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What is This?
Improving Student Comprehension of Social Studies Text: A Self-Questioning Strategy for Inclusive Middle School Classes

Sheri Berkeley¹, Lisa Marshak², Margo A. Mastropieri², and Thomas E. Scruggs²

Abstract
This study employed a randomized experimental design to investigate the effectiveness of a self-questioning strategy for improving student reading comprehension of grade-level social studies text material. Fifty-seven seventh grade students with a range of abilities, including English as second language learners and students with learning and other disabilities, from three inclusive middle school classes participated. Results indicated that students in the self-questioning strategy group outperformed students in a typical practice group on both multiple-choice and open-ended comprehension tests of the social studies content read. Implications for practice and future research are discussed.

Keywords
reading comprehension, strategy instruction, diverse learners

As students progress through the grades, they face increasingly challenging and diverse types of text from which they must read and understand novel concepts. In addition, classrooms are becoming more inclusive of different types of learners, including struggling readers and students who have learning disabilities (LD; Hock, Schumaker, & Deshler, 1999). This creates new challenges for teachers who need to provide adequate classroom instruction. Although content teachers may recognize that students need to be taught how to approach challenging reading tasks (e.g., reading a textbook), research has shown that many teachers feel unprepared to meet the needs of these struggling readers (e.g., Bryant, Linan-Thompson, Ugel, Hamff, & Hougen, 2001; Schumm & Vaughn, 1995).

Reading Comprehension Research
In 2000, the National Reading Panel (NRP) reviewed more than 100,000 studies related to improving student achievement in reading (National Institute of Child Health and Human Development, 2000). The panel categorized these studies into five broad areas: (a) phonemic awareness, (b) decoding, (c) fluency, (d) vocabulary, and (e) comprehension. Strategy instruction was determined to be an important component of comprehension instruction. The basic premise underlying strategy instruction is that students can be taught more effective strategies than the ones they learn and apply on their own (Johnson, Graham, & Harris, 1997). Strategies identified by the NRP include (a) monitoring comprehension (teaching students to recognize when they understand what they read and when they do not), (b) using graphic and semantic organizers, (c) answering questions posed by the teacher, (d) generating questions (sometimes referred to as self-questioning because students are taught to ask their own questions while reading), (e) recognizing story structure, and (f) summarizing. Although research specific to students with LD was not included in the NRP synthesis, recent reviews of the special education literature have also indicated that reading comprehension strategy instruction is very effective for improving learning for students with disabilities as well (see Table 1 for a list of these reviews).

One type of reading comprehension strategy that has been found to be particularly effective with both general and special education students is self-questioning (Berkeley, 2007; Mastropieri & Scruggs, 1997). Self-questioning...
strategy instruction involves explicitly teaching students to monitor their comprehension by asking and answering questions while they are reading. Some questioning strategies have been based on teaching students to ask and answer questions about the text structure. In a review of the literature, Gersten, Fuchs, Williams, and Baker (2001) found that questioning strategies are especially effective with narrative text that generally uses a variant of a story grammar text structure (e.g., character, setting, plot). However, expository texts often consist of multiple text structures. For example, a single chapter from an expository text may involve explicit teaching of new strategies specific to the various expository text structures.

Bakken, Mastropieri, and Scruggs (1997) investigated the effects of a text structure strategy as well as a summarization strategy compared to a traditional instruction group. The text structure strategy required students to ask themselves questions to identify the text structure (main idea, list, or order) of an expository paragraph. The summarization strategy required students to ask and answer more general predetermined questions: “(a) Who or what is the paragraph about? (b) What is happening to the who or what? and (c) Create a summary sentence in your own words using fewer than 10 words.” Instruction was provided to 54 eighth grade students in a one-to-one setting. Short passages of approximately 100 words at an eighth grade readability level were used in the intervention. On measures of central information recall, the strongest effects were found for the text structure strategy group compared to both the summarization strategy and traditional instruction groups. On measures of incidental information recall, both the text structure and summarization strategy groups performed better than the traditional instruction group.

