Collaborative Strategic Reading:

"Real-World" Lessons From Classroom Teachers

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ABSTRACT

The present study extends 8 years of previous research using Collaborative Strategic Reading (CSR), a set of comprehension strategies designed to improve understanding of expository text. We examined teachers' yearlong implementation of CSR. Five intervention and five control teachers from five schools participated along with their students. Intervention teachers attended a CSR professional development workshop and were provided with ongoing follow-up support. Students in CSR classrooms improved significantly in reading comprehension when compared with students in control classrooms. Teacher case studies reveal that with the exception of one teacher, students' comprehension gains were associated with the quality of CSR implementation.

CONSIDERABLE ATTENTION HAS FOCUSED ON effective interventions for preventing reading difficulties in recent years. Two national panels have synthesized research and issued reports on effective reading practices (National Institute of Child Health and Human Development, 2000; Snow, Burns, & Griffin, 1998). These panels reached similar conclusions, identifying the following essential elements as building blocks of reading instruction: phonemic awareness, alphabetic principle/phonics, fluency, vocabulary, and comprehension. The National Institute emphasized the critical role of reading comprehension as the "essence of reading" (Durkin, 1993, p. 4-1) and noted the importance of preparing teachers to teach comprehension strategies. Furthermore, they suggested that teaching a combination or package of reading comprehension strategies is more effective than teaching isolated strategies.

Similarly, in special education, several syntheses have been conducted to address the effectiveness of reading interventions and other factors on the performance of students with disabilities (e.g., Fuchs, Fuchs, Mathes, & Lipsey, 2000; Gersten, Fuchs, Williams, & Baker, 2001; Mastropieri, Scruggs, Bakken, & Whedon, 1996; Swanson, Hoskyn, & Lee, 1999). These syntheses provide compelling evidence that there are several critical elements associated with positive outcomes for students with reading disabilities (RD). Vaughn, Gersten, and Chard (2000) described these as (a) making instruction visible and explicit, (b) implementing procedural facilitators or strategies to facilitate learning, (c) using interactive groups or partners, (d) providing opportunities for interactive dialogue between students and between teachers and students, and (e) ensuring that the building blocks of reading are evident from a bottom-up perspective (e.g., phonics and the elements of decoding) and a top-down orientation (e.g., strategies to facilitate the understanding of text).

In the last 10 years, extensive research has focused on the beginning elements of effective reading interventions for students with RD (e.g., phonemic awareness) and considerably less on reading comprehension (Gersten et al., 2001). This is in no small part due to an improved understanding of the role of phonemic awareness in early reading and the need to better understand the effects of early intervention (for a review, see Stanovich, 2000). However, research on reading comprehension, particularly with expository text, has waned, although the need for students with RD to understand and

learn from what they read has increased (Beck & McKeown, 1999; Kucan & Beck, 1997).

There are at least two compelling reasons why students with RD should acquire strategies to help them understand expository text:

1. They are increasingly included in general education classrooms, where the demands to read and learn from text are substantial.
2. They are unlikely to be provided with supported instruction by the special education teacher during social studies and science.

Thus, access to the general education curriculum for students with learning disabilities or behavior disorders requires strategies for understanding the text used for learning in these classrooms. Research has documented that teachers are "begging" for instructional practices that provide them with the tools to enhance outcomes for all the students in their classrooms—particularly in the area of reading for meaning (Fuchs & Fuchs, 1998; Vaughn, Hughes, Schumm, & Klingner, 1998).

Collaborative Strategic Reading (CSR) was designed to facilitate reading comprehension for students with reading, learning, and behavior problems included in general education classrooms (Klingner, Vaughn, et al., 2001). Built on the foundation of reciprocal teaching (Palincsar & Brown, 1984) and many of the features previously identified as associated with effective instruction (e.g., collaborative group work, interactive dialogue, procedural strategies), CSR was designed to address three prevailing educational problems: (a) how to adequately include students with disabilities and English language learners (ELL) in text-related learning; (b) how to teach text comprehension strategies that facilitate students' learning from expository text; and (c) how to provide opportunities for students with disabilities to interact effectively with peers.

CSR helps students learn specific strategies associated with effective reading comprehension: brainstorming and predicting (*preview*), monitoring understanding (*click and clunk*), finding the main idea (*get the gist*), and generating questions and reviewing key ideas (*wrap up*). CSR also provides students with the opportunity to work in small cooperative groups (approximately four students per group) in which each student plays a critical role associated with the effective functioning of the group and the implementation of strategies (e.g., *leader, clunk expert, gist pro*). The four comprehension strategies are first taught to the class as a whole. After students become proficient in strategy usage, they are divided into cooperative groups to practice the strategies with expository text.

Our initial research was conducted with 26 Latino middle school students with learning disabilities (LD) who were also English language learners (Klingner & Vaughn, 1996). During the first phase of the study (approximately 15 sessions), we implemented reciprocal teaching (Palincsar & Brown, 1984) with 8 to 9 students per group by modeling the comprehension strategies and then supporting students' learning and use of the strategies. This support gradually decreased as students became more proficient in applying the strategies on their own. In the second phase of the study, students were divided into two groups. Students in one group tutored younger students with LD in reading comprehension strategies, and students in the other group worked in small cooperative groups. Students made gains in comprehension even when they were not directly provided with reading comprehension instruction by the teacher. Even students who were very poor decoders made improvements in reading comprehension.

