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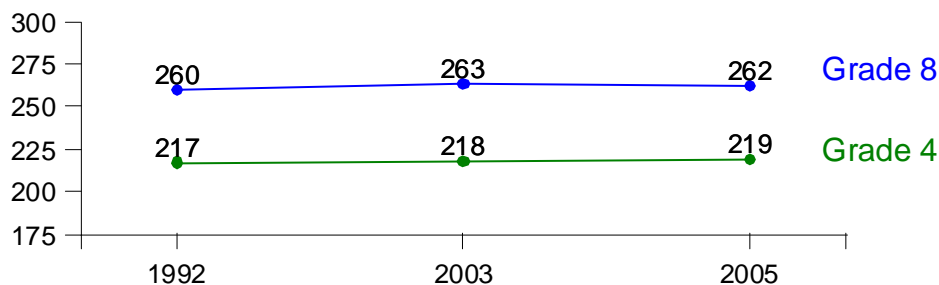
RECIPROCAL TEACHING

At A Glance

Reciprocal teaching is an instructional approach designed to increase students' reading comprehension at all grade levels and in all subject areas. Students are taught cognitive strategies that help them construct meaning from text and simultaneously monitor their reading comprehension. This Information Capsule summarizes reciprocal teaching's basic principles, implementation steps, and four comprehension strategies. Issues to consider when implementing reciprocal teaching are discussed, including how to teach the strategies, what grade levels and types of students benefit from reciprocal teaching, and optimum group size. Research on the impact of reciprocal teaching on students' reading comprehension is reviewed and a brief summary of Miami-Dade County Public Schools' use of reciprocal teaching is provided.

Little progress has been made nationwide toward improving students' reading skills during the past decade, as evidenced by minimal improvements in reading scores on the Nation's Report Card, the National Assessment of Educational Progress (NAEP). The table below shows that the 2005 average NAEP grade 4 reading scale score was one point higher than the 2003 average score and two points higher than the 1992 average score (on a 500-point scale). In eighth grade, the 2005 average reading score was one point lower than the 2003 average score and two points higher than the 1992 average score.

Grades 4 and 8 NAEP Reading Scale Scores, 1992, 2003, and 2005



Source: National Center for Education Statistics, 2005.

Allen (2000) concluded that many students struggle with reading because of weak comprehension skills, rather than the inability to read, especially at the middle and senior high school levels. A student's comprehension (ability to make meaning from what is read) may be poor because of a lack of fluency in reading, limited vocabulary or background knowledge, or a lack of interest in the material he or she is reading. Only a minority of students have decoding problems (understanding the relationship between letters and their sounds), often resulting from a lack of phonics training or, in some cases, dyslexia. Researchers have suggested several reasons why students lack reading comprehension skills, including:

- Reading strategy instruction is not provided in all content areas. A breakdown in comprehension in subject areas other than language arts has occurred because students are not taught how to adequately implement cognitive strategies when reading different types of text. In middle and senior high school, students' texts are filled with new and more difficult vocabulary, especially in math, science, and social studies. Students are not taught how to read these types of text or interpret their visual representations, such as charts, graphs, and maps.
- The overuse of traditional teaching techniques has diminished students' enthusiasm for reading.
- With up to 30 students in a typical classroom, teachers lack the time and resources to provide the intensive strategy instruction, repeated opportunities for supported practice, and individualized feedback struggling readers need.
- Classroom use of the internet, CD-ROMs, videos, and hands-on projects has reduced the time students previously spent reading for content knowledge (Tom Snyder Productions, 2004; Weedman & Weedman, 2001; Allen, 2000; Manning, 1999; Fuentes, 1998; Coley et al., 1993).

Basic Principles of Reciprocal Teaching

Reciprocal teaching was introduced as an instructional approach to improve students' reading

comprehension at all grade levels and in all subject areas. Developed by Annemarie Palincsar and Laura Klenk at the University of Michigan and Ann Brown at the University of Illinois at Urbana-Champaign, reciprocal teaching was designed to help students develop the ability to construct meaning from text and monitor their reading comprehension. Students learn a set of cognitive strategies, modeled by the teacher and practiced by students in cooperative groups, that are used to structure discussions of the text (Florida Online Reading Professional Development, 2005a; Foster & Rotoloni, 2005; Promising Practices Network, 2005; Palincsar, n.d.).