Like the summarization strategy in the Bakken et al. (1997) study, other researchers have taught students to monitor their comprehension by asking themselves a set of predetermined questions. For example, Jitendra, Hoppes, and Xin (2000) investigated the effects of direct instruction of a main idea summarization strategy with self-monitoring. Thirty-three middle school students with LD and behavior disorders monitored their comprehension using the following questions: “Does the paragraph tell (a) what or who the subject is? (single or group), (b) action is? (category), (c) why–something happened?, (d) where–something is or happened?, (e) when–something happened?, and (f) how something looks or is done?” The intervention was implemented 30 to 40 min a day for one week in a small-group pull out setting. Short passages at a 2.88 readability level and consisting of three to five sentences were used during the instructional lessons. The results indicated a statistically significant effect in the experimental condition and that positive outcomes were maintained over time (i.e., 6 weeks after instruction). These findings were consistent with previous studies that investigated main idea strategy instruction for

### Expository Text Strategies

Reading skills and strategies in the upper grades are generally exclusively taught by the English teacher; however, language arts curriculum primarily consists of narrative text. Content classes such as social studies, however, require students to read and demonstrate knowledge from expository text. Generally, content-area textbooks include multisyllabic technical words, various text structures, and a dense amount of unfamiliar concepts and facts (Bryant, Ugel, Thompson, & Hamff, 1999; Mastropieri, Scruggs, & Graetz, 2003). Special education researchers have begun to investigate the effectiveness of self-questioning strategies for narrative text when applied to expository text as well as to develop new strategies specific to the various expository text structures.

#### Table 1. Reviews and Meta-Analyses of Special Education

<table>
<thead>
<tr>
<th>Reference</th>
<th>Year</th>
<th>Title</th>
<th>Journal</th>
<th>Volume</th>
<th>Pages</th>
</tr>
</thead>
</table>
students with disabilities (i.e., Graves & Levin, 1989; Jitendra, Cole, Hoppes, & Wilson, 1998).

An alternate approach to questioning strategies is to teach students to develop their own questions instead of asking predetermined questions. Katims and Harris (1997) taught 207 seventh grade students in inclusive settings to monitor their comprehension using the RAP strategy (originally developed at the University of Kansas Center for Research on Learning; see Schumaker, Denton, & Deshler, 1984). The mnemonic to this strategy represented the following steps: “(a) Read a paragraph, (b) Ask yourself questions about the main ideas and details, and (c) Put the main ideas and details in your own words using complete sentences.” The relatively short expository passages used were at the students’ corresponding grade level and were approximately 400 words in length. Findings showed that students in the intervention group outperformed the control group on reading comprehension performance. However, disaggregating the results for the 25 participating LD students showed that these students did not make statistically significant improvement, indicating that a more explicit questioning strategy may be needed for these students.

**Summary**

Although main idea and summarization strategies are highly effective when implemented in small-group or one-on-one settings, they may be impractical for use within inclusive general education classrooms. Both strategies are labor-intensive and time-consuming to use while reading, particularly for students who are not fluent and as a result do not complete reading tasks at the same rate as their peers who are proficient readers. These factors are important to consider as general education teachers’ attitudes can affect the adoption of cognitive strategies (Fagella-Luby & Deshler, 2008; Mastropieri et al., 2003). Less time-consuming and labor-intensive strategies are likely to be more appealing to classroom teachers and therefore implemented as part of instruction. Although the strategy investigated by Katims and Harris (1997) was simple and easily implemented in a large-group inclusive setting, it did not appear to be explicit enough for students with LD.

