention sessions started at different times. Consistent with this design, the intervention first utilized reading-subject texts with the group of participants, followed by the introduction of the second (i.e., science subject), and a third (i.e., social studies subject) type of texts. In this specific study, a multiple-probe design was employed due to its ability to minimize the frequency of testing during the baseline condition. Moreover, collecting data intermittently before implementing the intervention mitigates the potential influence of testing effects on internal validity (Ledford & Gast, 2018). Using a multiple-probe design, single-subject research made it possible to control for participant growth effects, which could confound the results and allow the participants to function as their own controls. Furthermore, this research design allowed replication across time with the staggered start of sessions, which increased the internal control during the study (Ledford & Gast, 2018). Before any intervention was administered, the reading level scores of the participants were evaluated during the baseline phase. During the intervention phase, participants were introduced to four reading comprehension strategies: summarizing, asking questions,

clarifying, and making predictions. This study systematically replicated the original study of reciprocal teaching by Bruce and Chan (1991).

Based on the evidence standards developed by the What Works Clearinghouse (WWC), this study adhered to the following guidelines: (a) The dependent variable (DV) was measured to determine the effects of the independent variable (IV); (b) The inter-observer agreement (IOA) was collected by the researcher for a minimum of 20% of the study's sessions, with 80% agreement as to the minimum across all sessions; (c) Initial preintervention data collection sessions overlapped; (d) Probe points were available just before introducing the independent variable; (e) and each case that did not get the intervention must have a probe point in a session where another case either gets the intervention for the first time or reaches a predetermined intervention criterion set by the researchers (WWC, 2022).

Measures

Independent variable. The independent variable in this study was the reciprocal teaching instructional program to increase reading comprehension. The methodological framework of reciprocal teaching was that the teacher (i.e., researcher) and a group of students (i.e., participants) read a particular text together. Next, the researcher and the students engaged in an interactive session during which the researcher modeled the comprehension strategies based on the text read while the participants asked questions about the text and the modeled strategies (Doolittle et al., 2006; Gilbert, 2018). When all participants in the group understood how to use the comprehension strategies based on the text, the researcher assigned a role to each participant. These roles instructed the participants to act as the "teacher" in the group and facilitate the dialogue using one of the four comprehension strategies: questioning, summarizing, clarifying, and prediction (Gilbert, 2018).

Dependent variable. The dependent variable in this study was the participant's reading comprehension level, which was defined as the proportion of comprehension questions answered correctly by the participant. Comprehension questions answered correctly were used to measure the effects of the reciprocal teaching strategies. The researcher created a probe consisting of ten comprehension questions to accompany each reading passage. That included nine multiple-choice questions. Each multiple-choice question test consisted of four text-explicit questions and five text-implicit questions. The last question was asking participants to predict what might happen next after the reading.

Materials

The texts used to assess reciprocal teaching were factual articles under the reading level in the Virginia school's category measure that the Virginia Department of Education (VDOE) established for participants with a minimum of a one-year delay in reading comprehension. The teaching passages varied in length, and the researcher ensured that each passage had been completed before proceeding to the next passage. Additionally, the documents that were used in the daily assessment had a minimum of 200 and a maximum of 300 words. Thirty-five texts were selected for daily evaluation; however, the researcher could modify the texts if needed. Text passages in three subject areas were identified: reading, science, and social studies.

During baseline and intervention sessions, all participants completed a ten-item, multiple-choice comprehension question assessment that was formulated for each text. Each of the assessment questions contained three answer options. The Pearson and Johnson categorization of the question method was used, which was as follows: (a) four explicit text questions whose answers were explicitly stated in the text; (b) five implicit text questions that required the participant to make a deduction based on the information in the text about

information that the author did not explicitly mention; and (c) one question asking participants to predict what will happen next after reading (Chikalanga, 1992). Also, during the intervention, reciprocal teaching role cards (see Appendix A) were provided to participants to record how many questions they answered correctly (see Appendix B).

Fidelity, Validity, and Inter-Observer Agreement

To ensure procedures were correctly implemented during each phase of the study, procedural and content reliability were assessed using a Treatment Fidelity Checklist (see Appendix C). Social validity (see Appendices D & E) was assessed by the participants and teachers at the end of the study.

Fidelity Measures. To ensure procedures were correctly implemented during each phase of the study, procedural fidelity was assessed using a Treatment Fidelity Checklist. The checklist consisted of approximately 25 steps. The number of procedural steps varied based on how many errors required correction. A second observer, a special education faculty member, observed 33% of the sessions, randomly selected in each phase, to verify that every step of the planned intervention was effectively implemented. In every session in which procedural fidelity was assessed, the researcher followed all of the required procedures in the correct sequence with an accuracy of 100%. The procedural reliability was calculated by simply dividing the number of correctly completed steps by the entire checklist's number of procedural steps and multiplying by 100.

Social Validity. Both the student participant and the parent were assessed for social validity. The collection of Social Validity Assessments was done by the researcher, who read the questionnaire to the student participants following the completion of data collection. The questionnaire included a Likert scale ranging from 1 to 5 (1 = strongly disagree, 2 = disagree, 3 =

neutral, 4 = agree, 5 = strongly agree), with smiley faces that depict the scales. For each question, the participant was asked to circle the number or smiley face that describes their answer. The participants were asked to rate and comment on statements such as, "What I liked most regarding the reading program activities was that this study helped me read better," and "I enjoyed doing the reading program." The questionnaire for the participant had nine items: seven that were closed-ended and scored based on the rating scale, and two that are open-ended. See Appendix K, the consent form for parents to allow their child to complete the Social Validity Questionnaire.

The Parent Social Validity Form was similar to the Participant Social Validity Form. It consists of 12 questions that use a 5-point Likert Scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) and four open-ended questions. The social validity assessment measured the parent's perceptions of the intervention and its usefulness to their child during the study. Another expectation was to understand if the parent had any suggestions regarding how to improve the intervention. The main objectives of this questionnaire were to acquire information that can help in the future selection of classroom interventions. See Appendix L, the consent form for parent participants to complete the Social Validity Questionnaire.

Inter-observer Agreement. Inter-observer agreement (IOA) for correct and incorrect answers to the text read was evaluated during each intervention phase. To achieve reliable measures, a volunteer assistant (a second observer), unrelated to the study and without information on the study conditions, was trained to listen to taped sessions with the participants. The second observer was provided with a copy of the reading passage. During the session monitoring, the observer put an error mark (slash) through incorrect answers. The second

observer's copies were compared to the experimenter's marked copies to determine IOA. An agreement was counted if both observers scored an answer the same way, either as correct or as an error. A disagreement was noted if the observers differed in their scoring of the answers. The inter-observer agreement was then calculated by dividing the number of agreements by the number of disagreements plus disagreements and multiplying the quotient by 100. The worksheet for this calculation is provided in Appendix Q.

Procedures

Baseline. The baseline sessions for the reading-subject text lasted a minimum of three sessions, or until the data were stable. Overall, the stability of the data determined the total number of baseline sessions required. The baseline sessions for two subsequent interventions (i.e., science subject text and social studies subject text) required additional baseline sessions, respectively. During each baseline session, the participants were given a passage to read along with the researcher, who was reading it out loud. Following the reading of the text, the participants completed the ten-question reading comprehension assessment pertaining to the text. The assessment included nine multiple-choice questions and one question asking the participant to predict what would happen next in the text. Aside from having the text read aloud to them, the participants did not receive any intervention or instruction from the researcher during baseline. The participants could ask the researcher for help with any word or words they could not read or understand. If a participant asked for help with an assessment question, the researcher said, "Just do your best." No feedback was provided on quiz accuracy during baseline. The researcher created an answer key, to which the researcher compared the participants' responses.

Intervention. The intervention phase involved the researcher implementing the RT program appropriately with a small group of participants. The procedures in this study were a

systematic replication of the procedures used by Bruce and Chan (1991), in which each of the

four strategies previously mentioned were used to enhance participants' understanding of the text

read before answering the questions. The intervention was initiated after obtaining permission

from the participant's parents. The participants worked with the researcher in a small group

setting across four sessions, each lasting approximately 45 minutes. To guide participants

through reciprocal teaching, the researcher used the following strategies, outlined below:

Step 1: Modeling the Teaching Strategy. During the session, the researcher introduced

the theoretical basis for applying the strategy, including the basic teachings on optimizing their

performance as summarizers, questioners, clarifiers, or predictors. During this teaching phase,

the participants were expected to develop a basic understanding of each RT strategy, what was

expected of each group member based on his/her role, and how to interact in harmony with the

others in the group. In addition, the researcher used the interactive dialogues among the

participants in these sessions to develop and refine a basic understanding of each participant's

strength(s).

Step 2: Analyzing and Communicating the Study Text. When the participants

demonstrated a basic understanding of the RT strategy, the researcher distributed the text on

which the RT strategy was practiced. The researcher read the text with the small group of

participants to help clarify any difficult or hard-to-understand concepts. Next, the researcher

distributed the role cards (i.e., summarizer, inquirer, clarifier, and predictor) among the group

members so that each participant had a role. At this stage, the guided worksheet was passed out

to the participants and explained what was expected of them individually and in groups. The

participants were first required to answer the initial part from their own introspection before

seeking the group's ideas on their answers. This presented a chance to debate each other's points and, consequently, guide each other to understand the concepts better.