Strategic learners are highly aware of their own reading and thinking and have the ability to apply self-correction measures in an effort to understand the text (Florida Online Reading Professional Development, 2005b). Biemiller and Meichenbaum (1992) researched children's approaches to learning and found that "one source of the differences between the highest- and lowest-achieving children is in the degree to which they become self-regulators of their own learning. High-achieving students engage in a number of helpful strategic skills, including goal setting, planning, self-interrogation, self-monitoring (checking answers), asking for help, using aids, and using memory strategies." Metacognition, or the awareness of own's own thinking processes, is an essential component of reciprocal teaching (Educational Research Service, 2003; Hashey & Connors, 2003; Oczkus, 2003). Effective readers do not always comprehend in a linear manner. Instead, they go back and forth, checking their understanding. This back and forth process integrates reciprocal teaching's four cognitive strategies (Hashey & Connors, 2003).

Reciprocal teaching can be used with any grade level or subject area and with any story or passage. No specific curriculum is required to implement reciprocal teaching because it is an instructional strategy that does not rely on a particular content (Promising Practices Network, 2005; Quezada, n.d.).

Steps in the Reciprocal Teaching Process

Several basic steps are followed in a typical reciprocal teaching session. Scaffolding, thinking aloud, continuous monitoring of performance, and

the use of cooperative learning are a part of each step (Hashey & Connors, 2003).

- The teacher initially assumes the major responsibility for instruction by teaching the four cognitive strategies and providing information about their importance and the context in which they are useful. The teacher also discusses with students why the strategies are effective and when they can be used. Each strategy should be clearly understood by all students before moving on to the next strategy.

Not all strategies can be used effectively by all students. If students find a strategy difficult to use, it may be too complex for them to understand. These difficulties can often be resolved by providing more instruction and examples. If additional instruction is not helpful, the teacher should introduce a simplified version of the strategy or another strategy that is less complex.

- Students read a segment of text at the sentence or paragraph level. As students progress, longer segments are used. While reading, students learn and practice the four comprehension strategies.
- The teacher gradually shifts responsibility for mediating discussions to the students. Guided practice sessions become dialogues as students support each other and their use of the comprehension strategies. All students have shared responsibility for taking part in dialogues and each student is given the opportunity to lead the dialogue. Eventually, students learn to conduct the group dialogues with little or no teacher assistance.
- The teacher assumes the role of facilitator by providing students with evaluative information regarding their performance. Feedback is offered to each student through modeling, coaching, hints, and explanations. The teacher also asks students to react to their classmates' statements by elaborating or commenting, asking questions, requesting clarification, and helping to resolve misunderstandings (Foster & Rotoloni, 2005; Alfassi, 2004; Fuchs et al., 2002; Slater & Horstman, 2002; Bruce & Robinson, 2001; Carter, 2001; Cerbin et al., 2000; Patti's Teacher's Corner, n.d.).

Reciprocal Teaching's Four Cognitive Strategies

Reciprocal teaching's four cognitive strategies were selected because they meet both needs of the strategic learner: the ability to read for meaning and simultaneously monitor for comprehension (Carter, 2001).

- Summarizing

Summarizing text provides the opportunity for students to identify, paraphrase, and integrate important information in the text. Students activate background knowledge to integrate information appearing in the text, focus on the main points, and evaluate the information for consistency (Promising Practices Network, 2005; Hashey & Connors, 2003; Carter, 2001; Newton Public Schools, n.d.; North Central Regional Educational Laboratory, n.d.; Palincsar, n.d.). Examples of summarizing prompts include:

- What does the author want me to remember or learn from this passage?
- What is the most important information in this passage?
- In my own words, this is about . . .
- The main point is . . .