Berkeley, Mastropieri, and Scruggs (2008) investigated the effects of a simple and explicit questioning strategy implemented in conjunction with other reading strategies (setting a purpose, previewing, activating background knowledge, and summarizing). Positive effects were found for seventh-, eighth-, and ninth-graders with LD in reading who were taught the strategy in small-group settings. The current study investigated this self-questioning strategy in isolation. Specifically, students were explicitly taught how to use the headings and subheadings in adopted textbooks to create relevant comprehension questions and to answer those questions after reading each section. Using headings and subheadings was intended to provide a more intensive support for students who have difficulty thinking of appropriate questions. In addition, each new heading provided a naturally occurring self-monitoring prompt for students to stop and answer their question for the previous section before moving on to subsequent sections. Hence, the purpose of the current randomized study was to investigate the effectiveness of this self-questioning strategy using headings. The following research question is evaluated: Does self-questioning strategy instruction improve the reading comprehension of grade-level social studies text content of seventh graders in inclusive classes?

### Method

#### Study Design

A pre–post experimental design was employed to investigate the effectiveness of a self-questioning strategy for improving the reading comprehension of middle school students in inclusive history classes. Students were stratified by class, disability status, and English as second language learner (ESOL) status. Then students were randomly assigned to a self-questioning strategy group or a comparison typical practice group and were instructed in two separate classrooms over three days. Finally, to control for differential effects because of teacher instruction, teachers were randomly assigned to teach the instructional conditions (see Table 2).

#### Participants

**Students.** A total of 57 seventh grade students with a mean age of 13.28 years (range = 11 to 14) participated. The sample consisted of 28 boys and 29 girls. Ethnicities of students included 40% white (n = 23), 35% Asian (n = 20), 12% Hispanic (n = 7), and 12% African American (n = 7). In addition, 15.8% of the sample were identified for special education services for LD (n = 5), other health impairment (n = 1), hearing impairment (n = 1), or 504 services (n = 2). All of these students received instruction for content-area coursework in inclusive general education settings. Overall, IQ scores for these students were average (range = 78 to 101). In all, 13 students (23%) were classified as ESOL. Of those students, 54% received support for content-area

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**Table 2. Random Teacher Assignment to Condition**

<table>
<thead>
<tr>
<th>Class 1</th>
<th>Self-Questioning</th>
<th>Typical Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher 1</td>
<td>Teacher 1</td>
<td>Teacher 2</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>Teacher 2</td>
<td>Teacher 1</td>
</tr>
<tr>
<td>Teacher 1</td>
<td>Teacher 1</td>
<td>Teacher 2</td>
</tr>
</tbody>
</table>

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coursework through the school’s ESOL program, whereas 46% of students received varying degrees of monitoring services. Finally, 35 students were in general education and received no other specific services.

Achievement data for students by condition prior to intervention are presented in Table 3, including (a) student scores on the Scholastic Reading Inventory (SRI) administered by the school at the beginning of the academic year, (b) state test scores for social studies from the previous school year, and (c) student grades in social studies for each quarter. Independent samples t tests indicated no statistically significant differences between self-questioning and typical practice groups on either the measure of achievement for reading (SRI), t(55) = 1.14, p = .26, or social studies content (Standards of Learning for Virginia [SOL]) test for seventh grade social studies, t(55) = 0.76, p = .45.

Teachers. Instruction was provided by one of two female instructors who had a mean age of 35 years (range = 33 to 37). One teacher had a doctoral degree, 8 years of special education teaching experience, and teaching licenses for LD, behavioral disorders, and mental retardation. The general education teacher had a master’s degree in special education and national board certification as an exceptional need specialist, 14 years of teaching experience, and certification in middle school social studies, LD, and emotional disabilities.

**Materials**

**Student materials for both conditions.** All students used the textbook adopted for their social studies class (Davidson, Castillo, & Stoff, 2002). Chapter 31, section 3, “The Carter Presidency,” was chosen because this material had not been covered during the school year, and as a result students were less likely to have background knowledge of the content.

