

Collaborative strategic reading during social studies in heterogeneous fourth-grade classrooms.

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In this study we investigated the effectiveness of a cooperative learning approach designed to foster strategic reading in 3 heterogeneous, culturally and linguistically diverse, general education classrooms in 1 school. Fourth graders in an 11-day experimental condition (N = 85) were taught by the researchers to apply reading comprehension strategies ("preview," "click and clunk," "get the gist," and "wrap up") while reading social studies text in small student-led groups. Control condition students (N = 56) in 2 classes did not learn comprehension strategies but received researcher-led instruction in the same content. Outcome measures (a standardized reading test, social studies unit test, audiotapes of group work) indicated that students in the experimental condition made greater gains in reading comprehension, $F(1,138) = 10.68$, $p = .001$, and equal gains in content knowledge. Discourse analyses of peer talk during cooperative group sessions indicated that 65% of discourse was academic in nature and content related, 25% was procedural, 8% was feedback, and 2% was unrelated to the task. Students implemented the clarification (click and clunk) and main idea (get the gist) strategies the most consistently and effectively.

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General education classrooms are increasingly heterogeneous. Contributing to this increase is the growing movement toward the inclusion of students with disabilities in general education classrooms (see, for review, Fuchs & Fuchs, 1994) and the growth in cultural and linguistic diversity among students (National Center for Educational Statistics, 1991). Faced with pressure to meet the educational needs of culturally and linguistically diverse students and students with learning disabilities (LD), many teachers feel overwhelmed (Schumm & Vaughn, 1992; Semmell, Abernathy, Butera, & Lesar, 1991). They express concerns about whether they are "doing the right thing" and indicate that they do not have the skills to meet the needs of many of their diverse learners (Schumm & Vaughn, 1991).

Within this context of increasing diversity, students' reading ability continues to be a primary focus in elementary education programs. Furthermore, as students progress through the elementary grades, they must increasingly rely on reading comprehension to learn from textbooks. Given the challenge of balancing a wide range of student needs in heterogeneous classrooms while facilitating the acquisition of reading skills and content-area knowledge, it is imperative to develop effective, empirically based interventions that seem viable to teachers. Thus, the purpose of this research was to explore the efficacy of an approach designed to foster strategic reading and facilitate social studies learning in heterogeneous, culturally and linguistically diverse classrooms that include students with LD. The approach, Collaborative Strategic Reading, combines reading comprehension strategy instruction (Klingner & Vaughn, 1996; Palincsar & Brown, 1984) and cooperative learning (Johnson & Johnson, 1989).

Reading Comprehension Strategy Instruction

Reading comprehension strategies acquired while students negotiate meaning as part of an active, constructive process can improve reading comprehension (Dole, Duffy, Roehler, & Pearson, 1991). Many students with LD are poor comprehenders and lack both the metacognitive skills to monitor their reading comprehension and the "fix up" strategies to repair understanding when it breaks down (Brown, 1975; Torgesen, 1977, 1980). Numerous strategies have been developed to improve the understanding, storage, and retrieval of complex, meaningful, and organized information (e.g., Armbruster, Anderson, & Ostertag, 1987; Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989). The effectiveness of these strategies has been documented better for students with LD (for reviews, see Weisberg, 1988; Wong, 1985) than for English as a second language (ESL) students (Hernandez, 1991).

The method of strategy instruction implemented in this study was influenced primarily by studies on reciprocal teaching (e.g., Palincsar & Brown, 1984, 1985; Klingner & Vaughn, 1996) and by the transactional approach (Pressley, Brown, El-Dinary, & Afflerbach, 1995). Reciprocal teaching appears promising for heterogeneous elementary classrooms because it has been found to be effective with a range of students: those who can decode but cannot comprehend text (e.g., Palincsar & Brown, 1984), average and above-average readers (for reviews, see Rosenshine & Meister, 1991,

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1994), fourth graders (the age group of interest in this study; Lysynchuk, Pressley, & Vye, 1990), and students with LD who use ESL, including those students with low decoding levels (Klingner, 1994; Klingner & Vaughn, 1996). As with reciprocal teaching, in the transactional approach to strategy instruction the teacher provides support and guidance to students as they apply strategies while interacting with the text and learning text content. A long-term goal of instruction is the self-regulated use of strategies. The term "transactional" is used to emphasize that (a) meaning is determined through the interaction of prior knowledge and information conveyed through print; (b) one person's reaction is influenced by what other group members do, think, and say; and (c) the meaning that emerges is the product of the group's interactions (Pressley et al., 1995).

However, reciprocal teaching and the transactional approach were designed to be used with small teacher-facilitated groups rather than student-led cooperative-learning groups in large classrooms. In fact, the majority of strategy instruction programs have taken place in resource rooms or other remedial settings, in small groups rather than large classrooms, with adolescents rather than elementary students, and with students with similar educational needs (e.g., adequate decoders but poor comprehenders). Because of the successes of these intensive, systematic efforts, general education classroom teachers have been asked to provide strategy instruction to their heterogeneous groups of students. Yet the challenges of such instruction are many, as attested to by those who have tried to adapt strategy instruction for large classrooms (Coley, DePinto, Craig, & Gardner, 1993; Deshler & Schumaker, 1993; Scanlon, Deshler, & Schumaker, 1996). As Deshler and Schumaker articulated, a key issue is how to achieve a balance between content and strategy instruction so that the academic needs of all students are met. Thus, one challenge in developing an intervention was to adapt previously successful strategy instruction models to be appropriate for heterogeneous classrooms in a way that would balance strategy instruction and content learning, motivate a range of students, and seem feasible to classroom teachers. We did this by including a cooperative learning phase in our Collaborative Strategic Reading model.