Step 3: Individual Activity. Each participant was given a worksheet that was unique to their role as questioner, summarizer, clarifier, or predictor. The first part of the worksheet tested the participants' introspection and critical thinking skills by asking them to come up with answers to questions by themselves. The answers they furnished were the foundation of their group-based discussion. Ideally, the questioner drafted inquiries about the topic. Next, the clarifier explained difficult or confusing words or concepts. Finally, the summarizer summarized the topic and the main ideas, and the predictor predicted what might happen if the narrative had continued.

Step 4: Group Activity. Finally, the group of participants came together in a collaborative initiative to address the issues and concepts emerging from individual activity. Each participant had a set of answers based on what was required on their worksheets. In this session, each participant presented their answer, and the other participants responded to them. First, the questioner read the questions recorded on their worksheet, and the remaining group participants worked together to find answers. Second, the clarifier stated the unknown words or ideas, and the remaining group participants worked together to define or explain them. Third, the summarizer showed the pictorial depiction of the story to the remaining group participants, who worked together to refine the picture and wrote a short explanation of the picture. Finally, the predictor presented a prediction of what would have happened had the narrative continued. The remaining group participants worked together to find evidence of that possibility in the text. Participants were then asked to submit their individual and group answers to the researcher. In the final phase, the researcher provided specific praise and feedback on the participant's performance. The

entire interactive session lasted approximately 45-minutes. Throughout the intervention, the participants were told that the activities would help them comprehend better as they read and to tried using the strategy while studying. At the end of each session, the researcher evaluated the participants by having them read a text and then answer comprehension questions.

Data Analysis

The study employed multiple data sources, including visual analysis of single-subject design data, to gather information for analysis. The majority of single-case research (SCR) studies that have been published still heavily depend on visual assessments, which are supported by comparisons of phase means, medians, or percentages (Parker & Hagan-Burke, 2007). Following each session (i.e., baseline and intervention phases), data for each participant was collected and graphed to facilitate a formative evaluation of intervention effects. This analysis helped the researcher determine whether a functional relation exists between the independent and dependent variables by the end of the study. Microsoft Excel 2019 was also used to check and analyze the entered data. Tables and graphs were created to present the results of the study effectively. The mean levels were calculated to determine the mean within each stage. Subsequently, the levels obtained for each stage were compared. Furthermore, the researcher assessed variability by documenting the range of data observed in each phase. The researcher employed Percent Nonoverlapping Data (PND) Analysis and P-values to assess the impact of the reciprocal teaching intervention on individual participants. Scruggs and colleagues (1987) introduced the concept of PND, which refers to the proportion of data points in each phase that are more extreme than the highest or lowest data point in the preceding phase.

CHAPTER IV

RESULTS

The primary objective of the present study was to investigate the impact of employing reciprocal teaching (RT) interventions on the reading comprehension skills of elementary-aged second language students with learning disabilities (LD). Specifically, the study aimed to assess the efficacy of RT interventions in enhancing reading comprehension abilities among a group of five, English as second language (ESL) students diagnosed with LD and experiencing difficulties in reading. This chapter elucidates the analyses conducted to evaluate the impact of the intervention on the reading comprehension performance of the students. The examination of the results encompassed several key areas. First, the effectiveness of the reciprocal teaching (RT) intervention was assessed to determine whether a functional relation existed between the use of the RT intervention and the reading comprehension skills of the ESL students with LD. Second, the satisfaction of student participants with the utilization of the RT intervention was appraised using a student satisfaction survey. Third, the perceptions of parents regarding the usefulness, feasibility, and satisfaction of the intervention were assessed through the administration of a parent social validity survey. Lastly, the capability of teachers to successfully implement the RT interventions, with a focus on explicit instruction, was evaluated using a procedural and content fidelity checklist. The subsequent sections will present the findings pertaining to these key areas.

Effectiveness of RT

Student data were collected to investigate the results of the use of RT on the reading comprehension skills of ESL students with LD. Specifically, did implementation of the RT intervention impact reading comprehension skills, across content, among ESL students with LD? The primary method of data analysis employed was a systematic visual analysis of the multiple-

probe design data collected. Additionally, the impact of the RT intervention on individual participants was assessed using the Percent Nonoverlapping Data (PND) analysis and P-values.
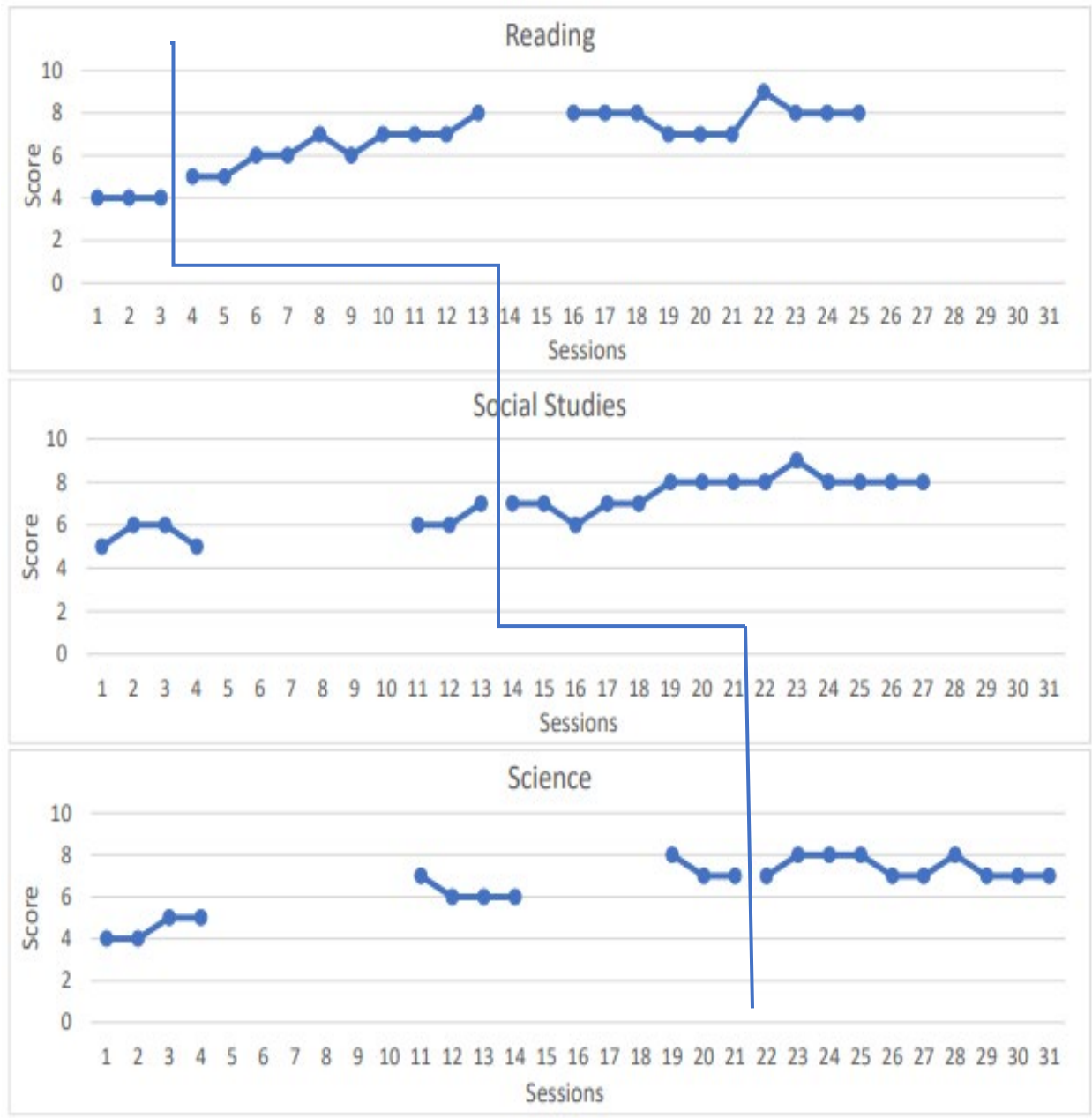
Student 1. Figure 1 shows the impact of the RT intervention on the reading comprehension skills of Student 1 across three content areas, reading, social studies, and science. Overall, Student 1 demonstrated an increase in the number of correct responses to comprehension questions during intervention across all three content areas. Specifically, the mean number of correct responses to comprehension questions during reading instruction baseline sessions was 3.3 (range: 3-4), with an increase in the number of correct responses to comprehension questions during reading instruction intervention sessions to 7.6 (range: 5-10). Moreover, during reading instruction sessions, there were no overlapping data (PND = 100%, p = 0.0004) between the baseline phase and the intervention phase (Table 2). During social studies instruction, the baseline phase mean of correct responses to comprehension questions was 5.4 (range: 5-6), while the mean number of correct comprehension question responses during the intervention phase increased to 7.6 (range: 5-9). Furthermore, there were few overlapping data points between the baseline and intervention phases (PND = 85.7%, p = 0.0002; Table 3). Finally, during science instruction, the number of correct responses to comprehension questions during the baseline phase was 5.5 (range: 4-5), which increased to 7.7 (range: 6-9) correct responses to comprehension questions during the intervention phase. As shown in Table 4, half of the data during science instruction were overlapped between the baseline and intervention phases (PND = 50%, p = 0.0089).