- Generating Questions

When students generate questions, they first identify what information is important enough to provide the substance for a question. They then put this information into a question format and self-test to make sure they can answer their own question. Questioning allows students to focus on detailed information, infer information, and offer possible solutions. Students become more involved in the reading activity when they are asking and answering questions themselves, rather than just responding to the teacher's questions (Promising Practices Network, 2005; Hashey & Connors, 2003; Carter, 2001; Wellington New Zealand Ministry of Education, 1998; North Central Regional Educational Laboratory, n.d.). Examples of questioning prompts include:

- One question I had about what I read was . . .
- I'm curious about . . .
- What was I thinking about as I was reading?

- Clarifying

When students clarify text, their attention is directed to the reasons why text is difficult to understand, such as new vocabulary, unclear references, and unfamiliar or difficult concepts. Clarifying guides the reader to look for parts of the passage that are confusing and unclear. Clarifying is especially important when working with students who have a history of comprehension difficulty. These students may believe that the purpose of reading is saying the words correctly and it may not concern them when the text does not make sense. Examples of clarifying prompts include:

- Is there anything in this segment I don't understand?
- What words or ideas need clarifying?
- One of the words I wasn't sure about was . . .
- What other words do I know that I can use in place of . . .

If there are unclear segments which hinder understanding, the reader is prompted to re-read, use the context of the passage, read ahead, use a dictionary or thesaurus, or ask for help (Promising Practices Network, 2005; Hashey & Connors, 2003; Carter, 2001; Wellington New Zealand Ministry of Education, 1998; Newton Public Schools, n.d.; North Central Regional Educational Laboratory, n.d.).

- Predicting

Predicting occurs when students hypothesize what the author will discuss next in the text. In order to predict, students must use background knowledge that is relevant to the topic. Predicting provides a purpose for reading: to confirm or disprove hypotheses. Students have the opportunity to link the new knowledge they encounter in the text with the knowledge they already possess. Prediction also facilitates the use of text structure as students learn that headings, subheadings, and questions embedded in the text are useful ways to anticipate what might occur next (Promising Practices Network, 2005; Hashey & Connors, 2003; Carter, 2001; Newton Public Schools, n.d.; North Central Regional Educational Laboratory, n.d.; Palincsar, n.d.). Examples of predicting prompts include:

- What do I think I will be reading about?
- What do I think might happen next?

Issues to Consider When Implementing Reciprocal Teaching

Based on studies conducted on the effectiveness of reciprocal teaching, a summary of issues schools and educators should consider when using the reciprocal teaching method is provided below.

- How to Teach the Strategies

In Rosenshine and Meister's (1994) meta-analysis of 16 studies that used cognitive strategies to improve reading comprehension, results were similar whether students were taught reciprocal teaching's four strategies or two, three, or 10 other reading comprehension strategies. The authors were not able to make a definitive statement about which comprehension strategies or combinations of strategies were most effective but suggested the "strongest candidates" were question generation and summarization.

Although researchers have not found any one particular order for teaching the four comprehension strategies to be most effective, they recommend the strategies be taught individually. Summarizing can be difficult for students and might best be saved for last (Hashey & Connors, 2003).

Researchers have identified two reciprocal teaching methods. One approach is "explicit teaching before reciprocal teaching," where students are introduced to the strategies before dialogue begins. The other method is called "reciprocal teaching only," where strategies are not introduced to the students prior to group dialogue. Researchers have not found evidence to determine if one of the two methods is more effective than the other for increasing students' reading comprehension (Allen, 2003).

Educators must be aware of the ways the reciprocal teaching approach changes with each teacher as he or she works to construct the approach. Hacker and Tenent (2002) examined teachers' implementation of reciprocal teaching over a three-year period. They found that the majority of teachers modified the reciprocal teaching guidelines. Almost all of the teachers added the use of writing to their

versions of reciprocal teaching, but the manner in which writing was incorporated varied widely. Of the four reciprocal teaching strategies, questioning played the most dominant role in teachers' practice. Of the other three strategies, summarization was used most often and predicting and clarifying were used sporadically, with clarifying often being omitted.