Cooperative Learning

Cooperative learning is an appropriate instructional approach for culturally diverse, heterogeneous classrooms. In comparison with competitive or individualistic methods, cooperative learning has been found to improve academic performance (Slavin, 1987), lead to greater motivation toward learning (Garibaldi, 1979), increase time on task (Cohen & Benton, 1988), improve self-esteem (Johnson & Johnson, 1989), and yield more positive social behaviors (Lloyd, Crowley, Kohler, & Strain, 1988). Cooperative learning methods have produced favorable results for students with LD (e.g., Madden & Slavin, 1983; Stevens, Madden, Slavin, & Famish, 1987) and for ESL students (Kagan, 1986; Long & Porter, 1985) and have been used successfully to teach reading comprehension strategies (Stevens & Slavin, 1995; Stevens, Slavin, & Farnish, 1991).

For this research, we defined cooperative learning as students working together in small groups on a clearly defined task that requires the participation of everyone in the group (Cohen, 1986, 1994). Students are expected to complete the task without the ongoing supervision of a teacher. A key factor affecting the productivity of small-group work appears to be how well the learning environment is structured to promote improved performance--just placing students together and telling them to cooperate is not enough. The extent to which the interaction in groups is structured affects the quality of student discourse and the academic outcomes (Yager, Johnson, & Johnson, 1985). Cohen (1994) concluded that when the goal of a task is to understand an assigned reading, structuring the interaction through scripts can be effective because students can use the scripts to raise the level of discourse, promote participation, and increase task engagement. Yet too much structuring can "impede conceptually-oriented interaction, particularly if it micromanages what group members are to say and think about" (Cohen, 1994, p. 30). Ideally, comprehension strategies can provide a structure for conducting text-related discussions that should increase group productivity and factual and conceptual learning (Cohen, 1994). The challenge is finding the optimal level of structure. Whether the amount of structure provided by our intervention was ideal was a question of interest to us in this study. Thus, we examined the forms of conversation and types of discussion that transpired in the cooperative-learning groups.

Analyses of the quality and nature of peer-group discussions (Deering & Meloth, 1991; Meloth, 1993; Meloth & Deering, 1994) provided a valuable precedent for this study and a coding scheme for analyzing the discourse in cooperative learning groups. Meloth and Deering (1994) examined the effects of two cooperative learning conditions on group discussions and metacognitive awareness by transcribing and analyzing peer group talk. They found that discussions were more focused and substantive in a strategic condition in comparison with a reward condition.

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In our study we examined the effectiveness of Collaborative Strategic Reading in heterogeneous classrooms by analyzing the results of reading comprehension and social studies content outcome measures and by conducting discourse analyses of group processes. Our primary focus was to better understand the nature of students' interactions while reading social studies text and applying comprehension strategies in cooperative learning groups.

Method

Participants

Participants included all of the students (for whom parental permission had been obtained) in five heterogeneous fourth-grade classrooms in a suburban elementary school in a large metropolitan area in the Southeastern United States (N = 141). The school's population was comprised of Hispanic (68%), white (24%), black (7%), and Asian or American Indian (1%) students. Each class was assigned to one of two conditions; the intervention condition included three classes with a total of 85 students (39 males, 46 females), and the control condition included two classes and a total of 56 students (20 males, 36 females). Classes were assigned based on the results of the Woodcock-Johnson Tests of Achievement--Revised (Woodcock & Johnson, 1989), word identification subtest. In an effort to ensure that the intervention and control conditions were initially as equal as possible, classes were paired and then randomly assigned to condition (i.e., of the two classes with the highest initial reading scores, one was randomly selected to receive the experimental intervention and the other the control condition; of the two lowest classes, one was randomly selected to receive the experimental intervention and the other the control condition). The fifth class was assigned to the intervention condition. Mean percentile scores (with standard deviations in parentheses) were 39.23 (6.52) for the intervention condition and 38.47 (7.06) for the control condition.

To better understand the characteristics of our diverse, heterogeneous sample of students, we categorized students by exceptionality, native language, and achievement. First we tabulated the number of students identified as LD or as gifted. Second, we looked at students' native languages and categorized students as speaking English as a first or second language (English or ESL). Students who spoke English as a second language ranged from limited English proficiency (LEP; proficiency levels of 3 or lower) to full proficiency (Level 5), as determined by district criteria. Third, we categorized students according to achievement, as determined by reading stanine scores from the Stanford Achievement Test (SAT; Stanines 1-3 are low achieving; Stanines 4 and 5 are average achieving; and Stanines 6-9 are high achieving). See Table 1 for the number of students in each category. Scores on the SAT were not available for the LEP students nor for eight other students; hence, they are not included in this categorization. Chi-square analyses of distributions across exceptionalities, languages, and achievement within treatment and control groups were not significant.

TABLE 1. Number of Students with Selected Characteristics, by Condition

	Intervention	Control
Exceptionality:		
Learning disabilities	8	4
Gifted	1	1
Language:		
English	41	29
ESL	44	27
Achievement (SAT: Reading):		
Low	31	14
Average	33	21
High	17	5

Procedures

Students in both conditions learned the same content, a unit pertaining to the economy of Florida from a Florida state history textbook (Ginn & Co., 1987). The number of instructional sessions (11) was held constant across both conditions (11 was the number of days required to teach one social studies unit). Each class session lasted 45 minutes. A homework activity (product map) that conformed to the school district's competency-based curriculum was assigned to both

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conditions. No other homework assignments related to reading and learning text content were assigned. Researchers provided all of the instruction in both conditions (one researcher at a time). We thought it was important for us to teach Collaborative Strategic Reading ourselves before asking classroom teachers to do so. One of two participant/observers was assigned to each of the five classes for the duration of the study. The role of the participant/observers was to monitor procedures (e.g., make sure the time spent on lessons was kept constant across conditions), ensure treatment fidelity, and assist in data collection (i.e., distributing tests, managing tape recorders). Participant/observers kept intervention logs that described the daily lessons as well as general impressions of classroom climate.