Figure 1: Scores of baseline and intervention sessions for Student 1
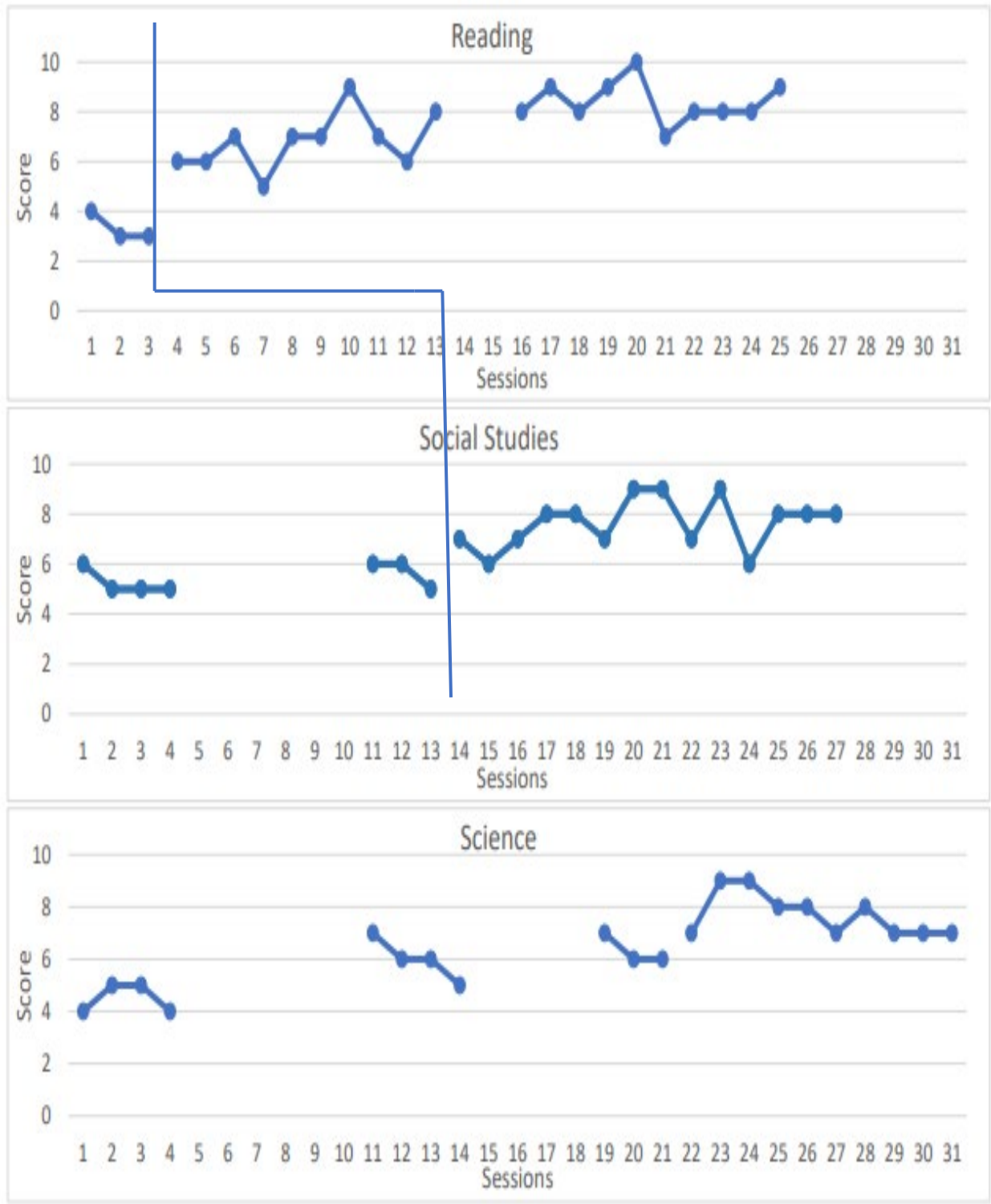
Student 2. Figure 2 shows the impact of the RT intervention on the reading comprehension skills of Student 2 across three content areas, reading, social studies, and science. Overall, Student 2 demonstrated an increase in the number of correct responses to comprehension questions during intervention across all three content areas. Specifically, the mean number of correct responses to comprehension questions during reading instruction baseline sessions was 4.0 (range: 4), with an increase in the number of correct responses to comprehension questions during reading instruction intervention sessions to 7.1 (range: 5-9). Moreover, during reading instruction sessions, there were no overlapping data (PND = 100%, p = 0.0004) between the baseline phase and the intervention phase (Table 2). During social studies instruction, the baseline phase mean of correct responses to comprehension questions was 5.9 (range: 5-6), while the mean number of correct comprehension question responses during the intervention phase increased to 7.6 (range: 6-9). Furthermore, there were some overlapping data points between the baseline and intervention phases (PND = 64.3%, p = 0.0051; Table 3). Finally, during science instruction, the number of correct responses to comprehension questions during the baseline phase was 5.9 (range: 4-5), which increased to 7.4 (range: 6-8) correct responses to comprehension questions during the intervention phase. As shown in Table 4, all of the data during science instruction were overlapped between the baseline and intervention phases (PND = 0%, p = 1.0000).

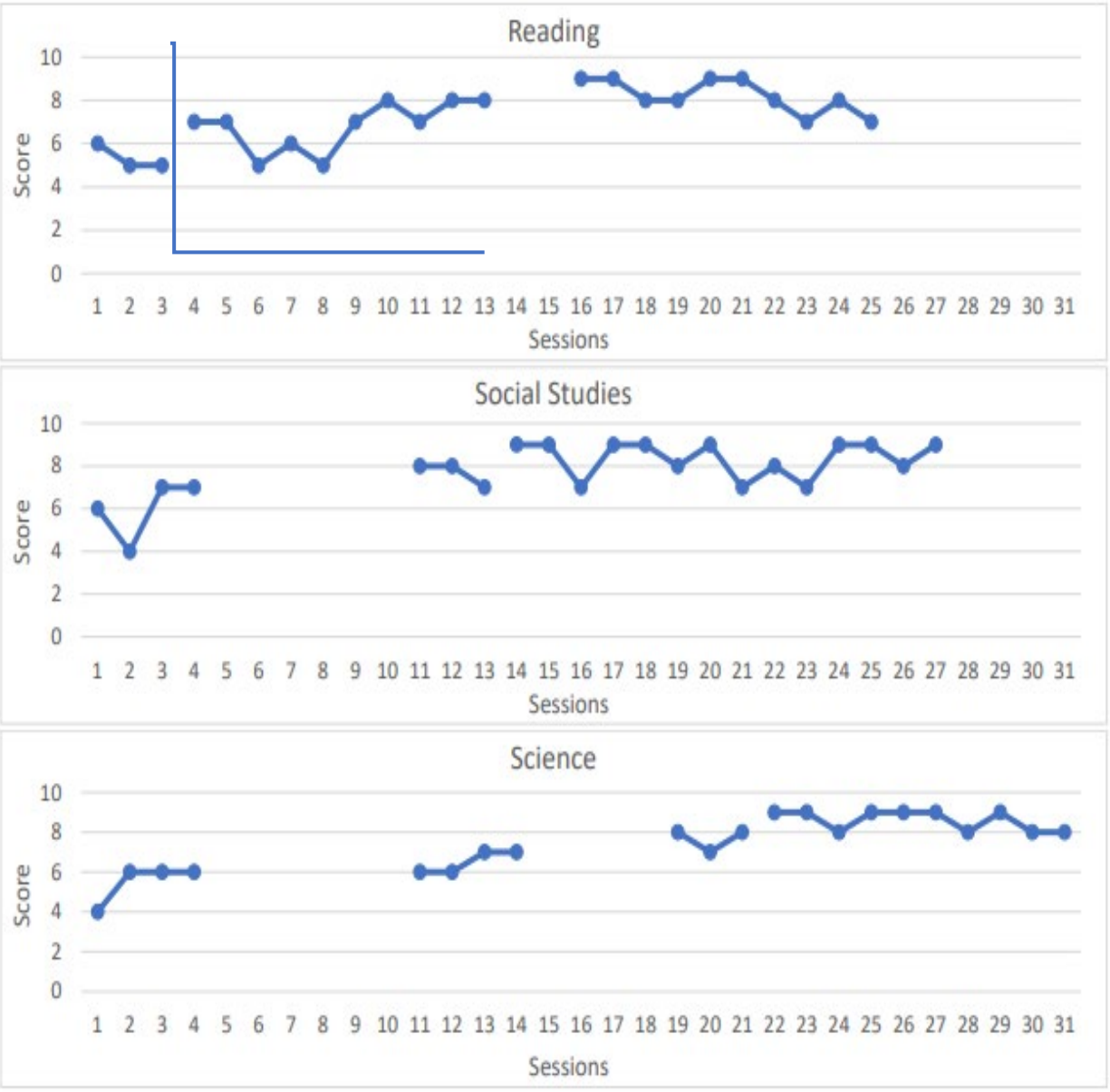Figure 2: Scores of baseline and intervention sessions for Student 2

Student 3. Figure 3 shows the impact of the RT intervention on the reading comprehension skills of Student 3 across three content areas, reading, social studies, and science. Overall, Student 3 demonstrated an increase in the number of correct responses to comprehension questions during intervention across all three content areas. Specifically, the mean number of correct responses to comprehension questions during reading instruction baseline sessions was 5.3 (range: 5-6), with an increase in the number of correct responses to comprehension questions during reading instruction intervention sessions to 7.3 (range: 5-9). Additionally, during reading instruction sessions, there were few overlapping data points (PND = 85%, p = 0.0088) between the baseline phase and the intervention phase (Table 2). During social studies instruction, the baseline phase mean of correct responses to comprehension questions was 6.7 (range: 4-7), while the mean number of correct comprehension question responses during the intervention phase increased to 8.4 (range: 7-9). Furthermore, slightly more than half of the data points data points between the baseline and intervention phases were overlapping (PND = 57.1%, p = 0.0114; Table 3). Finally, during science instruction, the number of correct responses to comprehension questions during the baseline phase was 6.5 (range: 4-6), which increased to 8.6 (range: 6-9) correct responses to comprehension questions during the intervention phase. As shown in Table 4, most of the sessions had no overlapping data between the baseline and the intervention phase (PND = 80%, p = 0.0001).