**Strategy condition materials.** Strategy materials were selected and modified from those used by Berkeley et al. (2008). Strategy sheets containing strategy steps, examples of each step, and suggestions for additional things to try if questions could not be answered were developed. Strategy steps included (a) “turn headings and subheadings into questions,” (b) “read the section,” (c) “stop!” and (d) “try to answer your question.” Additional “fix up” strategies included (a) “re-read that section (in case you missed something important),” (b) “check your understanding of vocabulary,” (c) “look for other text structures (maps, graphs, pictures) that can help you,” and (d) “write down questions to ask your teacher.”

Strategy monitoring sheets were also developed that required students to record their questions and indicate if they were successful in answering them (see Figure 1). For example, the first heading in the chapter was “The Election of 1976,” so a student might have come up with the questions, “What was important about the election of 1976?” or “Who won the election of 1976?” After reading the section, if the student could answer his or her question, he or she would circle “yes” and move on to the next section. If the student could not answer his or her question, he or she would circle “no” and try the fix up strategies. This strategy was meant to help students monitor their reading comprehension; for this reason, writing demands were intentionally minimized. Ideally, as students became proficient with the strategy and began to automatically use it while reading, they would no longer need to explicitly use a strategy monitoring sheet. Furthermore, by limiting the writing demands, students were not preoccupied by issues such as spelling or handwriting speed.

**Typical practice materials.** Students in this condition received only their textbook, which contained headings and subheadings, pictures, and questions at the end of the chapter.

**Teacher materials.** Strategy condition teacher materials included a textbook, scripted lessons, and overheads of student materials to use when modeling strategy use.

Typical practice condition teacher materials included a textbook and independent activities for students who finished reading early. Example activities included short stories for the teacher to read aloud to students and geography crossword puzzles.
**Section 3: The Carter Presidency**

**Directions:** Write down questions that you will try to answer while reading:

<table>
<thead>
<tr>
<th>Heading: The Election of 1976</th>
<th>Question #1: Can you answer your question?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heading: An Informal Presidency</td>
<td>Question #2: Can you answer your question?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Sub-Heading: Struggling with the Economy</td>
<td>Question #3: Can you answer your question?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Sub-Heading: Energy Crisis</td>
<td>Question #4: Can you answer your question?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Sub-Heading: Nuclear Power</td>
<td>Question #1: Can you answer your question?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Figure 1.** Example self-questioning strategy monitoring sheet

**Measures**

*Multiple-choice content test.* A 20-item multiple-choice test was developed by the first author and the classroom teacher. Questions were selected from unit tests, chapter tests, and section quizzes included within the teacher addition of the text. The following is a sample question from a chapter test: “Jimmy Carter seemed weak and uncertain because of his reversal on: (a) human rights, (b) apartheid, (c) economic policies, or (d) trade deficit.”

*Open-ended content test.* A 13-item open-ended test was developed by the first author and the classroom teacher. Questions were created using the headings of the chapter and were intended to target main idea concepts as opposed to specific factual content information (e.g., “Why was nuclear power a concern in the U.S. during Carter’s presidency?”).

*Strategy awareness survey.* Students were asked to “list all of the steps you followed when you read to help you remember the information.” This question was intended to measure whether students who were taught the strategy used it and whether students remembered each of the steps.

**Procedures**

*Teacher training.* Teachers were trained in one 45-min session prior to study implementation. Each lesson was modeled while the teacher followed along with the scripted lessons. In addition, the researcher was available every day of the intervention to answer questions about lesson implementation as they arose.

**Instruction.** During instruction, students were instructed in two separate classrooms. In the strategy condition, teachers followed three scripted lessons that gradually reduced the amount of teacher support. Each lesson lasted for 20 min.

In the first lesson, the teacher introduced the strategy by stating the purpose of the strategy, when students should use the strategy, and how it might help them.

Teacher: Today we’re going to work on a reading strategy that will help you when you read a text book. The strategy is called: SELF-QUESTIONING. This is when you make up questions yourself about what you are reading. This is an important strategy because it helps you to focus your attention on the facts that you read. It also helps you because it gives you a way to monitor your own comprehension.

