Intervention Strategies For Students With Specific Learning Disabilities: A Systematic Literature Review

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Abstract

Evidence-based intervention strategies are effective in education because they are grounded in empirical research and have been shown to address the challenges faced by students in general, and students with disabilities in particular. These strategies aim to enhance academic, behavioral, social, and emotional outcomes while ensuring that interventions are specifically designed and effective.

In this systematic review of the literature spanning 1990 to 2024, the use of intervention strategies (self-strategy instruction, collaborative strategic reading, and peer-assisted learning) to improve reading outcomes for students with specific [1]learning disabilities was evaluated. Ten studies met the inclusion criteria and were assessed according to the relevant What Works Clearinghouse (WWC) design standards. The research designs used included quasi-experimental design, comparative research design, A-B design, control group design, single-case design, and multiple baseline design.

The findings involving CSR, self-instruction, and peer-assisted learning strategies were shown to be beneficial for students with SLD. The study highlights several key areas for future research, including treatment variables, sample characteristics, and instructional strategies in inclusive classrooms, to better align with higher expectations for the effective integration of reading. Future research should explore the effectiveness of integrated reading interventions for students with academic challenges related to various disabilities.

Keywords: Specific Learning Disabilities, Intervention Strategies, Reading comprehension.

Introduction

Reading comprehension is one of the most important concepts associated with the nature of reading, making it a linguistic, educational, and pedagogical requirement. There is no doubt that the goal of all reading understands; reading without[2] understanding is not reading in its true sense. Reading comprehension is a complex process that occurs at different levels, requiring various mental abilities and extensive practice. It is also a difficult skill for students with specific learning disabilities (SLD) due to certain characteristics and limited abilities that differ from students without disabilities. Students with SLD have difficulty in understanding the meaning of words, passages and decoding words (Altaher, Qhtan., 2001). This impacts their academic performance. Some students with SLD in reading comprehension can read or decode words without difficulty, but they still have difficulties in understanding or remembering what they've read (Sartawi et al., 2001). Therefore, instruction strategies can help students with learning disabilities in reading through teaching them how to improve their skill, and how to generalize their use with other classes (Farouk Al Rousan, 2013). These strategies are based on thoughtful teaching methods that enhance the student's ability to acquire basic reading skills (such as decoding) and improve comprehension and understanding. The educational strategies adopted to improve reading for students with learning difficulties vary. Some

of these strategies involve engaging multiple senses at the same time, such as sight, hearing, touch, and movement, which helps make concepts clearer and more stable. Another strategy focuses on the teacher providing clear and organized instructions with intensive models and guidance, which allows the student to understand the required steps clearly and repeat the skills until they become natural. This includes teaching phonics with visual and audio support. Peer-assisted learning also plays a role in facilitating reading tasks for students with learning disabilities.

Research Problem

Previous research has focused extensively on determining the effects of reading interventions on improving phonics skills in students with specific learning disabilities, with less attention paid to reading comprehension. This is because most teachers focus so heavily on the external outcomes of reading ability that they overlook the importance of reading comprehension, which is as crucial as reading ability (Stanovich, 2000). Therefore, the researcher focused on determining the effects of the most used strategies on improving reading comprehension in students with specific learning disabilities. The purpose of this paper is to provide an overview of studies that were conducted over a 20-year period that have investigated the use of explicit strategy instruction, collaborative strategic reading and peer-assisted learning strategies to improve the reading comprehension skills of students with SLD. The research questions that guide this study are as follows:

1. What is the effect of using self-learning on the reading level of students with specific learning disabilities?
2. What is the effect of using collaborative strategies on the reading level of students with specific learning disabilities?
3. What is the effect of using peer-assisted learning strategies on the reading level of students with specific learning disabilities?

Research Goals

This study aims to raise awareness of the effectiveness of intervention strategies in improving reading comprehension for students with specific learning disabilities. Understanding the types of intervention strategies that are most effective and scientifically proven to have an impact helps inform practices, leading to faster and easier early intervention. This study enriches the research aspect due to the lack of interest of researchers in the reading comprehension aspect of students with specific learning disabilities.