Figure 3: Scores of baseline and intervention sessions for Student 3

Student 4. Figure 4 shows the impact of the RT intervention on the reading comprehension skills of Student 4 across three content areas, reading, social studies, and science. Overall, Student 4 demonstrated an increase in the number of correct responses to comprehension questions during intervention across all three content areas. Specifically, the mean number of correct responses to comprehension questions during reading instruction baseline sessions was 4.3 (range: 3-5), with an increase in the number of correct responses to comprehension questions during reading instruction intervention sessions to 7.7 (range: 6-9). Moreover, during reading instruction sessions, most of the scores between the baseline and intervention phases had no overlapping data (PND = 85%, p = 0.0088; Table 2). During social studies instruction, the baseline phase mean of correct responses to comprehension questions was 6.0 (range: 5-6), while the mean number of correct comprehension question responses during the intervention phase increased to 8.0 (range: 5-9). Furthermore, there were few overlapping data points between the baseline and intervention phases (PND = 78.6%, p = 0.0007; Table 3). Finally, during science instruction, the number of correct responses to comprehension questions during the baseline phase was 5.5 (range: 3-5), which increased to 7.6 (range: 4-9) correct responses to comprehension questions during the intervention phase. As shown in Table 4, few of the data during science instruction were overlapped between the baseline and intervention phases (PND = 70%, p = 0.0007).

Figure 4: Scores of baseline and intervention sessions for Student 4.

Student 5. Figure 5 shows the impact of the RT intervention on the reading comprehension skills of Student 5 across three content areas, reading, social studies, and science. Overall, Student 5 demonstrated an increase in the number of correct responses to comprehension questions during intervention across all three content areas. Specifically, the mean number of correct responses to comprehension questions during reading instruction baseline sessions was 2.7 (range: 2-3), with an increase in the number of correct responses to comprehension questions during reading instruction intervention sessions to 4.5 (range: 5-9). Moreover, during reading instruction sessions, most of the data between the baseline phase and the intervention phase were nonoverlapping (PND = 80%, p = 0.0160; Table 2). During social studies instruction, the baseline phase mean of correct responses to comprehension questions was 5.3 (range: 4-5), while the mean number of correct comprehension question responses during the intervention phase increased to 6.7 (range: 5-9). Furthermore, there were minimal overlapping data points between the baseline and intervention phases (PND = 92.9%, p = 0.0000; Table 3). Finally, during science instruction, the number of correct responses to comprehension questions during the baseline phase was 4.9 (range: 3-4), which increased to 6.1 (range: 4-7) correct responses to comprehension questions during the intervention phase. As shown in Table 4, all of the data during science instruction were overlapped between the baseline and intervention phases (PND = 0%, p = 1.0000).

Figure 5: Scores of baseline and intervention sessions for Student 5.
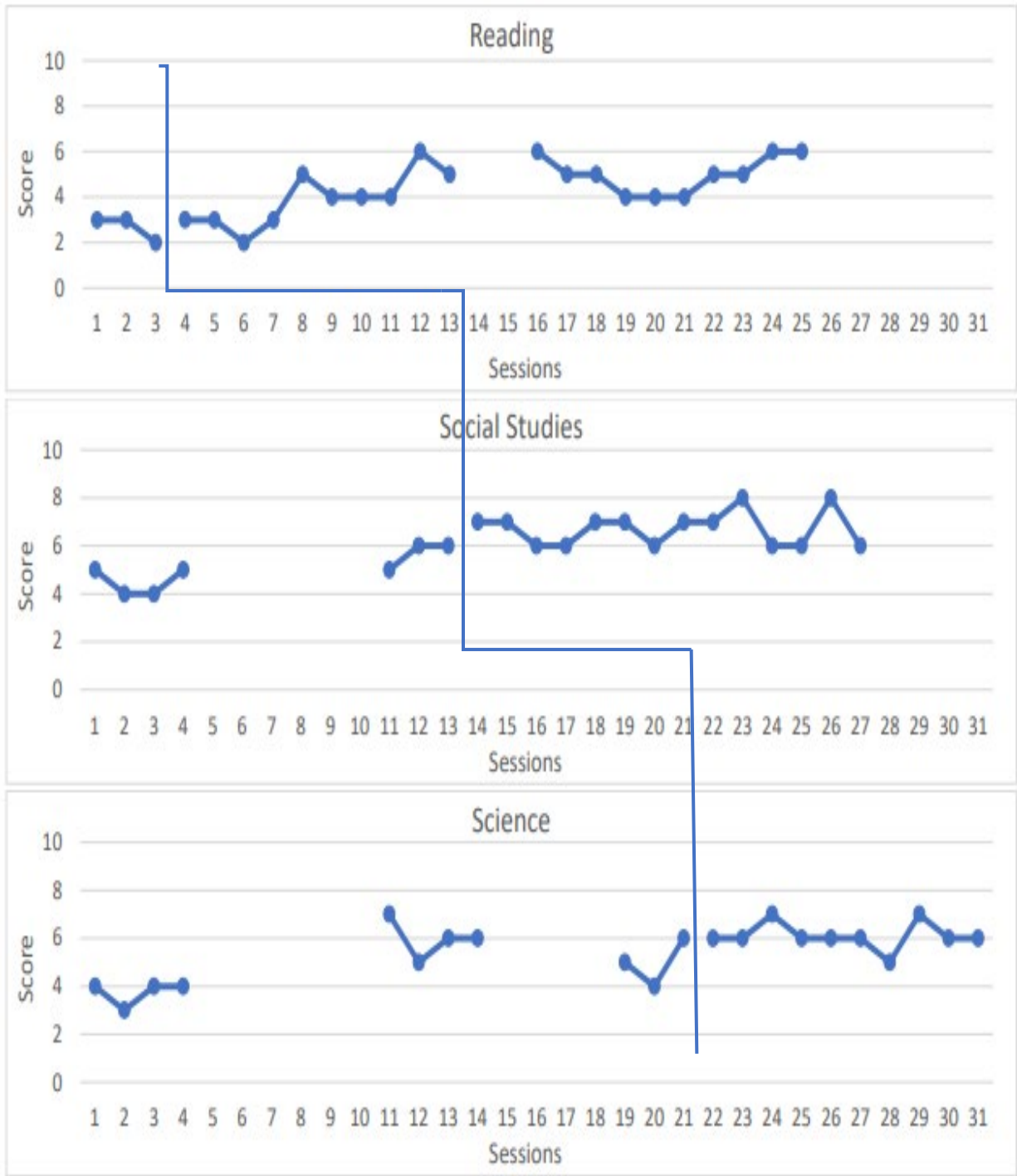
Table 2.

Summary of the Results for the Reading Intervention

Intervention	Student	Mean		Percent change (%)	PND (%)	*p*
		Baseline	Intervention			
Reading	1	3.3	7.6	128	100	0.0004
	2	4	7.1	77.5	100	0.0004
	3	5.3	7.5	40.6	85	0.0088
	4	4.3	7.7	77.7	85	0.0088
	5	2.7	4.5	66.9	80	0.016

Table 3.

Summary of the Results for the Social Studies Intervention

Intervention	Student	Mean		Percent change (%)	PND (%)	*p*
		Baseline	Intervention			
Social Studies	1	5.4	7.6	40.8	85.7	0.0002
	2	5.9	7.6	30.5	64.3	0.0051
	3	6.7	8.4	24.5	57.1	0.0114
	4	6	8	33.3	78.6	0.0007
	5	5.3	6.7	27	92.9	0

Table 4.

Summary of the Results for the Science Intervention

Intervention	Student	Mean		Percent change (%)	PND (%)	*p*
		Baseline	Intervention			
Science	1	5.5	7.7	38.9	50	0.0089
	2	5.9	7.4	25.2	0	1
	3	6.5	8.6	33.2	80	0.0001
	4	5.5	7.6	39.3	70	0.0007
	5	4.9	6.1	24.3	0	1

Social Validity

The concept of social validity refers to the extent to which an intervention or treatment is perceived as meaningful, acceptable, and beneficial by the individuals touched by the research. Social validity data for this study was collected via the completion of social validity assessments by both the participants, as well as the parents, or caregivers of the participants. These assessments were administered after the data collection process had concluded.