Intervention condition. Students in the intervention condition received researcher-facilitated instruction in how to (a) "preview" (prior to reading a passage, to read the title and headings, to predict what the passage might be about, and to recall what they already know about the topic); (b) "click and clunk" (to monitor comprehension during reading by identifying difficult words and concepts in the passage and using fix-up strategies when the text does not make sense; Babbs, 1984); (c) "get the gist" (to restate the most important idea in a paragraph); and (d) "wrap up" (after reading, to summarize what has been learned and to ask questions "that a teacher might ask on a test"). Whole-class, researcher-facilitated strategy instruction lasted 3 days. On the first day, a researcher introduced the plan for strategic reading (see the Appendix) and then modeled the strategic reading process while reading an expository text passage. A "think aloud" technique made explicit why, how, and when strategies were used. After this initial modeling, students were invited to try using the strategies and were supported in their efforts to do so. As students became more proficient, small groups of students took turns modeling the strategic reading process for the class. From the fourth day on, students worked in heterogeneous groups of five or six to learn textbook content. Students stayed in the same groups throughout the study. A rotating group leader led each group in the implementation of the strategies. Each student had the opportunity to serve as group leader during the study. After the first few days of group work, we added the role of recorder. This student wrote down the group's clunks for later review. Students were encouraged to assist each other in implementing the strategies and to become self-regulated strategy users. The researchers monitored the student groups, providing additional scaffolded instruction (including modeling) when necessary.

Control condition. Students in the control condition were not taught the reading comprehension strategies. Content was presented by a researcher who followed the instructional guidelines provided in the teacher's manual for the Florida history textbook. For each chapter, the instructor first introduced key vocabulary by listing words and their definitions on the chalkboard or a wall chart. Students examined and discussed pictures and then read through the text together (with one student or the teacher reading aloud at a time). The instructor then summarized textbook content (often using visuals), asked questions from the book to check understanding, and led classroom discussions about important concepts.

Measures

A standardized reading test and a social studies unit test were administered as dependent measures to all participants. Also, for purposes of analyzing student discourse during cooperative learning strategy implementation sessions, we audiotaped all groups in the intervention condition.

Standardized reading test. The comprehension subtest of the Gates-MacGinitie Reading Tests--Level 4, Forms K or L (MacGinitie & MacGinitie, 1989)--was administered at the beginning and end of the intervention to students in both conditions. This measure was selected to be consistent with previous research (Klingner & Vaughn, 1996; Lysynchuk et al., 1990). The Gates-MacGinitie Reading Tests are a group-administered measure of student reading achievement and are considered a "well-standardized instrument with a large and representative norm sample" (Swerdlik, 1992).

Content measure. The unit test included 50 questions from all lessons covered and was derived from questions included in the students' textbook and teacher's manual (Ginn & Co., 1987). Questions included the following formats: fill in the blank, short answer, multiple choice, and vocabulary definitions. The test was administered on the same day to all students in both conditions.

Audiotapes. Cooperative learning sessions were audiotaped and transcribed by the researchers and research assistants. All groups audiotaped their sessions, but only the decipherable tapes of one group per class were transcribed. Target groups were identified according to the following criteria: (a) the group reflected the ethnic composition of the class and

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included at least one student with LD; and (b) the group's performance was considered to be typical of that class (i.e., if a group seemed to have performed exceptionally well or very poorly, it was excluded). These groups were designated as Group 1, Group 2, and Group 3 for purposes of comparison. Transcribed were a total of 1,325 utterances from six sessions of Group 1, five sessions of Group 2, and five sessions of Group 3. Utterances were defined as a turn speaking, regardless of length.

Data Analysis

We approached data analysis in this study from two complementary directions. First, a quasi-experimental research design was applied to answer questions regarding overall treatment effectiveness. We used quantitative data analysis procedures to compare the intervention and control conditions on outcome measures. Second, using three discourse analyses, we examined the verbal interactions in the intervention condition peer groups to answer questions about group processes.

Results and Discussion

Quantitative Analyses

Between-group differences for reading comprehension and content knowledge. A posttest \times treatment analysis of covariance using raw scores from the Gates-MacGinitie Reading Test as the dependent measure and pretest scores as the covariate indicated that main effects were statistically significant, $F(1, 138) = 10.68$, $p = .001$ (with an effect size of .44). For the intervention condition, the pretest ($M = 21.68$, $SD = 8.87$) to posttest ($M = 24.66$, $SD = 8.36$) change was 2.98, with 24 students doing worse on the posttest than the pretest, five students performing the same, and 56 students doing better. For the control condition, the pretest ($M = 20.79$, $SD = 7.76$) to posttest ($M = 21.23$, $SD = 7.25$) change was .44, with 26 students scoring lower on the posttest than the pretest, five doing the same, and 25 scoring higher. A t test for paired samples was used to analyze the pretest to posttest difference scores of students in the intervention condition. This procedure indicated that students in the intervention condition demonstrated statistically significant growth in reading comprehension, $t(84) = 4.07$, $p = .000$ (effect size = .34).