In our second study (Klingner, Vaughn, & Schumm, 1998), the researchers provided instruction in inclusive fourth-grade classrooms. Students were taught how to use CSR while reading social studies texts. Control students received typical teacher-directed instruction in the same content. Students in the CSR group made significantly greater gains than students in the control condition on the *Gates-MacGinitie Reading Tests* (MacGinitie & MacGinitie, 1989) and demonstrated equal proficiency in their knowledge of the social studies content.

Our next effort with CSR was designed to prepare general and special education inclusion teachers to implement CSR in their classrooms (Vaughn et al., 1998). We followed these teachers for 3 years to examine their use and perceptions of CSR (Klingner, Vaughn, Hughes, & Arguelles, 1999). The results from these studies revealed that three of the seven teachers implemented CSR at high levels over time. The remaining teachers either implemented initially at a high level and then reduced implementation over time or implemented consistently at a low level.

Subsequently, we implemented CSR with fifth-grade students who were English language learners. The results indicated that students demonstrated high levels of academic engagement and assisted each other with word meanings, main idea, and understanding of text (Klingner & Vaughn, 2000). In other studies, CSR was implemented in an inclusive middle school program, where gains for students with and without disabilities were demonstrated (Bryant, Vaughn, Linan-Thompson, Ugel, & Hamff, 2000), and as part of a third-grade intervention that examined the effects of CSR on fluency and comprehension (Vaughn, Chard, et al., 2000).

In summary, over the last 8 years, we have studied the effects of CSR either separately or as part of a package of reading interventions in classrooms that included elementary (Grades 3–5) and middle school students. Students who represented a range of skills and expertise have participated in these studies, including English language learners, students with LD in resource room programs, and students with LD in inclusive settings. Although CSR is associated with gains in reading comprehension and improved strategic discourse in groups, there are issues concerning CSR that warrant further investigation.

Perhaps one of the most consistent findings with CSR is that although some teachers have caught on to the practice quickly, other teachers have found it challenging to learn and implement in their classrooms. This is particularly true for teachers who have not previously used cooperative learning or who are more comfortable in the traditional teacher's role as the main transmitter of knowledge in the classroom. Also, CSR is a relatively complex instructional practice that requires teachers to understand the cognitive monitoring of text and strategic learning.

Similarly, other researchers have described their efforts to promote comprehension strategy instruction by teachers. Deshler and Schumaker (1993) noted that they have struggled to help teachers find a balance between content and strategy instruction. Pressley and El-Dinary (1997) described their investigations of how teachers implemented reading comprehension strategy instruction and concluded that comprehension strategy instruction is an intervention that appeals to and is possible for only some teachers. The National Reading Panel (2000) reported that for teachers to use strategies effectively, extensive formal instruction in reading comprehension is necessary. Furthermore, they noted that "it is critically important to know what teacher characteristics influence successful instruction of reading comprehension" (p. 15). Clearly, more information is still needed about how best to teach comprehension strategies to teachers.

In this yearlong, quasi-experimental study of CSR, we sought to determine (a) the relative effectiveness of CSR, in comparison with no CSR implementation, for enhancing the reading comprehension of students with LD, average- and high-achieving students, and low-achieving students; (b) the strategic knowledge acquired by students with LD in CSR classes compared with students with LD in control classrooms; (c) teachers' implementation of CSR given the real-world challenges they faced; and (d) the ways in which teacher characteristics influenced their learning and use of a complex set of comprehension strategies.

METHOD

Setting and Participants

We conducted this study in 10 classrooms across five schools located in a large metropolitan school district in the southeastern United States. The student population in all schools was predominantly Hispanic, ranging from 92% to 97%, with the percentage of students considered to be limited in English proficiency ranging from 25.6% to 51% and the percentage receiving free or reduced-cost lunch ranging from 76.1% to 83.9%. Five teachers and their classes (in two schools) were assigned to the CSR condition, and five teachers and their classes (in three schools) were assigned to a control condition. Our two CSR schools had the highest percentage of students with limited English proficiency (44.9% and 51%, respectively), and one of these had the highest percentage (83.9%) of students on free or reduced-cost lunch (see Table 1). All students were reading in English and were taught throughout the school day in English.

The school district was undergoing many changes during the year this study was conducted. Schools transitioned from a whole-language to a balanced approach to literacy instruction, and teachers were unsure what was expected. This year also was when the state changed their high-stakes test from the *Stanford Achievement Test* to the *Florida Comprehensive Achievement Test* (FCAT) and first implemented its school grading plan. Rumors were rampant—teachers thought that if their students did not do well on the state's exams, they would receive a pay cut or, even worse, lose their jobs. These pressures were the worst for fourth-grade teachers (as in our study), who had the *Florida Writes* assessment to contend with as well.