Participant Social Validity. The participant questionnaire comprised a total of nine items, consisting of seven closed-ended items that were evaluated and scored using a 1 to 5 rating scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree,* 5 = *strongly agree*), and two open-ended items. Each participant completed the assessment independently, with only the researcher present while the assessment was completed. Due to the age and reading level of the participants, the researcher personally read each question to each participant. To reduce unintended researcher influence on participant responses, the researcher was located in the front of the room while the participant sat at a table at the back of the room. The researcher did not look at the participant while he/she was completing the assessment and the participant placed the assessment into an envelope before handing it to the researcher. Social validity assessment result indicated all five participants *agreed* with the initial seven questions. Furthermore, results to the two open-ended questions indicated participants liked all parts of the RT intervention, with three of the participants stating they liked exchanging roles the most and two indicating they liked the independent work the most. Results to the participant social validity assessment are listed in Table 5.

Table 5. *Participant Social Validity Assessment Results*

Questions		Students' Responses
1.	The activity was fun.	Every single student agreed with these statements.
2.	The activity helped me to understanding what I read.	Every single student agreed with these statements.
3.	This activity helped me to be better at reading comprehension because of reciprocal teaching	Every single student agreed with these statements.
4.	I think this might help me to understand what I need.	Every single student agreed with these statements.
5.	The activity helped me correctly answer many more questions than I had done before.	Every single student agreed with these statements.
6.	I think I will like reading aloud to my classmates.	Every single student agreed with these statements.
7.	I think this activity will help me do better in school.	Every single student agreed with these statements.
8.	What did you not like about the reciprocal teaching activity?	All the students agreed that there was nothing they did not like
9.	What did you like most about the reciprocal teaching activity?	Three students agreed to exchange roles, and two students liked the independence at work

Parent Social Validity. The social validity assessment completed by the parent, or

caregiver of the participant was made up of 12 questions that employed a Likert Scale with a

point value of 1-*strongly disagree,* 2-*disagree,* 3-*neutral,* 4-*agree,* and 5-*strongly agree*, and as

four open-ended questions. Social validity assessment results indicated all five participants

agreed with the initial twelve questions. Furthermore, the results to the four open-ended

questions indicated parents felt the execution of the intervention was satisfactory. The parents

said that the intervention had many advantages, such as facilitating the enhancement of students'

reading comprehension skills, fostering the acquisition of topic knowledge and language related

to the reading material, and encouraging meaningful discourse among students. The majority of

parents (n=4) expressed their belief that there were no discernible drawbacks associated with the

implementation of the RT intervention. However, it is worth noting that a solitary parent expressed the opinion that this instructional approach necessitates a greater time commitment compared to typical classroom methods because of the distinct procedures involved. No ideas were provided by any of the parents to question four pertaining to ways to enhance the RT intervention. Results to the participant social validity assessment are listed in Table 6.

Table 6. *Parent Social Validity Assessment Results*

Questions	Parents' Responses
1. This was an acceptable intervention for my child's needs	Every single parent agreed with these statements.
2. Most parents would find this intervention appropriate for children with similar needs	Every single parent agreed with these statements.
3. This intervention was effective in supporting my child's needs	Every single parent agreed with these statements.
4. I would suggest the use of this intervention to other parents	Every single parent agreed with these statements.
5. My child's needs are severe enough to warrant use of this intervention	Every single parent agreed with these statements.
6. I will encourage the use of this intervention with my child	Every single parent agreed with these statements.
7. This intervention did not result in negative side effects for my child	Every single parent agreed with these statements.
8. This intervention would be appropriate for a variety of children	Every single parent agreed with these statements.
9. The intervention is a fair way to help children who have difficulties understanding what they read	Every single parent agreed with these statements.
10. This intervention helped my child to read faster and make fewer reading errors	Every single parent agreed with these statements.
11. I like the procedures used in this intervention	Every single parent agreed with these statements.
12. Overall, this intervention would be beneficial for children with reading difficulties	Every single parent agreed with these statements.

Treatment Fidelity

To guarantee the accurate execution of RT procedures throughout every stage of the study, the evaluation of procedural fidelity was conducted using a Treatment Fidelity Checklist. The checklist comprised a total of around twenty-five sequential steps. The variability in the number of procedural steps was contingent upon the magnitude of errors necessitating rectification. A secondary observer, specifically a member of the special education faculty, was enlisted to observe a total of 33% of the sessions. These sessions were chosen at random during each phase of the study. The purpose of this secondary observation was to ensure that each step of the planned intervention was executed with utmost effectiveness. During each session in which procedural fidelity was evaluated, the researcher diligently adhered to all prescribed procedures in the appropriate order, achieving a remarkable accuracy rate of 100%. Moreover, the assessment of procedural reliability was conducted by employing a straightforward method of dividing the total count of accurately executed steps by the overall number of procedural steps outlined in the checklist, followed by multiplication with a factor of 100 (Table 7).

Table 7. *Descriptive Intervention Fidelity reciprocal teaching interventions' Procedures Steps for the Five Participants*

Participants	Mean percentage of intervention adherence
	RT intervention
1	100%
2	100%
3	100%
4	100%
5	100%

Note. RT = Reciprocal Teaching

CHAPTER V

DISCUSSION

This chapter provides further discussion and interpretation of the results presented in Chapter 4. First, results related to the effects of reciprocal teaching interventions on improving the reading comprehension of elementary school, ESL students with LD are discussed. Specifically, the discussion involves summarizing the results and making comparisons between the current findings and previous research on the topic of the effectiveness of RT interventions. Furthermore, the perceived use of RT as an intervention to increase reading comprehension skills by both the student participants and the parents of participants is discussed. Second, the limitations of the research study are presented. The discussion concludes with a summary of potential implications that the findings hold for both research endeavors and practical applications in the field.

Effectiveness of RT

Although the level of improvement varied across the five participants, overall results indicated the use of RT led to improvement in reading comprehension skills across all subject areas. The greatest improvement in reading comprehension demonstrated by all participants was in the reading subject area. Participant 1, who demonstrated the greatest improvement, showed an extraordinary 128% increase in reading comprehensive skills during reading instruction. Consequently, although Participant 3 showed the least progress in reading comprehension skills during reading instruction, overall scores still indicated a 40.6% increase from baseline. Furthermore, although not as substantial as during reading instruction, results revealed that the implementation of RT interventions yielded noteworthy advancements in participants' reading comprehension skills scores during social studies instruction. Similar to reading instruction

results, Participant 1 demonstrated the greatest improvement in reading comprehension skills during social skills instruction, with a 40.8% increase. Furthermore, the remaining four participants all demonstrated marked improvement in reading comprehension skills during social skills instruction, with Participant 4 demonstrating the smallest increase (i.e., 33.3%). Finally, the results indicated that reading comprehension skills during science instruction was also positively impacted, with improvements seen across all five participants, ranging from 24.3% to 39.9%. Based on these results, it is reasonable to state that the use of RT interventions on elementary school ESL students with LD is appropriate and results in generalized improvements in reading comprehension skills across several core academic subject areas.

Moreover, statistical analysis revealed a significant improvement in all participants' comprehension and interpretation of written texts across core academic subject areas. The implementation of various instructional strategies, including summarization and prediction, facilitated a more thorough comprehension of the subject matter among the students. This progress indicates the RT approach equips ESL learners with LD with the skills necessary to effectively comprehend and navigate intricate textual materials, while also fostering a proactive approach to reading. Moreover, the advantageous impacts on the comprehension of written material were not limited to any specific textual category or style. The capacity to extrapolate the impacts of the intervention across various reading materials implies that the acquired skills were transferable; thereby, resulting in a more comprehensive and enduring enhancement in the overall reading proficiencies of the participants. Furthermore, these results emphasize the pragmatic utility of real-time RT strategies and showcases their efficacy across diverse reading environments.

Additionally, it is worth noting that the implementation of the RT intervention not only enhanced the basic reading comprehension skills of participants but also led to an increase in metacognitive functions related to clarification and questioning. As such, it is reasonable to posit that RT also contributed to a deeper comprehension of academic content encompassing complex ideas, historical events, and interconnected concepts. The intervention's emphasis on interactive strategies likely facilitated the process by which ESL students with LD were able to analyze and break down the complexities inherent in the subject matter. As a result, the participant's memory retention and comprehension of the content were enhanced. The broad impact of the RT program on academic performance also appears to have played a significant role in fostering the participants' ability to engage in critical thinking. This, in turn, had a positive effect on their capacity to assess and incorporate information from complex topics, such as social studies and science. For example, science topics often require comprehension of intricate concepts and the employment of analytical thinking skills. The utilization of various RT interventions, such as summarization and questioning, helped the ESL students with LD to identify important particulars, establish relationships between concepts, and articulate their understanding of scientific principles. The consistent positive impact observed on science test scores aligns with the overarching theme of the study, which highlights reciprocal teaching as a versatile intervention that demonstrates efficacy across various subject areas. The extent to which the skills can be effectively utilized in the realm of science indicates that RT has the potential to serve as a comprehensive instructional instrument, equipping ESL students with the capacity for analytical reasoning that can be applied across diverse academic domains.

The implementation of the RT intervention across a series of classes showcased a methodical approach aimed at fostering classroom interactions that were advantageous to all

parties involved (Hunt, 2021). The researcher presented a comprehensive theoretical framework and anticipated enhancements in performance for each approach. The experimental sessions adhered to a meticulously outlined protocol, encompassing distinct stages such as the formulation of the instructional methodology. The analysis and presentation of the research text demonstrated the participants' comprehension of RT strategies. The inclusion of individual exercises within the framework of the activity facilitated a process whereby participants were encouraged to engage in critical thinking autonomously.