Next, the teacher introduced the strategy steps using a “think aloud” to model how to use the strategy while reading the first part of the chapter and showing students how to use the strategy sheet to help remember the steps. Modeling included (a) thinking of a question for each heading, writing it down on an overhead identical to students’ strategy monitoring sheet, and prompting students to record the question on their own papers, (b) reading each section and stopping to think about whether the question could be answered, (c) circling yes or no on the overhead to indicate whether or not the question could be answered and prompting students to record on their own paper, and, when applicable, (d) modeling using other think aloud strategies to try if they could not answer their own question after reading the first time. These additional strategies included “re-read that section (in case you missed something important),” “check your understanding of vocabulary,” “look for other text structures (maps, graphs, pictures) that can help you,” and “write down questions to ask your teacher.”

The second lesson was a guided practice of strategy use with the middle third of the chapter. The lesson began with a review of how to use the strategy and how to use the strategy sheet to help remember the steps. In this lesson, the teacher and the students worked together to develop and answer questions about each section: (a) the teacher asked general questions to prompt strategy use (e.g., “How do you come up with good questions to ask yourself while reading?”), (b) students volunteered questions based on the headings, and the teacher wrote one on the overhead and prompted them to write it or a question that they liked better based on the heading on their papers, and finally (c) the teacher read the passage, and teacher and students decided together whether or not their question could be answered or whether they needed to try other strategies.
In the last lesson, students independently practiced using the strategy while reading the remainder of the chapter. Students could reference their strategy sheet as they were working, and they were prompted to show they understood the strategy steps by filling out their strategy monitoring sheet. The teacher circulated, asked students about the responses they put on their papers, and gave feedback to encourage appropriate attributions. For example, if a student circled “yes” and could answer the question aloud, the teacher said, “Good work using the strategy.” If the student could not answer the question aloud, the teacher said, “Is there anything you could try to help yourself figure it out?” Finally, if a student circled no, the teacher asked, “What did you do to help yourself try to figure it out?” and then gave feedback to encourage strategy use.

In the comparison typical practice condition, teachers directed students to read a specified number of sections from the textbook and to try to remember as much information as they could. This procedure was intended to simulate a typical practice often used in general education social studies classes. Like the strategy condition, daily instruction was limited to 20 min.

Testing. On the day prior to lesson implementation, the classroom teacher administered the multiple-choice content pretest to the entire class. On the day following the last instructional lesson, the classroom teacher administered to the entire class the same multiple-choice content test, the open-ended content test, and the strategy use survey.

Scoring. Multiple-choice content tests were scored using a Scantron scoring machine. Rubrics were developed for the open-ended items. Open-ended content tests and strategy use surveys were scored by two independent scorers. Reliability between scorers was reconciled to 100% agreement.

Fidelity. In addition to a common training, teachers used identical scripted lessons to help ensure that teachers implemented the lessons as intended. Furthermore, teachers used a timer to ensure that each condition received instruction as they could. This procedure was intended to simulate a typical practice often used in general education social studies classes. Like the strategy condition, daily instruction was limited to 20 min.

Table 4. Means, Standard Deviations, and Effect Sizes for Content Tests

<table>
<thead>
<tr>
<th>Content Test Type</th>
<th>Self-Questioning</th>
<th>Typical Practice</th>
<th>Effect Size&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple-choice test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>M = 6.70, SD = 2.54</td>
<td>M = 6.30, SD = 2.00</td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>M = 10.30, SD = 3.54</td>
<td>M = 7.70, SD = 2.11</td>
<td>0.92</td>
</tr>
<tr>
<td>Open-ended test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>M = 7.03, SD = 3.16</td>
<td>M = 2.98, SD = 1.87</td>
<td>1.61</td>
</tr>
</tbody>
</table>

<sup>a</sup> Effect size calculated from posttest M<sub>Treatment</sub> = M<sub>Control</sub> / .5 (SD<sub>Treatment</sub> + SD<sub>Control</sub>)

independent t test to determine if differences in background knowledge related to the social studies content existed between the groups (self-questioning vs. typical practice) prior to intervention. Results indicated that the groups were not statistically different, t(55) = 0.66, p = .510. For this reason, posttest scores were used in the analyses of intervention effects.