An analysis of variance (ANOVA) using the unit test scores from students' social studies textbook as the dependent measure indicated no significant difference between students in the intervention ($M = 25.10$, $SD = 9.46$) and control conditions ($M = 23.93$, $SD = 9.11$), $F(1, 133) = .51$, $p = .48$, in content knowledge. In fact, there were greater differences among classes in each condition than across conditions. Means for the three classes in the intervention condition (with SD s in parentheses) were 23.66 (9.57), 22.48 (10.07), and 28.23 (8.29). For the control classes, the means were 20.6 (8.92) and 28.08 (7.64). Within both conditions, higher-achieving classes outperformed lower-achieving classes. Thus, the intervention-condition students learned as much content as the control-condition students, even though the former were mostly self-taught using the text rather than teacher-taught.

Pretest to posttest change, \times language and condition. A two-way ANOVA on pre- to posttest change scores on the Gates-MacGinitie \times native language and \times condition indicated that there was not a significant main effect for language, nor was there a significant language \times treatment interaction. When intervention and control conditions were combined, the means of the native English speakers ($N = 70$, $M = 1.71$) and the ESL students ($N = 71$, $M = 1.99$) were similar. But when looked at separately, differences were apparent (although not statistically significant): English intervention ($N = 41$, $M = 2.63$) and English control ($N = 29$, $M = .41$); ESL intervention ($N = 44$, $M = 3.30$) and ESL control ($N = 27$, $M = -.15$). It is interesting that the difference between the ESL students' change scores (3.45) was higher than the difference between the English students' change scores (2.22). Whether such a pattern would have resulted in increased differentiation over time can only be speculated and is a topic for further research:

Pretest to posttest change \times achievement and \times condition. A two-way ANOVA for pre- to posttest change scores on the Gates-MacGinitie \times achievement level and \times condition indicated no significant main effects, nor was there a significant achievement \times treatment interaction. However, as with the language scores, the mean change scores indicated patterns that perhaps over time or with larger samples would yield statistically significant differences: intervention students with LD ($N = 8$, $M = 4.25$) and control students with LD ($N = 4$, $M = 1.67$); intervention low achievers ($N = 23$, $M = 2.39$) and control low achievers ($N = 10$, $M = .30$); intervention average achievers ($N = 33$, $M = 3.36$) and control average achievers ($N = 21$,

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M = 1.48); intervention high achievers (N = 17, M = 3.18) and control high achievers (N = 5, M = -2.80).

Discourse Analyses within the Intervention Condition

We coded the 1,325 utterances in three ways to examine (a) the amount of time and skill with which students applied the strategies, (b) the forms of conversation that took place in cooperative learning groups, and (c) the extent to which higher-level discussions occurred in groups.

Time spent on strategies and efficacy of strategy implementation. We analyzed transcripts to determine how often students used each of the strategies when working in strategy implementation peer groups and how well they applied the strategies. We followed a multilevel procedure that progressed from global to more refined analyses (Miles & Huberman, 1994). First, to ascertain the percentage of discussion time devoted to each strategy, we coded all strategy-related utterances as fitting into one of four categories: preview, click and clunk, get the gist, or wrap up. Second, we sorted independently all strategy implementation sequences according to whether or not they represented an effective implementation of each strategy. Third, within these "effective" and "other" categories, one researcher further sorted these sequences of utterances into more refined units with similar characteristics that reflected like usage of the strategies (Strauss & Corbin, 1990). Verification was then conducted by another researcher who sought evidence that would confirm or disconfirm these findings. Disconfirmation of findings occurred in fewer than 5% of the sequences of utterances within the units. When this occurred, coders met and discussed their interpretations and agreed on the appropriate unit. Once we agreed on units, we highlighted representative quotes as well as quotes that appeared to be exceptions to general patterns.

Students applied three out of four strategies on a regular basis: preview (with 140, or about 16%, of 875 strategy-related utterances), click and clunk (455 times, or 52%), and get the gist (220 times, or 25%). Yet there was considerable variation in how well students implemented the strategies. Wrap up was applied least frequently (60 times, or 7%), in part because students often ran out of time and also because it happens only once per passage (see Table 2 for percentages of utterances related to each strategy).

TABLE 2. Percentages of Utterances Related to Each Strategy, by Group

Strategy	Group			Total
	1	2	3	
Preview	15	16	17	16
Clunks	56	54	43	52
Gist	29	24	19	25
Wrap-up	0	6	21	7

NOTE.--One representative peer group was selected from each of the 3 intervention classes.

Preview. Each group routinely previewed before reading a day's assignment, spending 16% of strategy-related discussion time on this prereading strategy. However, for the most part, exchanges about what students "thought the passage would be about," "already knew about the topic of the passage," and "thought they would learn about the topic" were perfunctory and brief. Students seemed merely to be going through the motions to complete task requirements rather than focusing on the intended learning. Group leaders typically moved on after one or two students had replied to each question, without attempting to connect or make sense out of responses. They provided little or no feedback. Higher-achieving students (e.g., Manny in the sample below) contributed more accurate and elaborate predictions than lower achievers (e.g., Omar). And even when a student generated an accurate prediction, this information seemed to have little effect on peers' responses. A representative example follows (all students' names are pseudonyms; GL = group leader):

GL: OK, what is the topic of the passage?

Teresa: Tourism and conversation.

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GL: OK, anybody else? OK, what do

we already know about this topic?

Manny: That it's going to be about people,

that they are going to the attractions?

GL: OK. Anybody else? Jenny?

Jenny: People that serve on the little

things?

GL: OK. Anybody else? Omar?

Omar: The morning of Halloween skiing?

GL: The morning of Halloween skiing?

OK, what do we think we

will find out about the topic

when we read the passage?

Manny?

Manny: I think we will find out about

people, that they go to different

places like Seaworld, Cypress

Gardens, Disneyworld, and

there are 32 and a half million

visitors?

GL: OK. Anybody else? OK, who

wants to read?

(It should be noted that Omar's unusual responses were not typical of other students in the intervention groups, yet the phenomenon of peers providing little feedback was common.)