- Grade Levels in Which Students Can Benefit From Reciprocal Teaching

Reciprocal teaching appears to benefit students at all grade levels. Numerous studies have reported that reciprocal teaching has a positive impact on students' reading comprehension at both the elementary and secondary grade levels (Alfassi, 1998; Lederer, 1997; Rosenshine & Meister, 1994; Palincsar & Klenk, 1992; Brown & Palincsar, 1989; Brown & Palincsar, 1987; Palincsar & Brown, 1986; Palincsar & Brown, 1985; Palincsar & Brown, 1984).

Myers (2005) conducted a three-month classroom action-research project on the impact of reciprocal teaching with read-alouds on kindergarten children's reading comprehension. Following reciprocal teaching instruction, students were able to retell stories succinctly but with appropriate details, ask questions to clarify their comprehension, and make logical predictions about what would happen next in a story. Myers (2005) concluded that kindergarten students were not too young to learn strategies that would help them assume responsibility for their own learning.

Hashey and Connors (2003) found that students benefitted from reciprocal teaching beginning at third grade. They reported that elementary teachers, who could more easily integrate the strategies with the content areas, saw success before secondary teachers. However, Bruce and Robinson (2001) suggested that younger students may require a longer and more intensive intervention in order for reciprocal teaching techniques to have an effect on their reading comprehension.

- Types of Students Benefitting From Reciprocal Teaching

One criticism of the original reciprocal teaching program is that it was designed for students who are adequate decoders but poor comprehenders and therefore may not be as effective for readers with poor decoding skills. Researchers have suggested that in order to increase the effectiveness of reciprocal teaching instruction with poor decoders, they should be taught strategies to help them identify unfamiliar words prior to or as part of the reciprocal teaching program. Strategies for helping poor decoders include tape-assisted reciprocal teaching (students listen to a recording of the text while following along with the printed text), reading passages orally to students, supplying unknown words when students are reading, using easy text, and rewriting of classroom materials at the struggling reader's instructional reading level (Foster & Rotoloni, 2005; Bruce & Robinson, 2001).

In their review of studies using cognitive strategies to improve reading comprehension, Rosenshine and Meister (1994) found no differences in results between studies that investigated the impact of reciprocal teaching on all types of readers and those that studied students classified as good decoders but poor comprehenders.

Oczkus (2003) suggested that students who are inattentive, shy, or have other individual needs may not benefit if reciprocal teaching is used in whole class activities that do not require their participation. She concluded that these students benefit when reciprocal teaching is part of small groups or cooperative learning groups, where they tend to be more comfortable speaking and their attention is more easily focused.

- Optimum Group Size

Palincsar, David, and Brown (1989) recommended that students be taught in small, heterogeneous groups. Most researchers suggest that groups be comprised of between four and eight students so all students have an equal opportunity to practice using the

strategies while receiving feedback from other group members (Foster & Rotoloni, 2005; Patti's Teacher's Corner, n.d.). Some teachers have successfully introduced the strategies to the whole class, then conducted dialogues with small groups of students. Others have modified the entire process for whole-class instruction, using writing activities for practice and feedback (Hashey & Connors, 2003; Oczkus, 2003; Wellington New Zealand Ministry of Education, 1998).

Palincsar & Brown (1985) reported success when reciprocal teaching was implemented in larger classes with groups ranging in size from eight to 18. In their study, seventy-one percent of students achieved criterion performance on reading comprehension tests, compared to 19 percent of the control group, who had received individualized reading instruction.

Rosenshine and Meister (1994), in their meta-analysis of 16 studies using comprehension strategies to improve reading comprehension, found no relationship between the size of the instructional group and the significance of the results. The range of group sizes with significant results was two to 23 students.

- Number and Length of Sessions

Researchers have suggested that students need 12 to 20 sessions to master the reciprocal teaching technique (Westera & Moore, 1995; Newton Public Schools, n.d.). Palincsar and Brown's initial studies (1983, 1984, 1985, and 1986) reported increases in students' reading comprehension scores on standardized tests after 15 to 20 days of instruction.