Teachers. Teachers ranged in years of experience from 1 to 29 in the experimental classes (M = 9.4) and from 2 to 32 in the control classes (M = 9.8). All were certified to teach

TABLE 1. Student Demographics and Florida State Achievement Test Results by School

	CSR schools		Control schools		
Characteristic	Gershwin	Dorsey	Ellington	Armstrong	Foster
Hispanic (%)	97.0	92.0	97.0	92.0	96.0
LEP (%)	44.9	51.0	25.6	32.8	39.3
Free or reduced-cost lunch (%)	76.2	83.9	79.0	77.6	76.1
FLW mean score	3.1	2.9	3.0	3.2	2.6
FCAT Reading percentile	47.0	44.0	47.0	32.0	46.0

Note. All school names are pseudonyms. CSR = Collaborative Strategic Reading (Klingner, Vaughn, Dimino, Schumm, & Bryant, 2001); LEP = limited English proficiency; FLW = *Florida Writes*; FCAT = *Florida Comprehensive Achievement Test*.

elementary education, and none had special education degrees. One teacher in each condition had earned an endorsement to teach English language learners. More teachers in the control condition than in the experimental condition had earned advanced degrees (three versus one).

Because some teachers in the sample were already somewhat familiar with CSR, we could not randomly assign teachers to conditions. Instead, we matched teachers based on approximate years of teaching and educational degrees as well as student demographics. We also used this procedure because we were concerned that if some teachers at a school were in the CSR condition and others in the control condition, control teachers would be influenced by their peers who were using CSR. We encouraged CSR teachers to consult with their colleagues, and this would not have been possible had teachers been assigned randomly to conditions. Our primary interest was in real-world applications of CSR.

Students. The numbers of students in the 10 classrooms ranged from 26 to 34. We attempted to secure permission to participate in the study from all 306 students and achieved a success rate of 69%. Thus, 211 students (113 treatment, 98 control) participated in this study. Students were identified as low achieving (LA), LD, or average/high achieving (AA/HA). We determined which students to consider as LA through a two-pronged process: if they achieved a raw score below 21 or 22 on Forms K or L (respectively) on the *Gates-MacGinitie,* administered by researchers, and if their teachers identified them as low achieving. Students were considered to have LD if they met the state's identification criteria (i.e., a discrepancy between their ability and achievement as measured by standardized tests and evidence of a processing deficit). All other students were considered average/high achieving.

Implementation Procedures

CSR Teachers. The five CSR teachers attended a full-day professional development workshop in late September. Teachers saw CSR modeled, were provided with background reading, viewed videotapes of students using the strategy, and had opportunities for more than 2 hours of hands-on practice. Like others involved in similar work (e.g., Pressley & El-Dinary, 1997), we tried to teach not only *how* to implement CSR, but also *why*, so that teachers would develop an understanding of the underlying theoretical rationale for each of the comprehension strategies and cooperative learning components that make up CSR. We provided all necessary materials and conducted multiple in-class demonstrations for teachers.

Once teachers were comfortable using CSR on their own, we asked them to implement it twice a week. We observed teachers' implementation of CSR, using implementation validity checklists, and provided constructive feedback regarding the extent to which teachers implemented the practice's critical components.

Control Teachers. We asked control teachers to teach as they normally would with whatever materials and resources were available to them. As noted, we were interested in real-world situations. We observed these teachers' social studies instruction at least three times each. The instruction in control classrooms varied, but there were several facets of instruction that were common to all. All control teachers reviewed the vocabulary related to the passage students were about to read during at least one of the observations. Hands-on projects were common—four of the five control teachers taught lessons in which students worked on a project, such as creating a brochure related to travel in Florida, writing pictographs, or making Valentine's Day cards. All teachers used a variety of materials, including magazines, the Internet, timelines, and bar graphs. All teachers used the textbook at least once when we observed (but not every time). When using the textbook, some teachers called on students to read, others had the students read silently, whereas in other classrooms the teacher read aloud to students. In only one classroom were comprehension strategies taught in an explicit manner. This teacher taught students how to preview, summarize, pay attention to bold words, use semantic maps, and compare and contrast. We considered her to be the strongest of the control teachers. Her lessons had a clear purpose and focus, and students were supported in their learning of strategies and content.

Student Measures

Comprehension. We administered Level 4 of the Comprehension section of the *Gates-MacGinitie*. Students were required to answer 48 comprehension questions after reading 14 passages within a 35-minute period. Alternating forms of this test were randomly group-administered two times (pretest and posttest). Both forms of Level 4 contain six expository passages, six narrative passages, and two setting passages. Level 4 of the Comprehension test has an alternate-form reliability of .85. Moreover, the Kuder-Richardson formula 20 (KR-20) revealed reliability coefficients ranging from .92 to .93 for item difficulty (MacGinitie & MacGinitie, 1989). We administered this measure to be consistent with prior research (e.g., Klingner et al., 1998; Palincsar & Brown, 1984).