There were a few exceptions to the dialogue above. Occasionally students continued where they had left off the day before when previewing, restating an important concept they had just learned as "what they already knew about the topic":

GL: What is the topic of this passage?

Manny: The food industries of Florida.

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Randy: About stuff made in Florida.

GL: What do we already know about the topic?

Manny: That they preserve and can food for the rest of Florida.

Randy: It's about Florida's food that's canned so it won't be spoiled?

There are several explanations for the cursory manner in which students usually applied the preview strategy. First, perhaps students did not perceive previewing as important. More instruction by an adult emphasizing why previewing is helpful might have helped students to understand its significance (Duffy et al., 1987; Paris, Lipson, & Wixson, 1983).

Second, further instruction in how to monitor the application of the previewing strategy might have made a difference. Perhaps the students did not know enough to determine when the strategy had been used well (Garner, 1992).

Third, predicting what a passage might be about appears to be difficult with social studies texts. Brady (1990) and Rosenshine and Meister (1994) noted that using a prediction strategy with social studies texts is problematic because social studies textbooks tend to lack coherence. For this reason, we included the strategy of predicting what a passage would be about only as part of previewing. Thus, students only predicted once, during prereading activities, rather than on an ongoing basis. We believe that predicting what the next paragraph will be about (as in reciprocal teaching) is more suitable for narrative text.

Fourth, at times students seemed to lack background knowledge that could have helped them understand a passage (Pearson, Hansen, & Gordon, 1979). Perhaps it is necessary for a knowledgeable adult to help students connect what they have already learned with what they will be learning. It could be unrealistic to expect peers to perform this function. When a student made a prediction that had little or nothing to do with text content, peers did not try to teach background information or help the student focus on relevant clues that might have helped clear up misunderstandings. This type of small-group learning might not be feasible for teaching information for which students lack adequate prior knowledge.

Fifth, more procedural knowledge might have helped less proficient previewers develop the ability to access background knowledge and use headings, subheadings, and pictures to make realistic predictions. As previous research suggests (e.g., Paris & Lindauer, 1976), prereading strategies may be used automatically (and easily) by skilled comprehenders but not by poorer readers. The results of this analysis indicate that poorer readers most often provided brief or inaccurate predictions or none at all. Yet more instruction by an adult might have unnecessarily held back higher-achieving students. For strategy instruction to be effective within a small-group structure, lower-achieving students must be able to learn from their more accomplished classmates. Unfortunately, the modeling higher achievers provided did not result in improved previewing by their less skilled counterparts, nor did the higher achievers provide explicit feedback or instruction in previewing that might have helped their peers.

In conclusion, although students consistently previewed before they read a day's passage, they did so in a cursory manner. For the most part the preview strategy did not serve its purpose of activating background knowledge and creating more interactive readers who made predictions about text content and read to confirm or disconfirm their predictions. When students have little background knowledge about a topic, it seems preferable for a teacher to conduct a whole-class preview before small-group work.

Click and clunk. All groups regularly implemented the second strategy, click and clunk. More than half (52%) of all strategy-related utterances were either checks by the group leader to find out if anyone had not understood a word in a passage, requests by students for clarification of a difficult word, or explanations of a vocabulary word.

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These fourth-grade students applied this strategy consistently and liked using it. In postintervention interviews they said they liked click and clunk the best because, for example, "If you didn't know a word somebody could help you out" and "If I see them (the words) again I would know them."

Asking for help with a difficult word or concept requires having enough metacognitive awareness to monitor one's own comprehension (Flavell, 1981; Garner, 1987). One encouraging finding is that the students in this study demonstrated this ability. For example, a student in Group 3 persisted until he understood:

GL: Were there any clicks or clunks?

Frank: What is an economy?

GL: An economy is when there's lots

of workers and when they get together

they make an economy.

OK, is that it? Are there any more

clunks?

Frank: I still don't know what economy is!

GL: Lots of different people from different

jobs working together ...

Rita: ... because they need money to

pay the rent and buy a house and

food and clothing?

Another encouraging finding was that students provided far fewer inaccurate definitions than expected based on previous research with older students (Klingner & Saumell, 1992; Palincsar, Brown, & Martin, 1987). Students in the groups whose discussions were transcribed routinely checked with an adult when they were not sure about the meaning of a word. In the following representative example, students in Group 1 corrected an inaccurate definition themselves and then checked with a researcher:

GL: Any clunks?

Manny: Petroleum.

GL: Anybody know what petroleum

is? Randy?

Randy: I think it's like a policeman or

something.

GL: Teresa?

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Teresa: I think it's like patrols that take care of the land. They ...

Omar: Hold on a sec. I think it's like a black oil that comes from the ground, and that they make ...

GL: OK, I don't know if that's right; I'll ask the teacher. What is petroleum?

In only two cases (once in Group 1 and once in Group 2) did a student propose an incorrect definition without other students then supplying an accurate definition or checking with an adult. One of the two inaccurate definitions that was not later clarified follows:

Randy: I have a clunk. It's restored.

GL: Manny?

Manny: It's sort of like when you have a big warehouse and you store things there, I think.

Randy: So it's stuff that's been stored again?

For difficult words not to be a problem with peer group interventions like the one applied in this study, a teacher or other knowledgeable adult must be available to provide assistance with unfamiliar concepts, and students must ask for help when they need it. These two conditions were met in this study. Yet providing feedback for all who require assistance can be difficult in a class with many students and several groups. To help check for misunderstandings and as a way to encourage follow-through on clunks, students were instructed to keep track in writing of words they had not understood and then to tell these to the teacher and whole class at the end of the class period.