Research Limitations:

Research limitations include the following:

• Spatial limitations: This study's research was limited to the United States of America.

• Time limitations: This study relied on research published from 1990-2024.

Definitions of Terms

1- **Specific Learning Disabilities**: It is a neurodevelopmental disorder that typically begins during school age, although it may not be recognized until adulthood. It refers to persistent difficulties in one of three areas—reading, writing, and mathematics—that are crucial to an individual's ability to learn.
2- **Intervention Strategies**: It is a set of practices and processes proven effective for students with disabilities through scientific research and clinical practice.
3- **Reading comprehension :**It is the ability to understand what one reads, whether silently or aloud, to extract meaning from word combinations in context, and to use both explicit and implicit information in the text to grasp the intended message.

Theoretical framework and previous studies

First: Literature Review

First : Specific Learning Disability
The American Psychiatric Association (DSM-5) defines specific learning disabilities as neurological disorders that affect the ability to learn specific academic skills such as reading, writing, or mathematics, despite normal intelligence. Learning disabilities include dyslexia, dysgraphia, and dyscalculia (American Psychiatric Association). According to the National Council on Learning Disabilities

(NCLD), learning disabilities are neurological disorders that affect specific mental processes related to learning, such as reading, writing, and mathematical reasoning. They are not the result of emotional disturbances or environmental or social problems, but they impede academic performance in a way that is disproportionate to the person's abilities (Saro, Bernados, Gaviola, & Cruiz, 2023).

Neurological theory advocates believe that many children with learning disabilities clearly show simpler neural signals than typical children. This is due to acquired brain damage that leads to an inability to organize, integrate, and synthesize information necessary for academic skills, which in turn leads to learning disabilities, in addition to an imbalance in cognitive processing capabilities between the two halves of the brain. Supporters of this trend emphasize that learning disabilities result from this imbalance.

Al-Damati (2013) indicated that both hemispheres are affected: the right hemisphere specializes in the simultaneous processing of visual-spatial information, while the left hemisphere specializes in the sequential processing of linguistic information. Integration between the two hemispheres is essential for the learning process, and cognitive disturbance in either of them causes an imbalance, leading to learning disabilities.

Proponents of behavioral theory, on the other hand, believe that the decline in academic achievement among students with learning disabilities may be attributed to the use of inappropriate teaching methods, a lack of appropriate educational tools and activities, large class sizes, and low student motivation. Additionally, unsuitable environmental conditions in the family, school, and society contribute to the issue (Abdul Hamid et al., 2013).

Second: Intervention Strategies
Many students with specific learning disabilities need effective, evidence-based intervention strategies to improve their performance. These strategies aim to meet their individual needs and develop their skills sustainably (Hailemariam et al., 2019). One prominent strategy is multi-sensory education, which relies on activating different senses (sight, hearing, and touch) to enhance understanding, such as using visual cards, audio recordings, or writing activities that focus on letters and words (Obaid, M. A., 2013).

Self-directed instruction can also serve as an effective intervention tool to improve students' learning levels, as it requires students to monitor their learning and evaluate their progress, such as writing daily notes or using mind maps to clarify ideas (Lee, Wehmeyer, & Shogren, 2015). Teachers can also use strategic peer-assisted learning, which enhances peer support. In this approach, a student who understands a particular concept supports a peer who needs help, increasing the student's confidence and reducing communication barriers, thereby making learning easier (Farlow, D. M., 2024).

Reciprocal teaching is another educational technique that engages students in the learning process by encouraging them to play the role of the teacher. This strategy is used in small groups, where each student explains a portion of the content, enhancing their personal understanding (Öksüz, H., & Akyol, H., 2024).

Prompting strategies, which rely on providing positive feedback and rewards, along with designing activities that suit students' interests and learning levels, are also effective. Teachers can employ the fading strategy to ensure that students continue to improve independently. This approach begins with significant support and gradually reduces it until the student can perform the task unaided. For instance, a teacher may start with detailed instructions and progressively reduce them until the student becomes self-reliant (Cure, G., 2024).

