

Improving students' reading comprehension skills: Effects of strategy instruction and reciprocal teaching

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Abstract

The aim of this study was to investigate the effects of three different forms of strategy instruction on 210 elementary-school students' reading comprehension. Students were assigned to any one of three intervention conditions or to a traditional instruction condition (control condition). Training students were taught four reading strategies (summarizing, questioning, clarifying, predicting) and practiced these strategies in small groups (reciprocal teaching), pairs, or instructor-guided small groups. At both the post- and follow-up test the intervention students attained higher scores on an experimenter-developed task of reading comprehension and strategy use than the control students who received traditional instruction. Furthermore, students who practiced reciprocal teaching in small groups outperformed students in instructor-guided and traditional instruction groups on a standardized reading comprehension test.

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1. Introduction

A widespread goal of education in the elementary school is reading comprehension for all students because reading comprehension provides the basis for a substantial amount of learning in secondary school (Alvermann & Earle, 2003; Kirsch et al., 2002). In the last 20 years, a major goal of reading comprehension research has been to identify effective reading strategies that increase children's comprehension (National Reading Panel, 2000). But as Guthrie, Wigfield, Barbosa, et al. (2004) pointed out, the evidence rests primarily on instructional research in which single cognitive strategies are taught in controlled experiments. Relatively little is known about the issue of how multiple strategies can, and should, be combined in comprehension instruction. In multiple strategies programs, strategy practice is often supported by peer-assisted learning arrangements (Brown, Pressley, Van Meter, & Schuder, 1996; Klingner, Vaughn, & Schumm, 1998; Palincsar & Brown, 1984). However, only a few investigations have addressed issues related to the identification of the effective elements inherent in multiple strategies programs. Consequently, the aim of this study was to examine the effect of strategies being taught on reading comprehension and how these strategies are practiced in relevant instruction.

1.1. Reading-comprehension strategies

A substantial body of research suggests that reading-comprehension instruction should include explicit cognitive strategy instruction (Guthrie, Wigfield, Barbosa, et al., 2004). The theoretical bases for this suggestion are reading comprehension models,

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such as Cromley and Azevedo's (2007) direct and inferential mediation (DIME) model which in turn is based on Kintsch's (1988, 1998) construction–integration model. The DIME model hypothesizes relationships among background knowledge, vocabulary, word reading, reading strategies, and inference that together result in reading comprehension. Reading vocabulary and background knowledge directly contribute to reading comprehension and also have effects that are mediated by inference. The model further suggests that the effect of strategies on comprehension is mediated by inference. Reading comprehension is correlated with a number of cognitive and metacognitive strategies, such as (a) activating background knowledge (Dole, Valencia, Greer, & Wardrop, 1991), (b) summarizing text (Armbruster, Anderson, & Ostertag, 1987), and (c) generating questions to capture the main idea of the passage (Rosenshine, Meister, & Chapman, 1996).

Although these cognitive and metacognitive strategies have most frequently been investigated in isolation, some researchers have examined how they work together in more complex strategy packages (Brown et al., 1996; Guthrie, Wigfield, & Perencevich, 2004; Klingner et al., 1998; Palincsar & Brown, 1984; Souvignier & Makhlesgerami, 2006). For example, reciprocal teaching (RT) is an instructional procedure developed by Palincsar and Brown (1984) to improve students' text comprehension skills through scaffolded instruction of four comprehension-fostering and comprehension-monitoring strategies (Palincsar & Brown, 1984; Palincsar, David, & Brown, 1989; Rosenshine & Meister, 1994), that is, (a) generating one's own questions, (b) summarizing parts of the text, (c) clarifying word meanings and confusing text passages, and (d) predicting what might come next in the text. These four strategies are involved in RT in ongoing dialogues between a dialogue leader and the remaining students of the learning group. The dialogue leader, who can be a teacher or a student, models the use of the strategies, provides conditional knowledge about strategy use, and helps students to apply a strategy to a passage. As the students in the group become more familiar with the strategies and the procedure, dialogue leaders fade their involvement and other students take turns as discussion leaders. An underlying assumption of RT is that by applying the strategies in a group process, especially less able students can learn from their more knowledgeable peers. The overall goal is to promote, through scaffolding instruction and collaboration, the self-directed and flexible use of the learned strategies. To sum, the following elements are essential to RT: instruction of the four comprehension-fostering and comprehension-monitoring strategies, application of the strategies using rich and meaningful reciprocal dialogues, and providing scaffold instruction during which teachers gradually fade their modelling of the strategies (Hacker & Tenent, 2002; Palincsar & Brown, 1984).