Prompted Think-Aloud Strategy Interview. The prompted think-aloud was designed to capture whether and how students applied comprehension strategies on a transfer task (a copy is available from the first author). Procedures similar to those described by Jiménez, García, and Pearson (1996) were followed. As students read aloud an expository text passage, we interrupted their reading at predetermined points to ask, "What are you thinking?" Additional questions encouraged students to verbalize the strategies they were using (e.g., "When I give you this to read, what is the first thing you do?" "What do you do to make sure you under-

stand everything you have read?"). We recorded students' responses in writing and also audio-recorded them to ensure accuracy.

Teacher Measures

Observations and Videotapes of Social Studies Sessions. We took extensive observation notes that were guided by written prompts organized around four topics: the classroom's physical environment, description of the lesson, teachers' behaviors, and students' behaviors (a copy of this instrument is available from the first author). The data collected also included information about classroom management and students' engagement. We noted the activities that the two sets of teachers (i.e., experimental and control) used to facilitate students' comprehension of content-area text. We recorded how (a) comprehension strategies were taught, (b) students were grouped, and (c) text was read (e.g., silently, aloud by teacher, aloud by student). The purpose of these prompts was to help us organize our observation notes into descriptions of the ways teachers facilitated comprehension and knowledge acquisition. In addition to observing content-area lessons, we conducted one observation during each teacher's language arts session, to gain an understanding of their reading instruction.

Implementation Validity Checklists. We administered implementation validity checklists (IVCs; Vaughn et al., 1998) to provide an objective assessment of the extent to which teachers implemented specific components of CSR (copies are available from the first author). We noted if each component was implemented, modified, or not observed. Components of the strategy focused on student behaviors, teacher behaviors, and the classroom setting. Open-ended questions at the end of the protocol prompted us to provide details about any adaptations we observed and to describe our overall impressions.

Collaborative Strategic Reading Implementation Log. Teachers kept records of their implementation of CSR. They recorded the frequency with which they implemented the strategy as well as the length of each session.

Individual Teacher Interviews. We conducted pre- and postinterviews with all teachers, as well as conversations during classroom observations. The purpose of the pre-interview was to gather information on how and when the teacher taught comprehension strategies, what was the structure and content of each teacher's social studies curriculum, and how teachers accommodated students with disabilities. Every teacher was asked the same set of questions. The five teachers in the experimental classrooms, however, were asked additional questions about CSR and the extent to which they were already familiar with it.

Questions asked during the postinterview were tailored to each teacher. The purpose of the postinterview was to gather information not obtained during classroom visits. We asked CSR teachers to share their perceptions of its effectiveness and to describe challenges they had experienced during its implementation. We also asked them if they planned to continue using CSR and how they might modify it. Our final question prompted teachers to reflect on the overall functioning of their social studies lessons over the past year.

Data Collection

Pre/Postinterviews and Classroom Observations. We interviewed all teachers in either September or October and again in May. We tape-recorded and transcribed each interview.

We conducted three formal classroom observations per teacher, using IVCs, as well as several additional informal observations. One formal observation was videotaped to ensure accurate reporting. The two primary researchers also visited each CSR classroom at least twice to provide teachers with support and feedback on their implementation of CSR. We took observation notes during each formal observation and immediately afterwards typed our notes, organizing them around the prompts in the protocol. We generated summaries at the end of the study using these semistructured notes. All researchers followed the same master calendar for conducting observations—thus, the time intervals between observations were approximately the same across teachers.

Testing. We group-administered the *Gates-MacGinitie* prior to teachers being trained in CSR (in September) and then at the end of the school year (late April). Two researchers were present during every administration and followed standardized procedures as dictated in the test's manual. At the end of the year, we also individually administered the prompted think-aloud strategy interview to all students with LD (during sessions that lasted about 15 minutes each).

Data Analysis

Teacher Measures. Portions of the procedures for qualitative data analysis outlined by Miles and Huberman (1994) were applied. Two primary researchers read randomly selected transcripts and notes and determined themes that were common across all data sets. We then compiled a data summary for each teacher that was organized around these categories (Strauss & Corbin, 1990).

Not only did we compile the data for each teacher into a summary, but we also generated descriptive tables for each measure, so that comparisons could be made across teachers. After reviewing these summaries, we noted information gaps. We developed postinterview questions in an effort to fill these gaps.

Student Measures. The grading of the prompted think-aloud was facilitated by a rubric with a possible total score of

26. This rubric was divided into "prereading," "during reading," and "postreading" strategies (a copy of this rubric is available from the first author). Four researchers scored the prompted think-aloud, achieving an initial interrater agreement rate of .94 during training. Once all of the scoring was completed, 10% of each scorer's grading was spot-checked to ensure interrater agreement. This interrater agreement rate was determined to be .95.

We entered all scores on the *Gates-MacGinitie* into a database and analyzed the data set with SPSS 9.0. Group differences were evaluated using an ANCOVA procedure, with *Gates-MacGinitie* raw scores as the dependent measure and pretest scores as the covariate. We set the alpha level for the overall between-condition comparison at .05. For the analyses by achievement level, we set the alpha level for each at .017 to maintain a family-wise alpha of .05 (Keppel, 1982). We determined effect sizes on the *Gates-MacGinitie* by dividing the differences between gain scores by the pooled standard deviations (Cohen's *d*), as recommended by B. Thompson (personal communication, August 19, 2002). We calculated effect sizes on the prompted think-aloud using Cohen's *d,* dividing the difference between scores by the pooled standard deviation (Cohen, 1988).