By systematically and consistently using these targeted strategies, the quality of learning can improve, enabling students to become more independent and self-reliant. This leads to sustainable and productive educational outcomes. Students with learning disabilities can gradually overcome reading challenges and make significant progress.

Third: Comprehensive Reading

Reading comprehension has received significant attention from researchers as an essential component of students' cognitive and linguistic

development (Shanahan et al., 2010). It is a complex mental activity aimed at understanding the meaning of what the student reads, supported by the reader's background knowledge to infer meaning. Reading comprehension includes understanding words and sentences and connecting their meanings (Gersten, Fuchs, Williams, & Baker, 2001). Jitendra and Gajria (2011) indicate that reading comprehension requires a thorough understanding of the text, inferring meanings, and analyzing them. It also involves critical thinking and summarizing information.

Achieving reading comprehension is a challenge in education, as approximately 40% of students struggle to understand new words and implement comprehension strategies. Reading comprehension is vital for learning and intellectual growth, as it improves critical and analytical thinking and enriches vocabulary and general knowledge. Many students, particularly those with learning difficulties, face persistent problems at one or more levels of reading comprehension.

Williams (2004) identified five levels of reading comprehension through which students progress to achieve understanding:

1. Literal Level:

The student recognizes details, main ideas, and the sequence of events, makes comparisons, identifies cause-and-effect relationships, understands character traits, and recalls information mentioned in the text.

2. Reorganizing Information Level:

This involves classifying, summarizing, and restructuring the information.

3. Inferential Comprehension Level:

The student infers supporting details, main ideas and their sequence, comparisons, cause-and-effect relationships, character traits, predicts outcomes, and interprets illustrations in the text.

4. Evaluative Level:

This includes making judgments about the characters (e.g., whether they are real or imaginary), evaluating events (e.g., whether they are facts or opinions), and assessing the sufficiency, accuracy, and relevance of the information, as well as its overall value and acceptability.

5. Appreciative Level:

This involves emotional responses to the content, identifying characters and events, and engaging with the writer's use of figurative language.

Methods and Procedures
This chapter deals with presenting the research procedures, study sample, and comprehensive study tools.

Research procedures:

The search procedures consisted of two steps.

First, a literature search was conducted using three online databases (i.e., PsycI NFO, Psy Articles, and ERIC) with the following keywords: learning disabilities, specific learning disabilities, cognitive disabilities, learning strategies, self-instruction, collaborative strategies, peer assistance, collaborative reading, reciprocal teaching, motivation, fading, self-questioning, reading effectiveness, basic reading skills, reading, and comprehensive reading.

Second, all journal articles and references identified through the eligibility and exclusion criteria were manually reviewed. The inclusion criteria required selecting studies that:

- Addressed strategies or interventions affecting comprehension knowledge in students with learning disabilities.

- Were published in English between 1990 and 2022.

- Clearly indicated the measure of effect.

To meet the criteria, articles had to:
(a) Use an experimental design (i.e., single-subject, experimental, or quasi-experimental design), with qualitative and descriptive studies excluded.
(b) Be published in an English-language, peer-reviewed journal between 1990 (the end date of the most recent review) and 2022.

(c) Include participants aged 6–21 years identified as having a learning disability.

The initial computer search yielded 132 articles, of which 7 met the criteria.

Table 1. Studies Reviewed (Participants)

Study	n	Age	setting
Johnson, Graham, and Harris (1997)	47 students	11-12	Special Classrooms
Klingner, Yaughn, Arguelles, Hughes & Leftwich (2004)	211 students	9-12	Inclusion Classroom
Chalk, J. C., Hagan-Burke, S., & Burke, M. D. (2005).	94 students	16	Special Classrooms
Saenz and Fuchs (2005)	132 students	10	Inclusion Classroom
Spörer, Brunstein, and Kieschke (2009).	210 students	9-12	Special Classrooms
Rouse, Alber-Morgan, Cullen & Sawyer (2014)	2 students	11	Special Classrooms
Völlinger, Supanc & Brunstein (2018)	140 students	9	Inclusion Classroom

Results and Discussion

The First question: What is the effect of using a single intervention strategy (Self-instruction on learning, Collaborative Strategic Reading effectiveness, Peer-Assisted Learning Strategies) on the level of reading comprehension?