Multiple-choice test. Posttest scores for each measure were analyzed in an independent t test to determine if there were differences in specific content knowledge between the groups after instruction. Results yielded a significant main effect for condition, t(55) = 3.40, p = .001.

Open-ended test. Posttest scores for the open-ended test were analyzed with an independent t test to determine if there were differences in main idea content knowledge between the groups after instruction. Results yielded a significant main effect for condition, t(55) = 5.96, p < .000.

Strategy Survey

Responses to the strategy survey indicated that 63.2% of students in the study used one or more strategies to help them remember information that they read (self-questioning = 83.3%, typical practice = 40.7%). Of students who learned the self-questioning strategy, 88% identified it as a strategy that helped them remember what they had read. Other strategies students identified included reading twice (n = 6), reading slowly (n = 2), previewing (n = 1), and multiple strategies (n = 5) such as “reread, test yourself, say it in your head” and “skim it, read it, go over important things.” In addition, 4 students said that they read one time only, 4 students said that they “try to remember,” and 2 students

Results

Content Tests

Reliability for the multiple-choice content test was assessed at α = .62, and reliability for the open-ended content test was assessed at α = .82. Students in the self-questioning group outperformed students in the typical practice condition for both measures of content knowledge with mean scores of 10.30 (SD = 3.54) versus 7.70 (SD = 2.11) on the multiple-choice test and 7.03 (SD = 3.16) versus 2.98 (SD = 1.87) on the open-ended items test. The effect sizes (ESs) associated with these differences were large for the multiple-choice test (ES = 0.92) as well as the open-ended test (ES = 1.61). Table 4 shows descriptive data by group, and Table 5 shows descriptive data by group and type of learner.

In the last lesson, students independently practiced using the strategy while reading the remainder of the chapter. Students could reference their strategy sheet as they were working, and they were prompted to show they understood the strategy steps by filling out their strategy monitoring sheet. The teacher circulated, asked students about the responses they put on their papers, and gave feedback to encourage appropriate attributions. For example, if a student circled “yes” and could answer the question aloud, the teacher said, “Good work using the strategy.” If the student could not answer the question aloud, the teacher said, “Is there anything you could try to help yourself figure it out?” Finally, if a student circled no, the teacher asked, “What did you do to help yourself try to figure it out?” and then gave feedback to encourage strategy use.

In the comparison typical practice condition, teachers directed students to read a specified number of sections from the textbook and to try to remember as much information as they could. This procedure was intended to simulate a typical practice often used in general education social studies classes. Like the strategy condition, daily instruction was limited to 20 min.

Testing. On the day prior to lesson implementation, the classroom teacher administered the multiple-choice content pretest to the entire class. On the day following the last instructional lesson, the classroom teacher administered to the entire class the same multiple-choice content test, the open-ended content test, and the strategy use survey.

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identified other nonstrategies (e.g., “luck” and “important ones were easy to remember”).

Of the 22 students in the strategy condition who identified self-questioning as a strategy that helped them, 100% remembered one or more steps, 95% remembered two or more steps, and 73% remembered all of the steps to the strategy. In addition, 6 students remembered the additional “fix up” steps taught.

Discussion

Findings from the current study indicate that a questioning strategy using actual grade-level social studies textbook materials can be successfully taught to large-group seventh grade students in inclusive classes. Furthermore, students in the current study who received strategy instruction outperformed the typical instruction group on both identification and production content tests. This is important because seventh grade is often considered the beginning of secondary school, when demands on reading using expository textbooks increase dramatically. This is also important because it extends previous research that has generally relied on highly controlled text (e.g., Bakken et al., 1997; Jitendra et al., 2000). Strategies that can be easily utilized by students when reading material from their assigned textbook have the potential to increase not only student comprehension but also the likelihood that students will continue using the strategy.