Overall, the findings associated with the click and clunk strategy were encouraging. Students were conscientious about defining difficult words and usually were able to provide accurate definitions.

Get the gist. Students in each group regularly restated the most important ideas in a section, or "got the gist," before they continued reading a passage. They spent 25% of strategy-related discussion time on this task.

Three findings emerged regarding the manner in which students found the main ideas in the paragraphs they read. First, for the most part, students were able to state the gist of a paragraph accurately in their own words. However, as expected, good readers were much better at determining what was important than poorer readers (e.g., Johnston & Afflerbach, 1985). The gists of better readers tended to be more elaborate and more accurate than those of poorer readers. A few examples from the average and high achievers in each group follow:

Manny: I think it's about phosphates, what they use it for, because it is

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the most important mineral.

And about the other ones, like

limestone, and coal, and sand,

and gravel.

Joanna: I think what's important is the

people that cut the trees and

make the paper. They are wonderful

persons to do that work

and all that stuff.

Vicky: I think the gist is that some materials

lining the earth contain

minerals that are used to make

products.

Teresa: The gist is about the food and

vegetables that are shipped, and

they are processed before they

are shipped.

Randy: I think the gist is about how

they're telling you how they

freeze the food so it won't get

spoiled and can travel to different

countries, and it tastes better.

In contrast, lower achievers tended to provide one- or two-word answers, either restating the topic of the passage (e.g., Omar: "Industry?"; Julie: "Transportation"; and Rita: "Tourists.") or repeating a few key words from someone else's more elaborate gist. For example:

Manny: It's about the workers. They

used to cut down the trees, and

they never put them back, but

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now they do.

Omar: It's about trees and workers.

A second finding was that participation in getting the gist was high among these students, with lower achievers responding almost as often as higher achievers. Although their gists tended to be brief, less proficient readers were active participants in discussions about the most important ideas in a paragraph. This may be explained by the structure imposed on the discussions by assigning roles to various group members, providing strategies to guide interactions, and asking group leaders to take responsibility for active participation in their groups. Group leaders, particularly those in Groups 1 and 2, usually called on everyone. It was common for the group leader to ensure that each person had contributed his or her ideas and to say something like, "OK, anybody else want to say it in different words?"

A third finding is that the students in these groups often tried to help each other "get the gist." Main idea is a difficult skill to teach to low-achieving students (e.g., Baumann, 1986), yet, for this type of small-group work to be appropriate for heterogeneous groups of students, all students must be able to benefit from guidance from their peers. Unlike with the previewing and clarifying strategies (with which students rarely helped each other, except by defining difficult words), peer assistance with the generation of more accurate or elaborate main ideas was common. In the following example, the group leader in Group 3 elaborated an incomplete gist:

GL: What is the gist? What is the most important main idea? ... Rita?

Rita: Oranges.

GL: Oranges, very good.

Rita: And grapefruit.

GL: And grapefruit, very good. And it

also tells about juice and putting

concentrate in cans.

In conclusion, unlike with the previewing strategy, where it appeared students required more declarative, conditional, and procedural knowledge, students seemed to understand the importance of the main idea strategy, knew when to use it, and were able to use it accurately. Students also better understood how to help each other.

Wrap up. Wrap up was the strategy with the greatest variation across groups--Group 3 wrapped up after all but one session, but Group 1 did not wrap up at all. Because it was the last strategy, and only used after reading that day's portion of text, groups often ran out of time and did not review at all or started to review and did not finish.

Because it was used less frequently than the other strategies, we had more difficulty finding patterns in the way students applied the wrap up strategy. Yet a few tentative themes emerged. When asked what they had learned, students replied in one of two ways. They either provided a brief summary of key ideas (e.g., "I learned that the government helps people build houses, and get food, and get new ideas, and the banks") or they restated a word they had earlier brought up as a clunk (e.g., "I learned what phosphate is"). Note in the following example that Frank again talked about the economy (see the related example under the click and clunk section) and that the group leader provided feedback and elaboration:

GL: Let's get the wrap-up. What did

you learn?

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Frank: About the economy.

GL: OK, that is right about the economy

and about the bank and the

money for industries, we learned

that, too.

Questions that might be asked on a test also tended to reflect concepts that had been clarified earlier (e.g., "What is phosphate?" or "Why is phosphate important to Florida?"). And some questions were similar to previously stated gists. It is interesting how certain ideas were woven throughout these discussions about text content. Although students were encouraged to answer their own or their groupmates' questions, they rarely did so. For example, when Nilda asked, "What is phosphate?", a researcher asked if the group knew the answer to the question. Rita responded, "Yeah." Then someone changed the subject and the question was not answered. It is uncertain whether students did not answer questions because they ran out of time, they did not understand the importance of answering their questions, or it was not clear to them that they were supposed to do so. Future group work of this nature should stress the value of answering as well as asking questions. In previous research where student-generated questioning has promoted improved comprehension, students have answered their own questions (Manzo, 1985; Nolte & Singer, 1985; Palincsar & Brown, 1984).

When this strategy was applied, for the most part, it was done in an effective manner. Students summarized what they had learned and asked questions "that a teacher might include on a test" that reflected the most important ideas in a passage.

Forms of conversation. To analyze the forms of conversation that took place during peer-group discussions when an adult was not present, we coded utterances for content using a coding scheme we adapted from Deering and Meloth (1991). Two researchers independently coded each utterance as fitting into one of four categories: procedural, academic content related, feedback, or unrelated. Utterances were then further separated into subgroups within these four categories. Table 3 describes each category and subgroup. Some types of utterances tended to be short, as with positive feedback (e.g., "Very good!"), whereas others tended to be much longer, as with higher-level academic content-related statements. Reading aloud from text was not included, nor was discourse that took place when a teacher was present. Intercoder agreement was defined as the number of hits (both researchers coded the utterance in the same category and subgroup) over the total number of coded responses and was calculated to be .93.