Self-instruction on learning

Johnson, Graham, and Harris (1997) were some of the first researchers to study reading comprehension strategies for students with learning disabilities. They studied the components of self-regulated strategy development (SRSD); they checked if self-instruction and goal setting helped students learn, maintain, and generalize a story grammar strategy. Bednarczyk (1991) taught a story grammar strategy to fifth- and sixth-grade students with SLD using a multicomponent strategy instructional model, and self-regulated strategy development (SRSD). SRSD teaches students to set their own goals and provides themselves with instruction. The reading skills addressed by this study directly correlates with Alabama CCRS standard ELA.3.2. which states Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text [RL.3.2].

Participants were forty-seven students in fourth, fifth, and sixth grade, each of them had studied in special classrooms in one of four suburban elementary schools, middle class neighborhoods outside of Washington, DC. The researchers randomly selected and assigned them to four conditions (strategy instruction, strategy instruction plus goal setting, strategy instruction plus self- instruction, and strategy instruction plus goal setting and self-instruction). The researchers developed five different comprehension probes using five stories. The teachers used three of them for story retelling that the researchers used to measure the quantity of information students remembered after they read a story. Inter observer reliability was .92 for main ideas, .91 for details, and .85 for grammar ratings.

The researchers used the other two probes for a pretest and posttest. The researchers measured comprehension through asking multiple-choice questions. They also recorded any public cases of self-regulation. Instructors worked with six small groups for approximately 45 minutes, two days a week, for four to six weeks. Instructional steps for the four conditions were as follows: Preskill development focused on defining the common parts of a story. Next, the teacher conferences with students and reviews any experiences students had in using story grammar elements, story maps, or common reading strategies. In addition, the instructor

discussed with students how to lay a target to learn the strategy. Then the teacher discussed the learning strategy that had four steps: Write, say, read and think. Next, the teacher modeled how to use the strategy. The students practiced the strategy until they mastered the steps. Then the students engaged in collaboration practice that involved goal setting and monitoring their attainment. Finally, students completed independent practice.

The results showed that students in all strategy conditions were able to remember more ideas, specific information, story details, and this means the reading strategy produced general effects on students' story comprehension skills. Students' post-test scores were better than pre-test scores in story grammar. For main ideas and details recalled, students in strategy condition (ST) achieved higher scores than other groups. For questions answered correctly and story grammar in posttest, the mean of students in ST was greater than students in other groups.

In another study conducted by Chalk et al. (2005) to determine the effectiveness of the SRSD model with three classes of 94 second-year high school students with learning disabilities, the results indicated a positive impact. Many students produced high-quality essays, and the study showed that students benefited from a writing approach that helped them develop brainstorming strategies, semantic networks, goal setting, and revision.

Collaborative Strategic Reading effectiveness

Klingner, Yaughn, Arguelles, Hughes & Leftwich (2004) also studied ways of helping students to be more active readers. They studied how collaborative strategic reading (CSR), was implemented in classrooms, in comparison with no CSR implementation. CSR concepts addressed in this study are related to the Alabama CCRS standards ELA.4.13 which state that students will determine the meaning of general academic and domain-specific words or phrases in a text relevant to a Grade 4 topic or subject area [RI.4.4]. The researchers conducted the study in 10 classrooms across five schools located in the southeastern United States with 211 students (113

treatment, 98 control) participating in this study. Five teachers in two schools applied the CSR comprehension strategies designed to improve students' understanding of expository text, and five teachers in three schools applied a control classroom.