Results

First we describe student outcomes across achievement groups in reading comprehension. Then we share the results of the prompted think-aloud strategy interview. Next we provide teacher profiles that illustrate the variation among intervention teachers in their CSR implementation and the challenges they faced.

Student Outcomes

Students in CSR classrooms showed greater improvement in reading comprehension than students in classrooms where CSR was not implemented (see Table 2). On the *Gates-MacGinitie,* posttest differences were statistically significant in favor of the CSR classes (with pretest scores used as the covariate), $F(1, 208) = 6.39$, $p = .01$, $\eta^2 = .03$, $d = .19$.

When we compared scores by achievement level (i.e., high/average, low, or LD) and condition, students in CSR classrooms demonstrated higher gains, although only those gains made by the high/average-achieving group were different at a statistically significant level, $F(1, 132) = 5.76$, $p = .018$ ($d = .25$ for high/average-achieving students, .51 for low-achieving students, and .38 for students with LD; see Table 3).

In both conditions, there was wide variation across classrooms in students' comprehension gains. In general, CSR teachers with higher levels of CSR implementation (in quantity and quality) yielded greater gains than CSR teachers with lower levels of implementation (see Table 4). The one exception to this pattern was teacher Dewitt, who was a relatively low CSR implementer but whose students made the greatest gains. The effect size between his class and the CSR class with the lowest gains was .91. Another within-condition comparison, between the CSR classes with the highest and lowest levels of implementation (Cruz and Villa), yielded an effect size of .55. Similarly, between the classes with the highest and lowest gain scores in the control condition (Long and Jones), the effect size was .72. Clearly there were substantial teacher effects.

Although differences on the prompted think-aloud were not statistically significant, effect size calculations suggested that students with LD in CSR classes showed more gains in strategic knowledge than their peers in control classes, $d = .49$. Students in the CSR class with the highest implementation level (taught by Mr. Cruz) showed the greatest gains (see Table 5).

Teacher Profiles

The following teacher profiles illustrate the range across teachers in CSR implementation and expertise levels, as well as some of the challenges they faced. All names are pseudonyms.

José Cruz. José was in his eighth year of teaching. His highest degree was a bachelor's in elementary education. He implemented CSR consistently throughout the year. According to IVCs, he implemented all components of CSR 100%

TABLE 2. Gains on the *Gates-MacGinitie Reading Tests* for CSR and Control Classrooms

	Pretest		Posttest		
Classroom	*M*	*SD*	*M*	*SD*	Gain score
CSR	22.80	8.93	26.66	9.04	3.86
Control	19.96	7.33	22.24	8.83	2.28

Note. $F(1, 208) = 6.39$, $p = .01$; $ES = .19$; M = raw score mean; CSR = Collaborative Strategic Reading (Klingner, Vaughn, Dimino, Schumm, & Bryant, 2001).

TABLE 3. Comparisons on the *Gates-MacGinitie Reading Tests* by Achievement Level and Condition

	CSR classes			Control classes		
Achievement group	***M***	***SD***	***n***	***M***	***SD***	***n***
LD						
Pretest	13.65	5.60	20	12.44	5.13	9
Posttest	16.25	6.14	20	13.00	5.79	9
Gain	2.60			.56		
LA						
Pretest	15.04	3.22	24	14.13	4.05	24
Posttest	21.33	5.20	24	18.54	5.70	24
Gain	6.29			4.42		
AA/HA						
Pretest	28.14	6.66	69	23.15	6.42	65
Posttest[a]	31.54	6.98	69	24.89	8.84	65
Gain	3.39			1.74		

Note. CSR = Collaborative Strategic Reading (Klingner, Vaughn, Dimino, Schumm, & Bryant, 2001); LD = students with learning disabilities; LA = low-achieving students; AA/HA = average- and high-achieving students.

[a]$F(1, 132) = 5.76$, $p = .018$, with pretest scores used as the covariate; other comparisons not different at statistically significant levels.

TABLE 4. Raw Score Mean Gains on the *Gates-MacGinitie Reading Tests* by Teacher and Condition

Teacher	***n***	**Range**	***M***	***SD***
CSR				
Cruz	29	−7.00–24.00	4.93	6.90
Castillo	23	−6.00–21.00	4.35	6.41
Dewitt	21	0–15.00	6.19	4.17
Montoya	20	−8.00–13.00	2.50	5.50
Villa	21	−9.00–15.00	1.29	6.34
Overall	113	−9.00–24.00	3.86	6.13
Control				
Bustillo	23	−8.00–13.00	3.35	5.84
Chin	22	−12.00–21.00	1.18	7.22
Galvez	21	−13.00–17.00	2.14	7.21
Jones	18	−8.00–12.00	0.56	5.62
Long	15	−7.00–12.00	4.67	5.77
Overall	98	−13.00–21.00	2.28	6.48

Note. CSR teachers listed in order of implementation validity (rated for quantity and quality), highest first. CSR = Collaborative Strategic Reading (Klingner, Vaughn, Dimino, Schumm, & Bryant, 2001).