Westera and Moore (1995) examined the effect of the length of reciprocal teaching instruction in a study of eighth grade students from seven classes. Participants were divided into three groups: extended reciprocal teaching group (between 12 and 16 sessions), short reciprocal teaching group (between 6 and 8 sessions), and the control group. Analysis of pretest and posttest scores on the reading comprehension subtest of the Progressive Achievement Test revealed that the extended reciprocal teaching group scored significantly higher than the short reciprocal teaching group and the control

group. Ninety-five percent of the extended reciprocal teaching group showed gains in reading comprehension, compared to 47 percent of students in the short reciprocal teaching group and 45 percent of students in the control group. The authors concluded that the length of implementation of reciprocal teaching programs was an important determinant of whether students' reading comprehension skills improved.

Rosenshine and Meister's (1994) review of 16 studies that used cognitive strategies to improve reading comprehension found no relationship between the number of sessions and the significance of results. The number of instructional sessions in the reviewed studies ranged from six to 100.

The length of reciprocal teaching sessions usually depends upon the age and attention span of the students but generally falls within the range of 20 to 40 minutes per session. It is recommended that initial instruction take place on consecutive days (Patti's Teacher's Corner, n.d.).

- Text selection

Materials should be selected on the basis of students' reading comprehension levels and should be sufficiently challenging and representative of the types of materials students read in their classes. Reciprocal teaching strategies can be incorporated into district-adopted test books. Hashey and Connors (2003) concluded that reciprocal teaching was effective with expository and narrative text and fiction. Researchers have suggested that teachers start instruction with very short pieces of text or with short sections of larger works (such as a chapter or section of a text). This allows students to practice the strategies before moving on to longer readings (Capuchino High School, 2006; Oczkus, 2006; Foster & Rotoloni, 2005; Greece Central School District, n.d.; Patti's Teacher's Corner, n.d.).

- Including Additional Strategies in Reciprocal Teaching Instruction

Some instructional programs have included additional strategies, such as direct

explanation, writing, and identification of key words and phrases, in their reciprocal teaching instruction. It appears that these modified programs had a positive effect on students' reading comprehension.

Alfassi (2004) conducted a small-scale research project that examined whether the use of reciprocal teaching plus direct explanation in a ninth grade language arts classroom had a greater impact on students' reading comprehension than traditional literacy instruction. Two classrooms were randomly assigned to either experimental or control conditions. Students were administered an experimenter-developed reading comprehension assessment and the Gates-MacGinitie Reading Test. Results indicated that reciprocal teaching with direct explanation had a positive impact on reading comprehension, as evidenced by the experimental group's significantly higher scores on both reading comprehension measures.

Spiak (1999) studied 12 classes of ninth grade students taking a Chemistry/Physics Foundations course to see if content comprehension was enhanced when students wrote down their responses in combination with reciprocal teaching instruction. Each class participated in a reciprocal teaching assignment with the same science content. Half of the classes were asked to write down their responses as they read the material and the other six classes, using the same reciprocal teaching procedure, did not write down their responses. Posttest data indicated that content comprehension was enhanced in reciprocal teaching when students wrote down their responses. Forty-six percent of the students who wrote down their responses scored a "C" or better on the posttest, compared to 32 percent of the non-writers.

Miller, Miller, and Rosen (1988) studied the effect of adding an "identification of key words and phrases" component to reciprocal teaching. Students were randomly assigned to social studies classes and classes were then randomly assigned to experimental or control conditions. Following the intervention, the experimental group scored significantly higher on an experimenter-developed reading

comprehension test and wrote a significantly higher average number of words on their writing samples than students in the control group. The experimental group also had significantly higher grades at the end of the second quarter of the school year.

Thinking Reader is a computer-based program that uses reciprocal teaching strategies with an integrated system of prompts and instant feedback to provide students with individualized instruction. An evaluation of the program's impact on the reading comprehension of low level readers and students with learning disabilities concluded that students who used *Thinking Reader* had significantly greater gains in reading comprehension on the Gates-MacGinitie Reading Test than their peers who engaged in traditional reciprocal teaching instruction. In interviews and surveys, students reported that the program helped their reading comprehension. Teachers reported that the program had a positive impact on students' classroom engagement. The researchers concluded that use of a computer-based program to teach reciprocal teaching strategies was more effective than traditional reciprocal teaching methods (Tom Snyder Productions, 2004).