The researchers provided intervention teachers with professional development. Teachers saw CSR modeling and viewed videotapes of students using the strategy. Control teachers used normal instruction with materials and resources that were available to them. Intervention teachers implemented CSR consistently throughout the year, they used CSR four days a week for about 1.5 hours. CSR is a group of comprehension strategies designed to improve understanding of the text. Teachers taught lessons in which students worked on a project, such as creating a brochure related to travel in Florida, writing pictographs, or making valentine's day cards. All teachers used diverse materials, including journals, the Internet, timelines, bar graphs, and a textbook at least once. When using the textbook, some teachers requested students to read silently, while the teachers in other classrooms read aloud to students. Teachers taught comprehension strategies in an explicit manner through teaching students how to preview, summarize, pay attention to bold words, use semantic maps, compare. The researchers measured students' progress using a norm referenced comprehension assessment and prompted think-aloud strategy. The norm referenced assessment, the Gates-Mac Ginitie, included 48 questions and had alternate form reliability of 0.85. The prompted think-aloud strategy assessed how students applied comprehension strategies on a transfer task.

The researchers recorded some questions in writing and audio to ensure accuracy. Teacher measures included observations, videotapes, a validity checklist, and records of implementation. Additionally, the researchers conducted interviews with teachers before and after the study. Students in CSR classrooms demonstrated greater improvement in reading comprehension than those in classrooms where CSR was not implemented. On the Gates-MacGinitie Reading Tests, posttest differences were statistically significant in favor of the CSR classrooms, with

pretest scores used as the covariate. Regarding achievement levels, students in CSR classrooms showed the following gains: 0.25 for high/average-achieving students, 0.51 for low-achieving students, and 0.38 for students with LD. In the prompted think-aloud assessment, students with LD in CSR classrooms exhibited greater gains in strategic knowledge compared to their peers in control classrooms. CSR teachers with higher levels of implementation achieved greater student gains than those with lower levels of implementation. The one exception was teacher Dewitt, who was a relatively low CSR implementer but whose students made the greatest gains.

Peer-Assisted Learning Strategies

Unlike the study by Klingner, Vaughn, Arguelles, Hughes, and Leftwich (2004), Saenz and Fuchs (2005) incorporated Peer-Assisted Learning Strategies (PALS), a reciprocal peer-tutoring approach used to teach reading and grammar to native Spanish-speaking students with SLD. The authors also examined the incidental benefits of PALS for low-, average-, and high-achieving ELLs. The reading skills targeted in this study directly align with Alabama CCRS standard ELA.3.2, which states: Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text [RL.3.2].

The study included 132 native Spanish-speaking students. Data were collected on 11 students in each class: two students with SLD, three low-achieving (SLA) students, three average-achieving (AA) students, and three high-achieving (HA) students. Students in the PALS condition were trained in setup procedures, partner reading, and paragraph shrinking before beginning 15 weeks of PALS implementation. The researchers randomly assigned classrooms to the PALS condition or the contrast condition. Teachers attended a full-day workshop, where they received an overview of PALS procedures, practiced the activities, and were provided with a comprehensive PALS manual.

PALS sessions were conducted three times a week for 15 weeks. Training materials,

classrooms materials, and reading activities in PALS condition were basal texts, novels, library books, content area books, and books suitable for each reader in the team. Both students rendered in the role of tutor and tutee by rotation every 3 to 4 weeks. During PALS, students participated in three stages. The first stage was from one to 4 weeks, and it is partner reading with story retell. In this stage, each student read aloud for 5 min, and the most powerful reader read while the weaker reader worked as the tutor through the first 5 min. After that, the weaker reader reread the same text while the most powerful reader worked as a tutor. The second stage was through the first four weeks, it is paragraph shrinking. Each student reads aloud for 5 min, stopping after each paragraph to epitomize what was read. The third stage was during week 5, and it is prediction relay that was required two sessions. In this stage, the reader predicted before reading, read half a page, made sure the prediction and summarized half of the page using the paragraph shrinking strategy. During PALS strategy, students earned points, and these points directly related to the three PALS activities. Students gained a set of points during each stage in PALS strategy. The researchers used test-retest reliability for words correct between .93 to .96, and the researchers used concurrent validity with the reading comprehension subtest of the Stanford Achievement Test (SAT).