of the time. José was enthusiastic and supportive of his students, providing lots of positive feedback. He established clear guidelines, and students knew what was expected (e.g., "We're going to read the first section up until the subheading, here. Does everyone know where we are going to read? When you finish, start writing your clunks. Don't write the clunks you already know or can figure out easily. Only write the ones that really keep you from understanding."). He circulated while students worked in their small groups. Students seemed quite engaged in what they were doing. Early in the year, while students were still learning CSR, José stopped students periodically and asked them to share their gists with the whole class (e.g., "Some of you got the gist and some didn't. Now let's all think of what was most important . . . someone from each group can share a gist."). He then provided a quick summary. He explained that he did this because they were still learning and he was modeling. He added, "We're working towards independence."

TABLE 5. Gain Scores of Students with LD on the Prompted Think-Aloud by Teacher and Condition

Teacher	*n*	Range	*M*	*SD*
CSR				
Cruz	5	12.00–16.00	13.60	1.82
Castillo	7	1.00–23.00	10.14	7.29
Dewitt	1	11.00–11.00	11.00	—
Montoya	3	9.00–12.00	10.33	1.53
Villa	3	5.00–9.00	6.67	2.08
Overall	19	1.00–23.00	10.58	4.94
Control				
Bustillo	2	8.00–15.00	11.50	4.95
Chin	3	0–7.00	4.67	4.04
Galvez	2	5.00–11.00	8.00	4.24
Jones	1	10.00–10.00	10.00	—
Long	1	12.00–12.00	12.00	—
Overall	9	0–15.00	8.33	4.36

Note. d = .49 in favor of students in the CSR condition. LD = learning disabilities; CSR = Collaborative Strategic Reading (Klingner, Vaughn, Dimino, Schumm, & Bryant, 2001).

José generally implemented CSR 4 days a week, for 25 to 30 minutes a session, and then used the last day "to do something creative and to break away, because I use the textbook to do CSR. We need to take a turn doing something that is of interest, and it could be having the children take a point of view, take a stand on whether we should use nets for fishing or not. And then discuss the pros and the cons, and have the whole class defend a point. So we do things like that, things that are really interesting that help them develop all kinds of skills."

In summary, our impression was that José became an outstanding CSR implementer. He closely monitored students' progress and conducted excellent whole-class wrap-ups that generated higher level discussions and reinforced learning. His students became experts at implementing CSR. He clearly had an in-depth understanding of the key components of CSR. His implementation was characterized by commitment to doing it right and doing it well.

Lara Castillo. Lara was in her third year of teaching. Like José, her highest degree was a bachelor's. She implemented CSR throughout the year, although there was a midyear period when she became frustrated and implemented it less consistently. At the beginning of the year, Ms. Castillo and her students seemed very comfortable with the strategy. During the pre-interview, she indicated that she had always incorporated CSR-like strategies in her instruction. However, she became discouraged because she felt that students were taking too long to read through and process the material. Lara had planned to implement CSR three times per week for 45 minutes at a time. Classroom observations, however, confirmed that each session was lasting approximately 53 minutes. After a researcher offered suggestions for moving students through the material at a faster pace, Lara regained her positive attitude about the intervention.

During her postinterview, Ms. Castillo stated that she had found it difficult to implement CSR in the beginning but had finally grasped the strategy toward the end of the year. When she felt CSR was not benefiting her students, she became quite anxious about the strategy, but she was willing to modify her approach. Her flexibility resulted eventually in successful implementation. By May, she said that she had come to "love it." She felt that her students were grasping and retaining information, even though they were not implementing certain aspects of CSR in quite the way they had been trained (i.e., they were getting the gist and figuring out clunks after every section of text rather than after each paragraph). She further stated that she had incorporated parts of the CSR strategy (i.e., clunks, gist) into all her instruction, including language arts and science.

Overall, Ms. Castillo did an excellent job implementing CSR. She had high expectations and constantly demonstrated that her main concern was improving her students' learning. She also demonstrated excellent classroom management skills. Ms. Castillo seemed to understand the key components of the strategy and why they were important.

Lucy Montoya. This was Ms. Montoya's first year of teaching. She had obtained a bachelor's degree in elementary education, with an English for Speakers of Other Languages (ESOL) endorsement for teaching English language learners. She was quite conscientious in her implementation of CSR, thoroughly and carefully following each step of the strategy as she had been taught to do. She regularly conducted whole-class wrap-up sessions, during which she asked groups to share what they had learned and to ask at least one question,

which she then posed to the entire class to answer. She also asked students to share whether their predictions had been accurate or not. Ms. Montoya was an active teacher who circulated around the room during CSR sessions, providing feedback and making herself available for questions. She was well organized, with very good classroom management skills.

However, Ms. Montoya may not have developed a complete grasp of the strategy and the reasons for and benefits behind each step of CSR. Perhaps we did not do enough to support this promising first-year teacher. It seemed that her objective was to get through the steps and complete each lesson without much emphasis on how well students learned the material being covered. She encouraged classroom participation by asking questions, but most of her questions required lower rather than higher level thinking (e.g., basic recall). After each lesson, she asked every group to share one thing they had learned, yet we never saw her ask students to comment on other students' responses or to offer a different point of view. As a result, many students seemed to disengage and become distracted once it had been established who in their group would be the one to respond.