This approach fostered the generation of unique answers and ideas, which subsequently served as the fundamental building blocks for subsequent collaborative group endeavors. The comprehensive approach discussed herein effectively addressed all facets of the RT process. The establishment of this environment fostered a conducive setting wherein ESL students with LD could engage in collective endeavors and engage in insightful discourse; thereby, enhancing their aptitude for reading comprehension. The observed enhancements in students' reading comprehension indicated the efficacy of the RT program following its implementation. The aforementioned findings underscore the pivotal role that teachers play in guaranteeing favorable outcomes in RT intervention efforts.

Perceptions of RT

The secondary purpose of the study was to gain a more nuanced understanding of the impact of the RT intervention by taking into account the perspectives of both ESL students with LD and their parents (Young et al., 2019). This was accomplished by taking into account not only the academic outcomes but also the subjective experiences and feedback from the primary stakeholders involved in the learning process. Specifically, student participants completed a survey pertaining to their perceptions of the RT intervention. Overall, all five participants *agreed*

that the RT activities were fun, they helped them to understand what they were reading quicker, helped them to answer more questions correctly. Furthermore, all five participants indicated they enjoyed reading aloud to their classmates and they thought they would keep using the RT interventions when reading. Finally, results to the two open-ended questions indicated participants liked all parts of the RT intervention, with three of the participants stating they liked exchanging roles the most and two indicating they liked the independent work the most.

According to Young and colleagues (2019), the inclusion of parent social validity surveys demonstrates a holistic approach to assessment, which provides a more comprehensive perspective regarding the overall effectiveness and acceptability of educational interventions for students with diverse learning needs. As such, the opinions of the parents of ESL student participants with LD on the RT intervention were also obtained. Overwhelming, parents *agreed* that the intervention was acceptable, appropriate, and effective. Furthermore, parents *agreed* they would suggest and encourage the use of RT interventions in their child's classroom to help develop reading comprehension skills. When asked how the RT interventions could be improved, all parents indicated the RT interventions were effective as is and required no modification. These positive parental comments support the use of RT interventions for ESL students with LD in classroom settings.

Limitations

Despite the overall positive results, the present study is not without its limitations. The focus of this research centers around whether the implementation of RT interventions can effectively support elementary school ESL students with LD who struggle with reading comprehension. The diminutive size of the study's sample is a noteworthy limitation. The limited sample size, consisting of only five participants, may give rise to skepticism regarding the

generalizability of the results to the broader population. The limited number of participants in the study poses challenges in drawing broad conclusions about the effectiveness of RT interventions for a wider range of children experiencing similar challenges in the educational setting. Further research should be conducted targeting the use of RT interventions with more diverse populations, including older students and students with different disabilities and learning difficulties.

Another noteworthy limitation is that the researcher served as the interventionist throughout the study. It is plausible that the researcher may have inadvertently introduced a degree of bias in the provision of assistance within the RT interventions. The potential influence of the researcher's involvement in a given scenario could have led to a more comprehensive or personalized intervention compared to what a traditional instructor or professional might have offered. An exploration into the feasibility of implementing RT interventions within diverse educational settings and with various instructors is warranted to address this limitation in forthcoming studies. This particular approach would yield a more comprehensive understanding of the intervention's effectiveness across different classroom environments.

One additional limitation of the research is the relatively brief duration. The investigation was conducted during the summer session, a period characterized by a decrease in the presence of university students on campus. The temporal constraints imposed on the intervention may have influenced both its duration and level of intensity. By allocating additional time within each instructional session, students would have been afforded the opportunity to engage in a more thorough exploration of the RT strategies. This extended duration would have facilitated a deeper understanding and implementation of these tactics, consequently enhancing the probability of substantial improvements in students' reading comprehension abilities. The potential

enhancement of reading comprehension outcomes can be observed through an extended duration of exposure to conventional pedagogical methods. Consequently, future investigations necessitate the implementation of lengthier intervention sessions in order to further explore this phenomenon.

Another limitation pertains to the temporal aspect of the interventions, as the investigation solely relied on sessions conducted exclusively during the summer term. For students who encounter challenges in the domain of reading, engaging in after-school tutoring sessions may present them with additional hurdles to overcome. The potential impact of students' exhaustion on their academic performance and subsequent outcomes of interventions cannot be overlooked. Further investigation into the differential effects of reciprocal teaching interventions administered at varying times of the day, while considering factors such as fatigue, levels of attention, and overall responsiveness to the intervention, presents a potentially fruitful avenue for future research.

Conclusion and Implications

In conclusion, the results give insight on whether RT interventions effectively increased the reading comprehension skills of ESL students with LD. All participants demonstrated an increase in reading comprehension skills across several core academic subjects, including reading, social studies, and science. The results are bolstered by the exact reproduction of the reciprocal teaching processes that were based on the methodologies that were reported by Bruce and Chan (1991). To analyze the impacts of the intervention, a quantitative component is provided by a multiple-probe design and visual analysis, which includes the examination of the percentage of nonoverlapping and nonoverlapping data (PND) and P-values. The positive outcomes that were seen in the performance of the participants during the intervention sessions,

with nonoverlapping data in the majority of instances, provide evidence that there is a functional link between the implementation of RT strategies and the enhancement of proficiency in reading comprehension.

The conclusions of this research are beneficial to both academics and instructional professionals. According to the findings of this research, educators who put RT interventions into practice are likely to see an increase in reading comprehension skills by ESL students with LD. The specialized instruction and organized approach employed by RT interventions provide educators with a possible framework to assist students who are struggling with reading comprehension. Finally, the findings of the study provide researchers with opportunities for additional exploration. These opportunities include the need for larger sample sizes, the evaluation of treatments in normal classroom settings, and a more comprehensive consideration of the scheduling and length of intervention sessions.

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APPENDIX A

Reciprocal Teaching Role Cards

The Questioner

• Ask questions which will help the group to understand what has been read.

• Think of questions to ask as you read the text.

What is?

Why is?

How is?

What did?

Why did?

How did?

What can?

When can?

Why can?

How can?

Who/What would?

Where / When would?

Which would?

Why would?

How would?

What will?

Where / When will? Which will?

Who will?

What might?

The Summariser

• Tell the group what you have read in your own words.

• Have the group pick out the main ideas.

The most important ideas are ...

The main idea is ...

This part was about ...

First,.. Next, ... Then, ...

This story takes place in ...

The main events of ...

The problem is ...

The Clarifier

You must clarify when:

• The group is confused by what they have read.

• When a word is read and not understood.

• When a sentence is read that doesn't make sense.

• When a question is asked.

• Think about what you did to help you understand and tell the group. E.g. Reread the sentence looking for clues to help you figure out the word or phrase; Break the word apart and look for smaller words you already know; Look for a prefix or suffix; Look at the text features.

The Predicator

• Use what you have read and the text features to help figure out what the group will learn and/or what will happen in the next piece of text.

• The group can change their predictions as they read on!

I think ...

I wonder if ...

I imagine ...

I suppose ...

I predict ...

I think the next section will be about...

(Adapted from The National Behavior Support Service)

APPENDIX B

Reciprocal Teaching Strategies Worksheet

ID #: _____ Reading Assignment: _____ Date: _____

Prediction: Before you begin to read the selection, look at the main title, scan the pages to read major headings, and look at any illustrations. Write down your prediction about what the story will be about.

```
_____
_____
_____
_____
_____
```

List Main Ideas
As you finish reading each paragraph or section of the passage, summarize the main idea of that paragraph in one two complete sentences.

☐ **Main Idea #1**
_____
_____
_____

☐ **Main Idea #2**
_____
_____
_____

☐ **Main Idea #3**
_____
_____
_____

Generate Questions
For each main idea, write one question that the main idea will answer include words like who, what, where, when, and how.

☐ **Question #1**
_____
_____
_____

☐ **Question #2**
_____
_____
_____

☐ **Question #3**
_____
_____
_____

Clarifying: Copy down any words, phrases, or sentences in the passage that are unclear.

```
_____
_____
_____
_____
```

(Adapted from Lysynchuk, Pressley, & Vye, 1990)

APPENDIX C

Procedural Fidelity Checklist for Intervention Phases

Observer / Teacher Name:	
Date:	
Session:	

Instructions: Following each statement below, please indicate your agreement or disagreement by selecting the appropriate "yes" or "no" box. To determine the reliability of a procedure, divide the total number of "Y" obtained by 21 and multiply by 100.

Procedure	Instruction & activities	Y	N
Step 1: Modeling the Teaching Strategy	Sits group at a table to get reciprocal teaching instruction		
	Places reading material in front of each student		
	Introduce the four strategies (predicting, clarifying, questioning and summarizing)		
Step 2 Analyzing and Communicating the Study Text	Read the text together as a class		
	Hand out reciprocal teaching cards		
	Choose a group leader		
	Hand out self-assessment to the group leader		
	Ask students to answer the First part from their own introspection before seeking the group's ideas on their answers		
Step 3 Individual Activity	Ensure that students exchange reciprocal teaching roles		
	Ask the students to come up with their own answers		
Step 4 Individual Activity	Bring the students together in a collaborative initiative to address the issues and the concepts emerging from individual activity in step 3		
	students discuss their answers together		
	Submit their answers to you		
	Provide praise and feedback regarding the students' performance		
Assessment procedures	Places passage in front of a student		
	Read the passage out loud as a group		
	Says, "I'm going to read this passage out loud as group. I will be able to help you with words you do not know. Put your finger on the first word. Ready? Begin."		
	Teacher says, "You will need to answer these questions" (teacher prompts the student to read the questions aloud).		
	If the student gets stuck on a word for more than three seconds, the teacher tells the student the correct word and tells the student to continue reading		
	The teacher asks the students to answer the comprehension questions once the student has completed the reading.		
	Ask the students to return the evaluation sheet to you after they have finished answering		
Percentage of Daily Integrity			
TOTAL			

APPENDIX D

Social Validity Questionnaire (Student Form)

ID #:   Date:

Please respond to the following statements using the following scale:
   1. Strongly Agree
   2. Agree
   3. Neither Agree Disagree
   4. Disagree
   5. Strongly Disagree

	1 Strongly Agree ☺	2	3	4	5 Strongly Disagree ☹
1. The activity was fun.					
2. The activity helped me to understanding what I read.					
3. This activity helped me to be better at reading comprehension because of reciprocal teaching					
4. I think this might help me to understand what I need.					
5. The activity helped me correctly answer many more questions than I had done before.					
6. I think I will like reading aloud to my classmates.					
7. I think this activity will help me do better in school.					