The researchers used a comparative research design between treatment groups by PALS vs. contrast condition. PALS' students who were ELL with LD with low-, average- and high-achieving achieved high scores on reading comprehension in posttreatment tests. The PALS strategy positively impacted students' abilities to answer comprehension questions, though there was no statistically significant improvement in "words correct" or "make choices correct."

The Second Question: What is the effect of using more than one intervention strategy at the same time on the reading comprehension level?

Peer-assisted and cooperative reading strategy interventions

Similar to Rouse, Alber-Morgan, Cullen & Sawyer (2014) study, Völlinger, Supanc & Brunstein (2018) used a peer-assisted strategy

where they assessed the effectiveness of the recently designed reading intervention, combining strategy instruction in a peer-assisted, and cooperative learning. The researchers also recorded and analyzed students' reading performance with more detail through the course of the intervention. For organizational causes, the researchers determined to use an A-B design with maintenance phase. The skills addressed in this study correlate with the Alabama CCRS standard 3.4 which determines the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language [RL.3.4]. 140 students in third grade participated from five elementary schools in central Germany.

The researchers randomly assigned 72 of Students to the intervention group and 68 students in the control group. In the beginning, the researchers assigned students to pairs based on their pretest results. The intervention included 14 lessons. In the first two lessons, the students became familiar with their trainers and their reading partners. In lessons three through 10, the trainer taught the reading routine, the strategy of clarifying, the strategy of questioning, the strategy of predicting, and feedback to their partner. In lessons 11 to 13, each four students group worked together by using the partner reading activity and the reading strategies of clarifying, questioning, and predicting. During lessons 14 and 15, the trainers encouraged the students to use what they trained in other texts. In Lesson 16, trainers received students' questions and predictions from lesson 15 were debated. The students completed a survey about the training and gained a certificate of training participation. The researchers used control group design and single-case design. To measure reliability, the researchers used 20 parallel test forms randomly for 78 third-grade students. The test was administered by trained research assistants in the regular classroom. During the intervention course, the students` reading competence increased significantly compared with the baseline phase. In the maintenance phase, the decreased intervention students' reading competence was still better than the baseline phase.

The result showed a significant impact of time (p <001), where there improved the overall performance of the students during the course of the measurements. This study proved the possibility and success of combining single-case and between-group study designs that allowed us to check intervention students' reading competence development in treatment and no-treatment phases. Also, the results showed that students' reading competence in intervention groups differed significantly from that of students in the control group. The researchers used three different strategies. First one, repeated measures analysis for between-group comparisons of reading competence. The second one was multilevel analysis. The third one was single-case effect sizes for within-group comparisons. The three analysis ways confirmed the positive treatment effects on students' reading competence.

Both strategy instruction and reciprocal teaching

Similar to Rouse, Alber-Morgan, Cullen & Sawyer (2014), Völlinger, Supanc & Brunstein (2018), Spörer, Brunstein, and Kieschke (2009) checked if each of strategy instruction and reciprocal teaching improved young students' reading comprehension. Also, they studied the differential effect of practicing the strategies in the reciprocal small group (RT) and pair (RTP) activities as compared to instructor-guided (IG) activities and traditional instruction (control group). The reading skills addressed by this study directly correlates with Alabama CCRS standard ELA.3.2. which states to determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area. [RI.4.4].

Participants were 210 third- to sixth graders from two elementary schools in a medium-sized German town. The researchers randomly assigned schools to either the intervention or control condition. There were 42 students in RT condition, 42 students in IG, and 60 students in RTP. Students learned the intervention conditions from instructional assistants in groups of four to six students. This study included a pretest that was administered before one week of the intervention, the posttest was after one week of the intervention, and follow-up test was conducted 12 weeks after the posttest. Reading strategy instruction included 14 lessons that lasted 45 minutes.