A theoretical basis for suggesting effects of strategy instruction (which strategies are taught) and reciprocal teaching (how are strategies practiced) is Zimmerman's (1998) self-regulation model. In this model, self-regulation is assumed to be organized within a learning cycle that capitalizes on three types of self-reflective thoughts: (a) goal setting and strategic planning; (b) self-monitoring of one's accuracy in implementing a selected strategy, and (c) self-assessment of strategy outcome and task performance. These processes are considered to be cyclic or recursive because each process entails information that can lead to changes in a subsequent step of the cycle. In addition, these processes qualify as self-reflective cognitions in the sense that self-monitoring of learning activities and associated corrective processes are central features of each step included in the cycle. Drawing on Zimmerman's model, during reciprocal teaching students are engaged in cognitive and metacognitive activities: they alternate between prompting the use of a strategy, applying the selected strategy, and monitoring its accurate implementation. Hence, self-regulation procedures as described by Zimmerman (1998) are integral to RT.

Since Palincsar and Brown's (1984) seminal work, many studies have been conducted to test the effectiveness of reciprocal teaching. The procedure has been applied to different settings, age groups, and populations (Alfassi, 1998; Hart & Speece, 1998; Le Fevre, Moore, & Wilkinson, 2003; Lysynchuk, Pressley, & Vye, 1990; Palincsar, Brown, & Martin, 1987). In a meta-analysis involving 16 studies, Rosenshine and Meister (1994) reported a mean effect size of .32 for standardized test and .88 for experimenter-developed task favouring RT over control groups. Although there is clear evidence that RT promotes reading comprehension, no study analyzed the separate effects of the various aspects of RT and only a few studies have examined if RT students improved their strategies skills in terms of successfully applying a strategy to a passage. Furthermore, it is not clear if all or only one of the taught strategies is effective in fostering students' reading comprehension (Rosenshine & Meister, 1994; for training college students see also Hart & Speece, 1998). So far, a training effect for summarizing only could be established. There were significant improvements in four out of five studies in which researchers collected summarization probes. For generating questions, five out of six studies found no reliable difference between RT and control groups, although in all six studies RT students significantly improved in their reading comprehension relative to control students. Even though students were taught the entire set of four strategies in 12 out of 16 studies, effects on making predictions were assessed in only one of these studies (Dermody, 1988). No study has examined students' mastery of clarifying strategies. At present, it is thus unclear which strategies of RT significantly contribute to the development of students' reading comprehension skills.

Besides these open questions regarding the *empirical identification of effective strategies* involved in RT, a number of difficulties with implementing and practicing RT have been reported in the literature (Fuchs & Fuchs, 2001; Marks et al., 1993). In a qualitative analysis, Hacker and Tenent (2002) found that elementary-school teachers made many modifications to adapt RT to the requirements of mainstream classroom instruction. Some teachers combined small-group activities with whole-class instruction to make the collaborative learning process easier for students as well as for the teacher. Other teachers required their students to write down their questions, answers, and summaries. Marks et al. (1993) observed that teachers sometimes changed RT in a way that elements supposedly playing a critical role in promoting deeper levels of reading comprehension, such as students'

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