- Adopting Reciprocal Teaching as a Schoolwide Approach

When reciprocal teaching becomes a schoolwide effort, teachers at different grade levels and in different subject areas are responsible for introducing reading comprehension strategies to students. The adoption of the reciprocal teaching approach throughout the school encourages students to practice and generalize their new skills across classes. A schoolwide approach also provides a natural platform for professional development related to learning strategies and an opportunity for teachers to share experiences (Educational Research Service, 2003).

- Teacher training

The Educational Research Service (2003) stated that high quality staff development is a critical first step in teachers' development of new instructional techniques. Teachers who use reciprocal teaching strategies in their

classrooms should receive adequate training in the approach and have access to support systems at their school, especially when they encounter situations that require modifications. Teachers should also be provided with sustained feedback on their practice from individuals knowledgeable about reciprocal teaching. Teachers must be able to demonstrate the reciprocal teaching strategies, gradually allow students to assume leadership positions in the classroom, and then become facilitators for students (Foster & Rotoloni, 2005; Hacker & Tenent, 2002).

- Difficulties Encountered in Reciprocal Teaching Implementation

Rosenshine and Meister (1994) concluded that the main weakness of the reciprocal teaching method was the lack of implementation guidelines. There is no checklist of criteria for assessing the quality of reciprocal teaching instruction. In the studies Rosenshine and Meister (1994) reviewed, most of the researchers had not evaluated the quality of reciprocal teaching.

Hacker and Tenent (2002) used classroom observations and administration of teacher surveys to examine the practices of 17 elementary school teachers using reciprocal teaching over a three-year period. Their findings included:

- Teachers were not using all four of the strategies and strategies that were being used were often used inadequately. Many of students' questions and summaries were superficial and did not reflect a deeper understanding of the text.
- Consistent intervention by teachers was required in order for students to develop a deeper understanding of the text.
- Teachers had difficulty stimulating high quality dialogues among their students. Many students lacked knowledge of the basic classroom rules of discussion and this lack of skills sometimes hindered students' ability to engage in meaningful dialogues. Many student interactions remained at superficial levels throughout the reciprocal

teaching sessions. Maintaining meaningful collaborative dialogue was difficult and discussions frequently turned to irrelevant topics or personal matters. Many groups argued, some students lacked motivation to engage in the dialogues, and some students became passive and allowed other students to dominate the discussions.

- Some teachers reported that their students got bored with what eventually became a monotonous routine of predict, read, clarify, question, and summarize.

Research on the Impact of Reciprocal Teaching on Reading Comprehension

Research findings generally support the use of reciprocal teaching as an effective approach for increasing students' reading comprehension skills. A summary of studies conducted to examine the impact of reciprocal teaching on students' reading skills is provided below.

- After developing the reciprocal teaching method, Palincsar, Klenk, and Brown conducted a series of studies to validate its effectiveness. The impact of reciprocal teaching on students' reading comprehension was evaluated using scores on experimenter-developed reading passages. In all studies, following the reciprocal teaching intervention, students demonstrated improvement in their ability to write summaries, generate questions, identify discrepancies in text, draw inferences, recall text, and apply knowledge acquired from text to new situations. Most students maintained their improved levels of performance on follow-up assessments conducted from two months to one year following the interventions. Control group students demonstrated no significant improvement in their performance on the reading assessments. Students' reading comprehension was found to improve when reciprocal teaching strategies were facilitated by trained reading specialists, teachers with no specialized training, and student peers. Similar improvements were noted when students received whole class and small group reciprocal teaching instruction (Palincsar & Klenk, 1992; Brown & Palincsar, 1989; Brown & Palincsar, 1987; Palincsar & Brown, 1986; Palincsar & Brown, 1985; Palincsar & Brown, 1984).