In the first phase of the training, students in the three intervention conditions learned the same collaborative, reactive, and scaffolding instruction. In the first six training lessons of this phase, students learned four strategies using worksheet activities led by the instructor. In the first lesson, the instructor was introduced to the students. In the second lesson, the instructor introduced students to the strategy of making forecasts. In the third lesson, students learned how questions created and re-predicted the strategy by teaching students the kinds of questions teachers might ask. In the fourth lesson, students learned summarization and clarification through identifying main and important information, collect similar ideas, remember the idea, and create the primary idea when the author does not provide it. In the fifth lesson, students learned the clarification strategy by determining either words, concepts, or both. In the sixth lesson, students practiced cooperatively and independently the four reading strategies.

In the second phase of the training, students learned to apply strategies for reading passages. The first strategy in intervention conditions was traditional reciprocal (TR) teaching that has lessons 7-14. In the beginning, students learned how reading strategies have been applied, and how they predict content by reading just the topic. After that, they studied how words meaning or confusing passages could be and how they could summarize the paragraph. In the ninth lesson, the instructor taught the students how to lead the discussion. At this stage, students learned how to provide educational support for each other. Students continued practicing mutual dialogues until the end of lesson 14.

The second strategy in intervention conditions was reciprocal teaching in pairs (RTP). Students were educated about the use of four reading strategies, working in pairs and using mutual dialogues. In lesson 9, students applied what they had had educated. One student from each pair led the dialogue in the first paragraph with writing their reading actions on worksheets. After that, the second student read aloud the first paragraph of the passage, he or she identified words that were not clear and tried together with his partner to understand the words' meanings. The second student subedited questions a teacher might ask and debated with

his peer which question they wanted to write down. Then, they summarized the paragraph. Next, the leader provided feedback and together the two students formulated the summary and noted it on the worksheet. Finally, the second student generated a prediction, gave feedback and wrote down what they thought the best prediction would be. Then, the two students converted their roles. The task of the instructor was to monitor the dialogues of the pairs and to aid upon requests.

The third strategy was instructor-guided reading that was like the traditional RT and RTP students where students learned how to apply the strategies to a text paragraph, but the IG did not have a dialogue leader. In control condition, students learned reading comprehension from their regular teachers in two lessons a week with traditional instruction. Testing sessions were around 90 min. The researchers used experimenter-developed tasks and a standardized test to determine students' learning of reading strategies plus reading comprehension. The researchers used pretest, posttest, and follow-up test to determine students' reading comprehension skills. To ensure reliability, the scorers participated in a three-hour training session, and researchers used Pearson's coefficient to compute inter-rater reliability for each measure and testing period. The researchers randomly selected 20% of the assessments to be scored by a second observer for a reliability check and independently rated.

The results indicated that students in the intervention conditions used strategies such as summarizing, questioning, and predicting more frequently than the control students when reading a text at the posttest. Additionally, RT students who participated in small group activities benefited more from the training lessons than the control students. After the near transfer test was administered at both the posttest and follow-up stages, students in the three intervention conditions outperformed the control students, who showed only minimal improvement. In the far transfer test and in summarizing text paragraphs, only the RT students demonstrated significant improvement in performance compared to the IG and control students.

Using Prompt Fading to Teach Self-Questioning

Unlike Spörer, Brunstein, and Kieschke (2009) study, Rouse, Alber-Morgan, Cullen & Sawyer (2014) investigated the effects of a self-questioning intervention. The purpose of this study was to examine the effects of a self-questioning intervention with a prompt fading procedure on the reading comprehension of fifth graders with learning disabilities. The students in this study were fifth graders with LD who read on second grade level. The skills addressed in this study correlate with the Alabama CCRS standard 5.11 which states that determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. Unlike previous research, the researchers used multiple baseline design rather than group design. The reading passages used in this study were written on the second-grade level with 149-281 words and divided into four sections. The researchers used comprehension Quizzes that were the total number of questions that were answered correctly in 8 multiple choice quizzes given at the end of each intervention session. The researchers checked the Interobserver Agreement (IOA) across all phases of the study. A second observer independently scored 20 percent of the comprehension quizzes to determine IOA. Agreements and disagreements were examined on a question-by-question basis. IOA for students were between 100 and 97 percent. The researchers gathered treatment integrity data for 31 percent of total sessions. An observer used the checklists and recorded whether the primary data collector implemented each step correctly.