Results of the current study also lend support for explicit reading comprehension strategy instruction in general and replicate the findings of previous researchers who have found positive effects for training students to use reading comprehension strategies (see Table 1 for reviews). The large ESs found in the current study (ES = 0.92, ES = 1.61) are similar to ESs for studies using criterion-referenced measures reported in the literature for self-questioning strategy instruction (ES = 0.90; Berkeley, Scruggs, & Mastropieri, 2007). Moreover, these findings extend previous research in that the study was conducted with students selected from existing inclusive seventh grade classes consisting of general education, special education, and ESOL students.

Although these findings are generally positive, there are several limitations that should be taken into consideration.

Limitations

First, the intervention was relatively short (3 days) and was not implemented in conjunction with typical instruction provided by the classroom teacher but with a common activity in general education classrooms: independent textbook reading. Although the ESs produced were large and students in the strategy condition improved noticeably, this
improvement did not result in student mastery of the content as demonstrated on the multiple-choice (52% for strategy group compared to 39% for typical instruction group) and open-ended tests (54% for strategy group compared to 23% for typical instruction group). Clearly, this strategy in isolation is not intensive enough to replace explicit direct instruction of critical content. Nevertheless, if students in these inclusive seventh grade classes can benefit from relatively brief strategy instruction using adopted textbooks and improve their content-area reading comprehension, then longer more intensive strategy instruction may be warranted.

Another limitation is that there were no follow-up measures to determine if students maintained the learned strategy knowledge over time. Replications of this study should be conducted as repeated demonstrations of performance will be a more powerful test of the effectiveness of the self-questioning strategy. Similarly, future research should examine extended applications of this reading strategy and assess students on both criterion-referenced and standardized measures of reading and social studies content.

Finally, although all students appeared to benefit from strategic instruction, there were not sufficient numbers of students with disabilities or who were second language learners to conduct statistical analyses of the benefits for these populations. These students often display particular difficulty learning content information, including actively manipulating information, organizing content, differentiating main ideas and supporting details, comparing and contrasting concepts, reading and understanding large amounts of text, activating background knowledge, and demonstrating knowledge in testing situations (Bulgren, Deshler, & Lenz, 2007; Deshler et al., 2001). Therefore, it will be particularly important for future researchers to more specifically look at benefits for these students. Given the importance of reading comprehension in content-area classes and the increasing expectation that all learners meet curriculum standards (Deshler et al., 2001), results of the current study have important implications for practice.

**Implications for Practice**

This study has important implications for classroom instruction in inclusive settings. Students often struggle with expository materials, yet many content teachers feel unprepared to assist students who struggle with reading their textbooks (e.g., Bryant et al., 2001). Students in the current study learned the self-questioning comprehension strategy that relied on using features such as headings that appear in most content-area textbooks. In addition, the amount of instructional time required for students to master this strategy was minimal compared to other, more complex reading comprehension strategies and yet positively affected understanding of new content presented in their social studies textbooks. Both of these features make this strategy a more attractive option for inclusive teachers who may be reluctant to use class time to teach cognitive strategies during content-area instruction.

These findings may also prove helpful for teachers wanting to assist students with generalized reading comprehension strategies at the middle school level. Science textbooks share similar textbook features that the social studies books in the present study employed. Middle school teachers may be able to encourage students to use these strategies across their content-area classes in science and social studies. Initially, teachers could provide the self-questioning and monitoring sheets tailored to specific content areas. As students become more proficient with the regular strategy usage, strategy and monitoring sheets could be removed.

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**References**


Bryant, D. P., Linan-Thompson, S., Ugel, N., Hamff, A., & Hougen, M. (2001). The effects of professional development for middle school general and special education teachers on


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