TABLE 3. Taxonomy for Coding Verbal Interactions

Category	Description
Procedural	<ol style="list-style-type: none"> 1. Statements, questions, or directives regarding strategy-related procedures. 2. Comments or directives related to the behavior management of one or more group members, not strategy related.
Academic content related	<ol style="list-style-type: none"> 1. Requests for information regarding academic content (including statements about something not understood that could have been formed as a question). 2. Low-level responses, without explanations or elaborations (not including reading aloud). 3. High-level responses, with

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	justification or elaboration, including complete ideas about the gist of a passage,
Feedback	1. Compliments and positive feedback in response to another student's idea (not including "OK"). 2. Criticisms of another individual, an idea, or the process of reading and using the strategies.
Unrelated	1. Utterances unrelated to the task.
Category	Example
Procedural	"Now I need to pick someone to read." "Then you should pay attention."
Academic content related	"I don't understand what phosphates are." "It's a mineral." "I think it's about baseball players, that when it's too cold up north they come south so they can play in the sun." Feedback "Very good! I like that idea." "You are a 'pachuco' [dummy]."
Unrelated	"Students make birdlike screeches."

The highest percentage of discourse during peer-group strategy-implementation sessions was academic and content related (861 of 1,325 utterances, or 65%). Procedural comments, questions, or directives took up the next greatest percentage of time (337, or about 25%), with affective and off-task utterances occurring relatively rarely (101, or 8% and 26, or 2%, respectively). These results reflect a higher percentage of academic than procedural utterances when compared with Deering and Meloth's (1991) analysis of the dialogue in cooperative learning groups in which 46% of the utterances were academic and 45% were procedural. (Furthermore, it should be noted that we did not include oral reading in our analysis, whereas Deering and Meloth coded oral reading as academic utterances, increasing the percentage in that category.)

An examination of subcategories revealed that the greatest percentage of procedural comments by far were strategy related (23% of total utterances, or 299) rather than directed toward behavior management (3%, or 38). Procedural comments were almost always made by the student currently designated as group leader, although occasionally another student reminded the group leader of a strategy that had been omitted (e.g., "You forgot to get the gist"). More than half of all academic content-related utterances were questions of two distinct types (33%, or 446). One type was asked by the designated group leader and directed toward the group or a specific person (e.g., "Was there anything that was hard to understand?"). Other questions were asked by group members when requesting help with reading or clarifying difficult words (e.g., "What is petroleum?"). Almost as many academic content-related utterances were low-level responses (25%, or 337), and most typically involved responding to requests for help with hard words (clunks). Other low-level responses included predicting what a passage would be about and providing incomplete gists (e.g., [The gist is] "technology"). The lowest percentage of academic content-related utterances clearly reflected a higher level of thinking (6%, or 78). The majority of these were complete ideas about the gist of a passage (e.g., "I think the most important thing is that many

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important minerals line the earth and are used to make products"). A few higher-level responses concerned words found in the text (e.g., "Where is that word that I found? Modern factories. Modern. I think that is a very interesting word. It seems hard, because you think it means something else, like a thing that you make in a factory, but it is really just a word"). Comments related to feedback were much more positive (6%, or 87) than negative (1%, or 14). Few utterances were unrelated to the task, such as making birdlike screeches (2%, or 26); see Table 4 for the percentages of utterances in verbal interaction subcategories by group).

TABLE 4. Percentages of Utterances in Verbal Interaction Subcategories by Group

Group	Utterance			
	Procedural		Academic	
	Strategy Related	Behavior Management	Question	Low-Level Response
1	19	2	35	28
2	25	2	33	24
3	25	5	32	22
Total	23	3	33	25

Group	Utterance			
	Academic High-Level Response	Feedback		
		Positive	Negative	Unrelated
1	7	6	1	1
2	7	7	0	1
3	4	6	2	4
Total	6	6	1	2

NOTE. -- Percentages are out of the total of 1,325 utterances and were rounded to the nearest whole number (therefore, all totals do not equal 100%).

We are encouraged that students in these cooperative groups spent as much time as they did engaged in academic, content-related discussions. However, that only 6% of utterances could conclusively be categorized as high level is cause for concern. It appears that the task as we defined it was not conducive to this level of interaction. When interpreting these findings, however, it is important to consider that our criteria for considering an utterance as high level were stringent. It could be that a one-word response to a request to "get the gist" (e.g., "technology") does reflect some higher-level thinking.

Higher-level discussions. To further understand the forms of conversation and the nature of thinking that took place in peer groups, we analyzed transcripts to determine the extent to which content-related higher-level discussions occurred. Higher-level discussions are important because they promote higher-level thinking and conceptual learning (Cohen, 1994; Noddings, 1989; Vygotsky, 1978). Exchanges between students were classified as a higher-level discussion if they met the following three criteria (Alvermann, Dillon, & O'Brien, 1987; Harris & Sipay, 1990): (a) multiple points of view were proffered by the discussants, (b) the students interacted with one another, and (c) contributions exceeded the one- or two-word level.

Even though students were interacting in small groups, an arrangement that should be conducive to higher-order discussions, we noted only six discussions of this type. Students rarely disagreed with each other about academic content (one of the criteria for being classified as a discussion). Almost all disagreements between students were procedural. They rarely challenged each other's responses or offered multiple points of view, even though we encouraged them to do so. And challenges were brief, as in the following example:

GL: Who knows what eucalyptus is?

Teresa: I do. They're the leaves that koalas

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eat. You've heard of those,

right?