The intervention procedures were in six phases. During each session, students received a copy of the story from the primary data collector to start reading. After they finished reading, the primary data collector gave them the multiple-choice quiz and gathered the quiz when students had finished. The first phase was embedded questions training. During this phase, the students worked individually with the primary data collector that used modeling, guided practice, and immediate feedback to help the students to answer the embedded questions that are explicit. The students learned how to stop at each of the four embedded questions, read the question, and then wrote the answer on the line below the question through the text they were reading. After that, the students finished the post comprehension quiz independently. The primary data collector introduced immediate feedback after finishing each quiz.

The second phase was embedded questions in which the participants independently read and finished the embedded questions while the primary data collector observed. As the same as the training phase, students stopped at each embedded question, read the question, and wrote the answer to the question on the line below the question. After that, the collector checked students' answers, if they were incorrect, and told them to try again. After students finished, they completed the comprehension quiz independently and received immediate feedback from the primary data collector.

The third phase was Self-Questioning Training. During this phase, the embedded questions were systematically dimmed, one by one, replaced with an empty line to write the question and an empty line to type the answer. Therefore, at each session of this phase, the students answered a set of embedded questions and prompt self-questions in the following rate: 3: 1, 2: 2, and 1: 3 until the questions completely disappeared. Students were trained to create and answer explicit questions from the text they were reading. The students learned self-questioning using a "think-aloud" modeling process by the primary data collector. At the end of the sessions, students took the quiz and immediate feedback.

The fourth phase was self-questioning where the students received reading passages with four prompts to write a self-generated question and an answer to complete the text independently. As in the training phase, students stop at each prompt to create the question and write the answer. The primary data collector monitored the participants' answers while they completed the text.

The fifth phase was self-questioning fading which small pictures were used as a stop sign rather than the four self-questioning prompts. The stop signs were asking students to say a question and the answer instead of writing.

The final phase was maintenance/generalization that managed the students from 3 to 6 weeks. The maintenance probes were reading passages. The participants

painted their own symbols as a stop sign to self-question. Generalization probes using similar procedures. Students completed maintenance reading passages written on the second-grade level, while the generalization passage was written on 5th-grade level.

This study showed that using prompt fading helped students with learning disabilities to generate their own questions and raise their reading comprehension more independently. Students' results were similar after the training phase for embedded questions. In the self-questioning training phase, Students' grades improved compared with embedded questions phase. Sequentially in every new phase, students' results improved better than the previous phase.

Conclusion

The line of research involving CSR, self-instruction, and peer-assisted learning strategies has proven beneficial for students with SLD. The studies reviewed in this paper highlighted the advantages of using a self-regulated strategy development model to enhance the reading skills of elementary students with SLD. Teaching students to use self-questioning techniques in reading significantly improves their skills. These strategies can be implemented by any teacher using simple tools commonly available in most schools, such as a meeting table.

For effective application, teachers must carefully follow the instructions for each strategy. These methods not only enhance the academic performance of students with LD in reading but also help them progress to the next grade level. The studies also emphasize the importance of peer collaboration as an effective and accessible strategy in all schools. However, implementing peer-assisted learning strategies requires teachers to gain experience and schools to provide financial support for training and resources.

Teachers play a crucial role in implementing these strategies and adhering to their guidelines (Boyle and Provost, 2012). Therefore, to support students in improving their reading skills, teachers should incorporate research-based strategies with clear and systematic instructions.

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