8. What did you not like about the reciprocal teaching activity?

9. What did you like most about the reciprocal teaching activity?

Comments:

APPENDIX E

Social Validity Questionnaire (Parent Form)

The purpose of this questionnaire is to obtain information that will aid in the selection of future classroom interventions. These interventions will be used by parents of children with special needs. For each question, please circle the number that best describes your answer.

	Strongly Disagree	Disagree	Neither Agree Disagree	Agree	Strongly Agree
1. This was an acceptable intervention for my child's needs	1	2	3	4	5
2. Most parents would find this intervention appropriate for children with similar needs	1	2	3	4	5
3. This intervention was effective in supporting my child's needs	1	2	3	4	5
4. I would suggest the use of this intervention to other parents	1	2	3	4	5
5. My child's needs are severe enough to warrant use of this intervention	1	2	3	4	5
6. I will encourage the use of this intervention with my child	1	2	3	4	5
7. This intervention did not result in negative side effects for my child	1	2	3	4	5
8. This intervention would be appropriate for a variety of children	1	2	3	4	5
9. The intervention is a fair way to help children who have difficulties understanding what they read	1	2	3	4	5
10. This intervention helped my child to read faster and make fewer reading errors	1	2	3	4	5
11. I like the procedures used in this intervention	1	2	3	4	5
12. Overall, this intervention would be beneficial for children with reading difficulties	1	2	3	4	5

13. What are the advantages of using reciprocal teaching strategies for students with reading difficulties to improve reading comprehension?

14. What are the disadvantages of using reciprocal teaching strategies for students with reading difficulties to improve reading comprehension?

15. What suggestions do you have to improve the reciprocal teaching intervention?

Comments:

APPENDIX F

INFORMED CONSENT DOCUMENT

(Parents)

OLD DOMINION UNIVERSITY

<u>**PROJECT TITLE:**</u>
Using Reciprocal Teaching Strategies to Improve Reading Comprehension for Students with Learning Disabilities

<u>**INTRODUCTION**</u>
The purposes of this form are to give you information that may affect your decision whether to say YES or NO to allow your child to participate in this research, and to record your consent if you say YES. The main purpose of this study is to determine the effects of reciprocal-teaching interventions on improving the reading comprehension of elementary school students with learning disabilities and/or difficulty with reading comprehension. The reciprocal teaching intervention will be used with your child during a small group intervention session with a research investigator who is a PhD student in Special Education.

<u>**RESEARCHERS**</u>

Responsible Project Investigator:

Dr. Jonna Bobzien
Associate professor of special education
Darden College of Education
Department of Communication Disorders and Special Education
Old Dominion University
Phone: 757-683-3307, Email: jbobzien@odu.edu

Dr. Peggy Hester
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Darden College of Education
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Old Dominion University
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Investigator:
Hana Almohamadi, Doctoral student at Old Dominion University,
Darden College of Education
Department of Communication Disorders and Special Education
Old Dominion University
Email: halmo001@odu.edu

<u>**DESCRIPTION OF RESEARCH STUDY**</u>

When first modeled by a teacher and then completed independently by a student, reciprocal teaching strategies may help improve reading comprehension. These four strategies are questioning, summarizing, clarifying, and predicting. Once students have learned the strategies, they will take turns assuming the role of teacher and leading a discussion about what they read with the other students in their reading group. Throughout the process, the teacher will guide and affirm the students' ability to use the four strategies successfully within the small group. The teacher's role will be lessened as students develop the skills to participate in the discussion. Students will read both fiction and non-fiction passages; this includes passages in reading, science, and social studies.

If you decide to allow your child to participate, then your child will join a study involving research that is designed to examine the effectiveness of a reciprocal-teaching intervention to improve a child's reading comprehension. If you say YES, then your child's participation will involve working directly with a research investigator, for 45-minutes, three to five times per week. During the last session, your child will also work with the research investigator to complete one, nine-item questionnaire regarding the reading program activities. The anticipated total length of the study is approximately seven weeks. This study will take place in Lion's Child Study Center, Room 105, at Old Dominion University. Approximately five students with learning disabilities and/or difficulty with reading comprehension will be participating in this study.

Each session will be video or audio recorded for data analysis purposes only. Your child will not be identified by name in video or audio recordings and you may select the option that suits you best. Your child's data, information, and video or audio recording will be considered confidential and will be stored on a secure server on a password protected, ODU-managed computer or in a locked file cabinet in room 224 of the Lion's Child Study Center at ODU. Unless disclosure is required by law, the data and video or audio files will be accessible only to the study investigators and data collectors.

EXCLUSIONARY CRITERIA
To participate in this study, the participant must be between the ages of eight (8) to eleven (11) years old with a diagnosis of LD and/or difficulty with reading comprehension. Your child must be a struggling reader in the second, third, fourth, or fifth grade and have a reading delay of at least one year below their grade level, as determined by a reading assessment conducted by your child's school during the current school year. Your child must receive English as a second language (ESL) services at his school to support his language development. To the best of your knowledge, your child should not have any other disability (for example, autism, visual, and/or hearing impairment, or an intellectual disability).

RISKS AND BENEFITS
RISKS: The procedures used in the study are similar to the classroom procedures to which the child is normally exposed. Therefore, the risks of participating in the study are minimal. Also, children will take breaks as needed should frustration become evident through their reactions to the task. A potential risk to participants may be related to a breach of confidentiality. To protect confidentiality, each participant will be assigned a unique identification number that will be used in lieu of the participant's name on all research materials and video or audio files. The list of participants with corresponding identification numbers, all signed recruitment materials, and all data collection sheets will be stored securely in a locked filing cabinet in room 224 of the Lion's Child Study Center at ODU. The primary researcher is the only person with access to this file cabinet. In addition, the data and video or audio file will be stored on a secure server on an ODU-managed computer (i.e., a password-protected computer) accessible only to the researcher and data collectors. All data sheets and video or audio

clips will be locked to prevent copying and/or downloading, and all data sheets and video or audio files will be destroyed within one year after the study analysis ends.

BENEFITS: There are no direct benefits to participating in this study. It is hoped that the results of the study can be useful in helping researchers identify how and why reciprocal teaching strategies can be effective, which might improve students' academic performance, as well as instructional practices. Your permission will allow us to provide knowledge on the effectiveness of reciprocal teaching strategies on improving reading comprehension skills in children with learning disabilities and ESL.

Upon your consent, you will receive a brief description of the study procedures.

COSTS AND PAYMENTS

You will not be asked to pay any cost for your child's participation. Your child will also receive a $25 gift card after completing the study as a small token of appreciation.

NEW INFORMATION

If the researchers find new information during this study that would reasonably change your decision about participating, then they will give it to you.

CONFIDENTIALITY

To ensure your child's protection, the researcher will take reasonable steps to keep private information, including: (1) using a code instead of participants' real names in the study; (2) storing all data on a password-protected ODU-managed computer or locked file in ODU's Child Study Center to ensure all information is safe and secure; (3) ensuring all photographs or video or audio files are not allowed to be downloaded; and (4) ensuring all data sheets and video or audio files will be destroyed within one year after the study analysis ends.

WITHDRAWAL PRIVILEGE

It is OK for you to say NO. Even if you say YES now, you are free to say NO later and walk away or withdraw from the study at any time. If you or your child decide to withdraw the participation in this study at any time, it will not affect your relationship with Old Dominion University or the Saudi Students Club community or otherwise cause a loss of benefits to which you or your child might otherwise be entitled.

COMPENSATION FOR ILLNESS AND INJURY

If you say YES, then your consent in this document does not waive any of your legal rights. However, in the event of (harm, injury, or illness) arising from this study, neither Old Dominion University nor the researchers are able to give you any money, insurance coverage, free medical care, or any other compensation for such injury. In the event that you suffer injury as a result of participation in any research project, you may contact, Tancy Vandecar-Burdin, the current Institutional Review Board (IRB) chair, at 757-683-3802 at Old Dominion University, or the Old Dominion University Office of Research at 757-683-3460 who will be glad to review the matter with you.