Randy: They are like when the koalas get

in the trees, that's what they eat,

and that's like, they can eat other

things, but they also eat that.

Teresa: No, they don't eat anything else.

GL: OK, any more clunks?

Sequences that included an initiation, a response, and an evaluation, however, were common. Group leaders in the role of teacher typically asked questions and provided feedback as classroom teachers usually do (Cazden, 1988). This is hardly surprising, given that this is the discourse pattern to which students become most accustomed in school. A typical sequence follows:

GL: Who knows the gist? Manny?

[initiation]

Manny: It's about the workers, how they

used to cut down the trees, and

they never put them back. But

now they do. [response]

GL: OK. [evaluation]

It is evident that the reciprocal teaching model applied in this intervention, with students taking turns in the role of teacher and following a prescribed format, did not do enough to encourage natural discussions. As previous research has shown (Cohen, 1994; Yager et al., 1985), the structure imposed on the interaction in groups affects the quality of student discourse. We had hoped that the structure provided by Collaborative Strategic Reading might promote both task engagement and higher-level thinking. However, we did not attain this ideal balance. Although we promoted participation in content-related, text-based discussions, the nature of the task did little to foster higher-level discussions. The organized strategies and responsibilities of individual students in the group may have affected what students said and thought. When high-level transactions and conceptual learning are the goals, more open and elaborate discussions are necessary--they are not an automatic consequence of cooperative learning. We also have learned that, if these higher-level discussions are to occur, students need regular opportunities to observe adults and other students engage in them. Opportunities to practice listening and participating in such conversations should facilitate their occurring in small-group discussions.

An alternative explanation for students' lack of higher-level thinking warrants consideration. It is possible that the reading material rather than the reciprocal teaching format inhibited higher-level discussions. Students read about their state's history from fourth-grade textbooks that emphasized factual rather than conceptual learning and were noncontroversial. Perhaps if different reading materials had been employed that captured students' interest and imagination, encouraging them to form opinions, students would have stated multiple points of view (the first criterion of a high-level discussion).

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Summary and Conclusion

This exploratory study indicates that students in the intervention condition spent significant time discussing academic content and consistently implemented the strategies, some more proficiently than others (i.e., click and clunk and get the gist). Furthermore, experimental students realized greater gains in reading comprehension and showed the same content knowledge acquisition as students who received traditional teacher-led instruction. The study supports Cohen's (1994) explanation of the strength of reciprocal teaching, which is its capacity to draw typically disengaged students (i.e., lower achievers) into discussions, thereby increasing the likelihood of improved achievement. Considering that students with LD and LEP students usually participate at low rates in more traditional instructional formats, such as teacher-led whole-class instruction (e.g., McIntosh, Vaughn, Schumm, Haager, & Lee, 1994; Ruiz, 1995), their participation in these groups is promising. And though differences between the mean change scores of the students with LD and the LEP students in the intervention and control groups were not statistically significant, contrasts in their gains suggest that with more time or with a larger sample differences could become significant. Further research should explore this issue.

Lessons Learned

Overall this approach to comprehension strategy instruction appears to be feasible for use in general education classrooms with heterogeneous populations. However, we learned some valuable lessons that we are applying in subsequent research. First, this study taught us the importance of establishing procedures that promote higher-level discussions among student groups. As a result, we have modified the program so that students are taught to ask higher-level questions during wrap up and to discuss key issues. We have become aware that this is more easily done when students are highly interested and engaged in what they are reading. Second, we realized that when students lack background knowledge about a topic, teachers should conduct a whole-class preview prior to small-group work. Third, we learned to place more emphasis on teaching the metacognitive aspects of certain strategies (e.g., how and why to preview) and how to monitor if strategies have been applied effectively.

Limitations

Researchers rather than classroom teachers taught and monitored students' use of the strategies in this study. We conducted the study in this way because we were concerned about fidelity of treatment and viewed researcher implementation as one means of controlling for this issue in our initial exploration of the Collaborative Strategic Reading model. In subsequent research, we have taught Collaborative Strategic Reading to classroom teachers and observed their implementation of the approach. We are exploring procedures for ensuring that the intervention can be implemented effectively as part of teachers' routines. In this study, students implemented Collaborative Strategic Reading over 11 consecutive days. When teachers use this method, they are more likely to have students work in cooperative groups two or three times a week rather than every day. On days when students are not working in their small groups, the teacher should provide other types of complementary instruction to introduce or reinforce important concepts. We do not look at Collaborative Strategic Reading as an "all or nothing" approach but as an additional tool for teachers to add to their repertoire. We believe it should take the place of whole-class content-area textbook reading sessions but not displace all types of teacher-facilitated instruction. Future research should explore the use of Collaborative Strategic Reading in combination with other approaches (e.g., experiential learning).

Although this study lasted only 3 weeks, we believe it provides a valuable snapshot of the discussions of heterogeneous cooperative groups of fourth-grade students while they apply comprehension strategies. It shows that such groups can learn social studies content and apply strategies while working without the teacher's supervision. Further research is needed to determine the potential long-range effects of the intervention.

Appendix

A Plan for Strategic Reading

Prior to Reading

1. Preview

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a. Brainstorm: What do we already know

about the topic?

b. Predict: What do we think we will find

out about the topic when we read the

passage? Read: the first paragraph or section.

During Reading

2. Click and clunk

a. Were there any parts that were hard to

understand (clunks)?

b. How can we fix the clunks? Use fix-up

strategies.

3. Get the gist

a. What is the most important who or

what?

b. What is the most important idea about

the who or what? Read: Do steps 2 and 3 again, with all the paragraphs or sections in the passage.

After Reading

4. Wrap up

a. Ask questions: What questions would

show we understand the most important

information?

b. Review: What did we learn?

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