Michael Dewitt. Mr. Dewitt was a veteran teacher of 29 years. He had obtained a specialist's degree and was certified in administration as well as elementary education. Yet he was a relatively low implementer of CSR, who never really seemed to "buy into" the strategy. He used CSR only once a week until February, and then increased to 2 days a week thereafter (for about 1.5 hours per week, split over these 2 days). When asked how he felt about CSR after having implemented it for a year, Mr. Dewitt said, "I would still use CSR next year. But I would take an additional day every so often just to review the whole unit, the whole chapter, going over that information one more time. I find that's necessary, with all the things that we do." Mr. Dewitt thought that CSR by itself was not enough to facilitate students' learning and that additional instruction was necessary.

When we observed Mr. Dewitt's implementation of CSR, we noted that students in their CSR groups were generally left on their own to help one another. They relied on their cue cards to facilitate their implementation of the comprehension strategies. During this time, Mr. Dewitt typically sat at his desk doing paperwork—the few times he did walk around were restricted to disciplinary action. When asked about the teacher's role during CSR, he replied, "Well, you have to make sure that all the groups are working. So you're a disciplinarian . . . pulling that all together and getting them back on task"

According to IVCs, Mr. Dewitt implemented most of CSR's components. However, he did not have students predict what they thought they would learn about a topic, did not plan for groups that finished early, and did not conduct a whole-class wrap-up to review clunks and what had been learned.

Maria Villa. Ms. Villa was in her sixth year of teaching. She had earned a bachelor's degree and a certificate in elementary education. Although she implemented CSR throughout the year, she modified the practice extensively. At times, students implemented CSR as part of a "center," rotating to a station where they used CSR, while their classmates were involved in other activities. Students were left to do CSR on their own and were provided with few guidelines and little support. Ms. Villa did not conduct whole-class wrap-ups where she assessed whether students understood key vocabulary and were able to summarize what they had learned. The components of CSR were conducted by the students themselves while working in their groups, with little feedback from the teacher. Students did not get the gist after each paragraph.

Ms. Villa's priority seemed to be classroom management and whether students were working quietly—she often reminded them to lower their voices. She added two roles to help with management, that of "chip collector" (i.e., each student was given a certain amount of chips and "spent" them whenever taking a turn speaking) and "police patrol" to remind students to stay on task and talk quietly. She brought candy, and students were rewarded with a piece whenever they did well—there were several types of candy in the basket at each table; therefore, much more time was spent negotiating what type of candy a student received than on either the strategies or the academic content of the lesson. With guidance from the research team, Ms. Villa dropped the candy and the extra roles and became more involved in monitoring learning. She began to introduce new topics or review what students had learned the previous day prior to starting CSR and to conduct whole-class wrap-ups in which students shared their questions and gists.

Discussion

Students in the CSR condition showed significantly greater gains than control students on the *Gates-MacGinitie,* a standardized, distal measure of reading comprehension (as consistent with previous research). The overall effect size was low (.19; Cohen, 1988), yet effect sizes were higher for students with LD (.38) and LA students (.51). In general, the LA students in both conditions made greater gains in comprehension than students in other achievement groups, with the LA students in CSR classes showing the greatest actual gain.

We noted high levels of variability in implementation across the five intervention teachers. In general, students in classrooms where CSR was implemented the most often and with the greatest fidelity outperformed their peers in classrooms in which CSR was not implemented as well or as often. However, there was one notable exception to this pattern—the students in Michael Dewitt's class showed greater gains on the *Gates-MacGinitie* than all others. We can

only speculate about possible reasons for this. We are aware that there were more gifted and high-achieving students in this class than in other CSR classes and that they did an excellent job in their role as teachers in their groups. We know that Mr. Dewitt believed that CSR could not stand alone and that he needed to supplement it, yet we do not know what additional instruction was provided during other times of the day or when we were not present. Also, it should be noted that Mr. Dewitt was a much more experienced teacher than the other CSR teachers (29 years as compared to 6, 3, 1, and 8) and he had obtained a specialist's degree, whereas the highest degree earned by any of the other CSR teachers was a bachelor's. Teaching experience and advanced educational coursework can positively influence student performance (Ferguson & Womack, 1993; Murname & Phillips, 1981). Similarly, among the control classrooms, it was the students of the teacher with 32 years of experience who outperformed all others.

Practical Implications

A great deal of evidence already exists supporting the value of comprehension strategies (e.g., Gersten et al., 2001; National Reading Panel, 2000). Yet less is understood about how to actually teach teachers to use them (National Reading Panel, 2000; Snow, 2002). Teachers worry about the feasibility and fit of a new practice with their curricular and other demands (the "reality principle"). This may be particularly challenging with respect to implementing multicomponent comprehension strategies like CSR that are complicated and time-consuming (Gersten, Vaughn, Deshler, & Schiller, 1997; Klingner et al., 2001; Vaughn et al., 1998). Also, we know that teachers often have a hard time "letting go" of typically used practices and adapting new ones like CSR. Trying to help teachers learn to use comprehension strategies is, as Pressley and El-Dinary (1997) put it, "risky business" (p. 486).