VOLUNTARY CONSENT

By signing this form, you are saying several things. You are saying that you have read this form or have had it read to you, that you are satisfied that you understand this form, the research study, and its risks and benefits. You say you understand that there will be video or audio recordings of all sessions during this study that will be encrypted and password-protected on an ODU-managed computer; these recordings will be used for the research study only and will not be available publicly. If results are published, your child will be identified only

by a code. The researchers should have answered any questions that you may have had about the research. If you have any questions later on, then the researchers should be able to answer them by E-mail (halmo001@odu.edu) or Phone Number: (608) 446-2874, or you can contact Dr. Jonna Bobzien, E-mail JBobzien@odu.edu, Phone Number: (757) 683-3307 or Dr. Peggy Hester, E-mail phester@odu.edu, Phone Number: (757) 683-3226.

If at any time you feel pressured to participate, or if you have any questions about your rights or this form, then you should call Dr. Tancy Vandecar-Burdin, the current chair of the Institutional Review Board (IRB), at 757-683-3802, or the Old Dominion University Office of Research at 757-683-3460.

And importantly, by signing below, you are telling the researcher YES, that you agree to participate in this study. The researcher should give you a copy of this form for your records.

Parent / Legally Authorized Representative's Printed Name & Signature	Date
Student's Name	

INVESTIGATOR'S STATEMENT

I certify that I have explained to this subject the nature and purpose of this research, including benefits, risks, costs, and any experimental procedures. I have described the rights and protections afforded to human subjects and have done nothing to pressure, coerce, or falsely entice this subject into participating. I am aware of my obligations under state and federal laws and promise compliance. I have answered the subject's questions and have encouraged him/her to ask additional questions at any time during the course of this study. I have witnessed the above signature(s) on this consent form.

Here are the two options for recording the session:

  1- Record the session with video:

  ---- By choosing this option, the session will be recorded with video.

  2- Record the session with audio only:

  ---- By selecting this option, only the audio of the session will be recorded.

Please choose the option that best suits your preferences and needs

Investigator's Printed Name & Signature	Date

<div align="center">

APPENDIX G

INFORMED CONSENT DOCUMENT

(Parent Participant)

OLD DOMINION UNIVERSITY

</div>

<u>PROJECT TITLE:</u>
Using Reciprocal Teaching Strategies to Improve Reading Comprehension for Students with Learning Disabilities

<u>INTRODUCTION</u>
The purposes of this form are to give you information that may affect your decision whether to say YES or NO to participate in this research, and to record your consent if you say YES. The main purpose of this study is to determine the effects of reciprocal-teaching interventions on improving the reading comprehension of elementary school students with learning disabilities and/or difficulty with reading comprehension. You will be asked to complete a short questionnaire regarding your perspectives of the impact of the reciprocal-teaching intervention on your child.

<u>RESEARCHERS</u>

Responsible Project Investigator:

Dr. Jonna Bobzien
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Darden College of Education
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Old Dominion University
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Dr. Peggy Hester
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Old Dominion University
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Investigator:
Hana Almohamadi, Doctoral student at Old Dominion University,
Darden College of Education
Department of Communication Disorders and Special Education
Old Dominion University
Email: halmo001@odu.edu

<u>DESCRIPTION OF RESEARCH STUDY</u>

When first modeled by a teacher and then completed independently by a student, reciprocal teaching strategies may help improve reading comprehension. These four strategies are questioning, summarizing, clarifying, and predicting. Once students have learned the strategies, they will take turns assuming the role of teacher and leading a discussion about what they read with the other students in their reading group. Throughout the process, the teacher will guide and affirm the students' ability to use the four strategies successfully within the small group. The teacher's role will be lessened as students develop the skills to participate in the discussion.

Students will read both fiction and non-fiction passages; this includes passages in reading, science, and social studies.

If you decide to participate, you will join a study involving research that is designed to examine the effectiveness of a reciprocal-teaching intervention to improve a child's reading comprehension. If you say YES, then your participation will involve working directly with the research investigator to complete one, 12-item questionnaire regarding your perceptions of the potential impact of the reciprocal-teaching intervention on your child. The anticipated total length of time needed is 15-minutes. This study will take place in Lion's Child Study Center, Room 105, at Old Dominion University. Approximately five parents of children with learning disabilities and/or difficulty with reading comprehension will be participating in this study.

EXCLUSIONARY CRITERIA
To participate in this study, the participant must be the parent, or legal guardian, of a child between the ages of eight (8) to eleven (11) years old with a diagnosis of LD and/or difficulty with reading comprehension and who receives English as a second language (ESL) services at his/her school to support his language development.

RISKS AND BENEFITS
RISKS: A potential risk to participants may be related to a breach of confidentiality. To protect confidentiality, each participant will be assigned a unique identification number that will be used in lieu of the participant's name on all research materials, including questionnaires. The list of participants with corresponding identification numbers, all signed recruitment materials, and all completed questionnaires will be stored securely in a locked filing cabinet in room 224 of the Lion's Child Study Center at ODU. The primary researcher is the only person with access to this file cabinet.
BENEFITS: There are no direct benefits to participating in this study. It is hoped that the results of the study can be useful in helping researchers identify how and why reciprocal teaching strategies can be effective, which might improve students' academic performance, as well as instructional practices. Your permission will allow us to provide knowledge on the effectiveness of reciprocal teaching strategies on improving reading comprehension skills in children with learning disabilities and ESL.
Upon your consent, you will receive a brief description of the study procedures.

COSTS AND PAYMENTS
The researchers want your decision about participating in this study to be voluntary. You will not be asked to pay any cost for your participation, nor will you receive any compensation for participation.

NEW INFORMATION
If the researchers find new information during this study that would reasonably change your decision about participating, then they will give it to you.

CONFIDENTIALITY
To ensure your protection, the researcher will take reasonable steps to keep private information, including: (1) using a code instead of participants' real names in the study; (2) storing all data on a password-protected ODU-managed computer or locked file in ODU's Child Study Center to ensure all information is safe and secure; and (3) ensuring all questionnaires are destroyed within one year after the study analysis ends.

WITHDRAWAL PRIVILEGE
It is OK for you to say NO. Even if you say YES now, you are free to say NO later and walk away or withdraw from the study at any time. If you decide to withdraw the participation in this study at any time, it will not affect your relationship with Old Dominion University or the Saudi Students Club community or otherwise cause a loss of benefits to which you might otherwise be entitled.

COMPENSATION FOR ILLNESS AND INJURY

If you say YES, then your consent in this document does not waive any of your legal rights. However, in the event of (harm, injury, or illness) arising from this study, neither Old Dominion University nor the researchers are able to give you any money, insurance coverage, free medical care, or any other compensation for such injury. In the event that you suffer injury as a result of participation in any research project, you may contact, Tancy Vandecar-Burdin, the current Institutional Review Board (IRB) chair, at 757-683-3802 at Old Dominion University, or the Old Dominion University Office of Research at 757-683-3460 who will be glad to review the matter with you.

VOLUNTARY CONSENT
By signing this form, you are saying several things. You are saying that you have read this form or have had it read to you, that you are satisfied that you understand this form, the research study, and its risks and benefits. If results are published, you will be identified only by a code. The researchers should have answered any questions that you may have had about the research. If you have any questions later on, then the researchers should be able to answer them by E-mail (halmo001@odu.edu) or Phone Number: (608) 446-2874, or you can contact Dr. Jonna Bobzien, E-mail JBobzien@odu.edu, Phone Number: (757) 683-3307 or Dr. Peggy Hester, E-mail phester@odu.edu, Phone Number: (757) 683-3226.

If at any time you feel pressured to participate, or if you have any questions about your rights or this form, then you should call Dr. Tancy Vandecar-Burdin, the current chair of the Institutional Review Board (IRB), at 757-683-3802, or the Old Dominion University Office of Research at 757-683-3460.

And importantly, by signing below, you are telling the researcher YES, that you agree to participate in this study. The researcher should give you a copy of this form for your records.

Participant's Printed Name & Signature	Date
Witness' Printed Name & Signature	Date

INVESTIGATOR'S STATEMENT

I certify that I have explained to this subject the nature and purpose of this research, including benefits, risks, costs, and any experimental procedures. I have described the rights and protections afforded to human subjects and have done nothing to pressure, coerce, or falsely entice this subject into participating. I am aware of my obligations under state and federal laws and promise compliance. I have answered the subject's questions and have encouraged him/her to ask additional questions at any time during the course of this study. I have witnessed the above signature(s) on this consent form.

Investigator's Printed Name & Signature	Date

APPENDIX H

Data Collection Sheet

Student ID		Date	
Condition		Coder	

Week	Baseline					Treatment																								
	1					2					3					4					5					6				
Session	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Reading																														

Social Studies																														

Sciences																														

<div align="center">

CURRICULUM VITAE

</div>

BIOGRAPHICAL

Name: Hana Almohamadi

Business Address: Child Study Center
                          Old Dominion University
                          Norfolk, VA 23529-0136   Office: (757) 683-3307

EDUCATION

PhD   In progress   2018

MS   Shippensburg University, Shippensburg, PA   2016
          Ed.S. Special Education

BS   Taibah University, Medina, Saudi Arabia   2008
          Special Education, Summa Cum Laude

EXPERIENCE

Academic

Lecturer   2016-Present
University of Hail, Saudi Arabia

Teacher   2008-2010
Alhikma elementary school, Saudi Arabia

COURSES TAUGHT

Intro to rehabilitation of individuals with special needs
Assessment and diagnosis in special education
Mainstreaming strategies of student with special needs
Counseling for individuals with special needs & their families
Comprehensive rehabilitation of individuals with special needs
Academic learning disabilities
A case study in learning disabilities
Issues in Special Education
History of Psychological Studies
Educational Evaluation
Principle of Education Research