- Kahre, McWethy, Robertson, and Waters (1999) studied reciprocal teaching strategies for students with difficulties in reading and listening comprehension in four classrooms (kindergarten and grades 4, 5, and 7) at three schools. In kindergarten, results from informal pretest and posttest listening comprehension checklists indicated that students were able to respond in complete thoughts and retain more information about stories following the instruction. At fourth and fifth grades, results of an informal reading inventory indicated that the majority of students were reading at higher levels following reciprocal teaching instruction. However, reciprocal teaching was not found to be successful in increasing the reading comprehension of the lowest level fifth grade readers. At seventh grade, the researchers examined the impact of reciprocal teaching instruction on students' problem solving skills. Based on results from mathematics comprehension pretests and posttests, the researchers concluded that reciprocal teaching instruction did not lead to significantly higher levels of problem solving abilities.
- Rosenshine and Meister (1994) reviewed 16 studies that used cognitive strategies to improve student comprehension of text. They included only studies in which students were randomly assigned to experimental and control groups or it was determined that experimental and control groups were similar on initial measures of reading comprehension. Across the 16 studies, the median effect size of cognitive strategy intervention on students' reading comprehension was .32 when standardized tests were used and .88 when experimenter-developed comprehension tests were used. Effect size is a measurement that shows the relative magnitude of the experimental treatment. Effect sizes of .20 are considered small, .50 are considered medium, and .80 are considered large (Thalheimer & Cook, 2002).

While the majority of studies reviewed by Rosenshine and Meister (1994) reported significant increases in students' reading comprehension, as measured by experimenter-developed tests, results were seldom significant when standardized tests were used. Five

studies used both standardized tests and experimenter-developed tests. In four of the five studies, the results were not significant on the standardized test but were significant on the experimenter-developed test. Rosenshine and Meister noted that standardized and experimenter-developed comprehension tests often differ on a number of dimensions, including the length of the reading passages, use of topic sentences, amount of search required to answer questions, amount of background knowledge required to answer questions, and vocabulary.

Alfassi (1998) assessed the impact of a reciprocal reading program on the reading comprehension skills of ninth grade students enrolled in remedial reading classes at two high schools. The effect of the program was measured using the Gates-MacGinitie Reading Test and experimenter-developed reading comprehension assessments. Alfassi's (1998) findings were similar to those reported by Rosenshine and Meister (1994). The reciprocal teaching group scored significantly higher on the experimenter-developed comprehension posttest than the control group, but no significant difference was found between the two groups' scores on the Gates-MacGinitie Reading Test.

Alfassi (1998) suggested that the finding of no significant differences on the Gates-MacGinitie Reading Test might have been due to the fact that it did not sample the type of text or strategies learned within the reciprocal teaching intervention. Furthermore, students were required to use different reading strategies when completing the standardized and experimenter-developed tests. The Gates MacGinitie required careful reading and searching of the text. In contrast, recall was the major comprehension strategy involved in answering questions on the experimenter-developed test.

The studies summarized above found significant increases in students' reading comprehension on experimenter-developed reading assessments. However, several studies have also reported significant improvements in students' performance on standardized reading tests. A sample of these studies is provided below.

- The effects of reciprocal teaching were assessed in a sample of fourth and seventh grade students at eight schools. Pairs of students with similar pretest scores were identified at each grade level and one student in each pair was randomly assigned to the reciprocal teaching condition and the other to the control group. At fourth grade, the experimental group's scores on the reading comprehension subtest of the Metropolitan Achievement Test increased significantly more than those of the control group. At seventh grade, the experimental group's scores on the Gates-MacGinitie Reading Test increased significantly more than those of the control group (Lysynchuk, Pressley, & Vye, 1989).
- Greenleaf, Mueller, and Cziko (1997) examined the impact of a pilot Academic Literacy Course (of which reciprocal teaching was a key component) on ninth grade students' reading development. Results of their analysis showed that students made a significant gain of four score points from fall to spring on the Degrees of Reading Power Test, an amount identified as significantly greater than one year's expected growth. All groups of students made score point gains from fall to spring, regardless of ethnic or language background. Surveys were administered to students in the fall and spring. After participating in the course, students reported reading more books (an average of 5.58 books in the fall and an average of 10.99 books the following spring). Sixty-seven percent of students said they liked or loved reading following the course, compared to 42 percent before taking the course.
- Johnson-Glenberg (2000) compared the effect of reciprocal teaching versus visualization/verbalization programs on students' reading comprehension. Third, fourth, and fifth grade students from three schools participated in a reciprocal teaching program or a visualizing/verbalizing program for 10 weeks, or were part of the control group. The visualizing/verbalizing program trained students to create mental images from the text and discuss these images with their peers. Findings, based on the Detroit Test of Learning Aptitude (DTLA), indicated that both experimental groups had significantly