The National Reading Panel (2000) noted that "it is critically important to know what teacher characteristics influence successful instruction of reading comprehension" (p. 15). One teacher characteristic that may be related to successful implementation is prior knowledge about the practice. However, in this study, the two teachers with the highest and lowest overall fidelity (and understanding of the practice) were the two teachers who presumably had the most prior knowledge. Our best implementer, José Cruz, had already been exposed to CSR, tried it with previous classes, and seemed primed to learn more and to commit to long-term usage. Yet with Maria Villa, prior knowledge seemed to work against her. She had been using CSR for more than a year. However, it was her special education coteacher who had first become enthused about CSR and begun its implementation in their classroom. By all accounts, CSR had worked quite well. However, this coteacher no longer cotaught with Ms. Villa. Thus, she thought she knew the practice well, but in reality she had changed it substantially—she focused a great deal on classroom management (e.g., adding the roles of "chip collector" and "police patrol"). Perhaps because Ms. Villa felt as though she already knew CSR, she was reluctant to make the suggested changes that would focus more on the critical steps in CSR. It seemed clear to us that she did not understand the underlying concepts supporting the approach, and her prior knowledge and experience did not seem to have helped. This is consistent with other investigations of teacher change. For example, Richardson, Anders, Tidwell, and Lloyd (1991) noted that teachers who were weak or ineffectual, when interviewed, did not seem to understand the underlying theories associated with a strategy. On the other hand, our second highest implementer, Lara Castillo, did not have prior knowledge specifically about CSR but did indicate that she "had always incorporated 'CSR-like' strategies in [her] instruction" (e.g., using previewing and predicting strategies, formulating questions, and getting the main idea). Also, she noted, "I love working in groups . . . because when you have a class with children with LD, it helps to have someone close to them to guide them and help them." For Ms. Castillo, CSR turned out to build on what she already knew and to be a good fit with her teaching style.

Another important teacher variable may be teachers' confidence in their classroom management skills. Perhaps what some teachers most need is help with their classroom management skills *before* they are ready to learn complex instructional strategies. Any individual, teachers included, can only focus on so much at a time. Some teachers, such as Maria Villa, seemed focused on "controlling" the class and keeping the noise level down. Unless teachers feel comfortable and confident in their ability to manage their students, they may have trouble focusing on their students' learning—particularly with practices such as CSR that rely on collaborative group structures and complicated strategies. Cooperative learning seems most intimidating to those teachers who do not feel they have sufficient control over their students' behavior (and who do not have confidence in their own ability to regain control should students begin to get unruly). Yet this is a dilemma, because the best prevention of management problems is good instruction (Brophy & Good, 1984; Jones & Jones, 1998).

Limitations

There were various uncontrolled factors that may have influenced the outcomes of this study. One limitation was that we know little about what transpired during reading instruction (or at other times of the day). Not having been in teachers' classrooms all of the time, we do not know what else they may have been doing to enhance students' reading comprehension. Thus, we cannot be sure that gains were in fact due to CSR.

Another limitation was that we were not able to randomly assign teachers to conditions, thus introducing a sam-

pling bias that limits the generalizability of our findings related to treatment effectiveness. However, we did not set out to compare CSR with a well-defined comparison treatment (we have done so in previous research; see Klingner et al., 1998). Instead, our primary focus in this study was on understanding real-world applications of CSR, as implemented in actual teachers' classrooms and as compared with typical instruction.

There may have been school effects, although we had two CSR schools and three control schools. The two CSR schools had the highest number of LEP students, and one of these schools had the highest percentage of students qualifying for free or reduced-price lunch. Also, there may have been teacher effects related to years of experience and educational background. Although the mean number of years of teaching experience was very similar, more control teachers than experimental teachers had completed graduate degrees, and the only first-year teacher was in the CSR group.

There also may have been threats to the internal validity of the study. Teachers were under a great deal of stress, more than we have encountered in other years, for the reasons we outlined in our description of the school district. Teachers were implementing a new reading curriculum and administering different high-stakes tests for the first time. They were also quite worried about what the state's new grading plan would mean for them and their jobs.

Conclusion

In 2000, the National Reading Panel noted that more information is needed on ways to teach teachers how to use proven comprehension strategies. This is still true—we need to learn which components of professional development programs are most effective and how best to support teachers so that they can provide optimal instruction for their students.

In this real-world study, we found that teachers' implementation of CSR, a complicated set of comprehension strategies, varied a great deal. Future research should investigate whether support with classroom management (as part of a comprehensive professional development program) facilitates teachers' implementation of complex interventions. Also, the roles of prior knowledge and teachers' readiness or motivation to learn a new strategy should be explored further. Future research should control for teachers' years of experience and level of educational attainment as well. A similar study focusing separately on first-year teachers, midcareer teachers, and veteran teachers might further reveal the teacher variables that promote or inhibit the implementation of comprehension strategy interventions and the kind of support that is most helpful. ■

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