greater gains than the control group on subtests measuring word recognition, question generation, and the ability to answer explicit and visual open-ended questions. In addition, the reciprocal teaching group demonstrated greater gains than the control group on the subscore measuring students' ability to answer implicit open-ended questions. When the reciprocal teaching and visualizing/verbalizing groups were compared, it was determined that students in the reciprocal teaching group outperformed students in the visualizing/verbalizing group on answering explicit open-ended questions. The visualizing/verbalizing group performed marginally better than the reciprocal teaching group on a measure designed to determine students' ability to follow directions.

On A Local Note

Miami-Dade County Public Schools (M-DCPS) uses reciprocal teaching as one of many learning strategies for teaching reading. Reciprocal teaching is approved for use in the district at all grade levels and in all content areas. The district's Division of Language Arts/Reading added a fifth cognitive strategy to the reciprocal teaching approach. In addition to the application of the four strategies originally developed to guide the reciprocal teaching process (predicting, clarifying, questioning, and summarizing), M-DCPS students are trained to visualize, or create a mental picture of what they have read. There is no district policy governing the use of reciprocal teaching and no database is kept regarding how many schools and teachers use reciprocal teaching.

M-DCPS teachers receive training in reciprocal teaching as one component of Creating Independence through Student-owned Strategies (CRISS) training. CRISS training is available, upon request, to M-DCPS teachers in all subject areas in kindergarten through grade 12. In addition, reciprocal teaching techniques are reviewed regularly at reading coaches' meetings.

The Division of Language Arts/Reading has developed teacher assistance materials for districtwide use. A reciprocal teaching manual, including model lesson plans, reciprocal teaching scripts, and reciprocal teaching passages and quizzes (with answer keys) was distributed to every

school in the district in previous years and all language arts department chairpersons were trained in the use of the manual. The Division of Language Arts/Reading also distributed to all schools bookmarks containing summarized descriptions of reciprocal teaching's cognitive strategies and posters outlining reciprocal teaching's key strategies. Schools reproduced and laminated the bookmarks for students to use in their textbooks or reading selections. The Division of Language Arts/Reading is in the process of developing a model reciprocal teaching lesson to be posted on its web site.

Summary

Reciprocal teaching was designed to help students develop the ability to construct meaning from text while simultaneously monitoring their reading comprehension. No specific curriculum is required to implement reciprocal teaching and it can be used with any grade level or subject area. Reciprocal teaching's cognitive strategies teach students to summarize the content of what they read, generate questions, clarify, and predict the content of subsequent text.

Issues schools and educators should consider when implementing reciprocal teaching include methods

of teaching the comprehension strategies, the grade levels and types of students most likely to benefit from reciprocal teaching instruction, optimum group size, appropriate number and length of reciprocal teaching sessions, and types of text to select for reciprocal teaching instruction.

Research findings generally support the use of reciprocal teaching as an effective approach for increasing students' reading comprehension skills. More studies, however, have documented significant improvements in reading comprehension on experimenter-developed tests rather than on standardized reading tests.

Miami-Dade County Public Schools (M-DCPS) uses reciprocal teaching as one of many learning strategies for teaching reading. Reciprocal teaching is approved for use in the district at all grade levels and in all content areas. There is no district policy governing the use of reciprocal teaching and no database is kept regarding how many schools and teachers use reciprocal teaching. The Division of Language Arts/Reading has conducted districtwide training for teachers, language arts chairpersons, and reading coaches. Materials, including teaching manuals, posters, and bookmarks, have been distributed by the Division of Language Arts/Reading to all of the district's schools.

All reports distributed by Research Services can be accessed at <http://drs.dadeschools.net> by selecting "Research Briefs" or "Information Capsules" under the "Current Publications" menu.

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