Teaching Cause–Effect Text Structure Through Social Studies Content to At-Risk Second Graders

Joanna P. Williams, Abigail M. Nubla-Kung, Simonne Pollini, K. Brooke Stafford, Amaya Garcia, and Anne E. Snyder

Abstract

This study evaluated the effectiveness of a comprehension program integrated with social studies instruction designed for at-risk second graders. The program included instruction in cause–effect text structure, emphasizing clue words, generic questions, graphic organizers, and the close analysis of specially constructed cause–effect target paragraphs. This program was compared (a) to a content-only program that focused only on social studies and did not include text structure instruction and (b) to a no-instruction control. Fifteen classroom teachers, randomly assigned to treatment, provided the instruction. The program improved the comprehension of instructional cause–effect texts, and there were transfer effects on some comprehension measures. The performance of the 2 instructed groups did not differ on any of the content measures, indicating that such integrated instruction can be accomplished without a loss in the amount of content acquired. This study supports our previous findings on the effectiveness of explicit instruction at the primary-grade level.

Given mounting pressures to ensure that students achieve high levels of proficiency on standardized tests, many school districts have begun to increase the amount of time spent on reading and mathematics in the elementary school classroom. Consequently, instruction in other subject areas has been significantly reduced (Vogler, 2003). In a survey of 299 nationally representative school districts, for example, the Center on Education Policy (2006) found that 71% of these districts have reduced the amount of time spent on teaching at least one or more of the content areas.

Social studies is one content area that has been frequently cut back, with 33% of school districts examined by the Center on Education Policy (2006) reporting a significant reduction in the portion of the school day spent on social studies. This is unfortunate, as there are many skills, such as critical thinking, decision making, and problem solving, that can be acquired while learning social studies content (Ferretti & Okolo, 1996). Social studies instruction also encourages young learners to consider the role that history plays in shaping our communities (Brophy & Alleman, 2002) and, perhaps most important, helps them to develop civic competence (Ferretti & Okolo, 1996).

The extra time allotted to reading in the elementary curriculum has been greeted enthusiastically in most quarters. However, even with the additional time allotments, there is a notable deficit in today’s reading instruction: There is a lack of focused and explicit instruction in reading expository text (Hoffman et al., 1994). In an observational study of 20 first-grade classrooms, Duke (2000) found that informational text was rarely used in reading and writing activities. In the classroom libraries she examined, fewer than 10% of the books available to students included informational text. Similarly, a national survey by Campbell, Kapinus, and Beatty (1995) of elementary classrooms indicated that few if any of the books read aloud to students include expository text.

Expository text is generally regarded as more difficult than narrative text (Goldman & Rakestraw, 2000). Its content is often unfamiliar and frequently represents complex and abstract concepts (Stein & Trabasso, 1981). Moreover, expository text contains various text structures that can be difficult to recognize and interpret. These structures include sequence, description, compare–contrast, problem–solution, and cause–effect (Meyer & Poon, 2001), and they can be presented in isolation or in conjunction with other structures. Of the structures that can be found in expository text, the cause–effect structure may be particularly difficult for children (Ciardiello, 2002). Richgels, McGee, Lomax, and Sheard (1987) found that sixth graders were less able to comprehend causation text structure than other text structures. McCormick (2003) has suggested that this structure
is difficult because of the complex comprehension skills (i.e., making inferences, judging sequence, and making predictions) involved in the interpretation of causes and effects.

By the time students reach fourth grade, much of the content that they encounter in the classroom is presented in the form of expository text (Moss, 2005). Without an adequate understanding of the structures inherent in expository text and the strategies needed to comprehend the text that is organized within these structures, many students struggle with this rather sudden shift to informational texts (Duke, 2000). Evidence of this struggle is highlighted by the well-documented slump in fourth-grade reading achievement (Chall, Jacobs, & Baldwin, 1990).

In social studies instruction, as much as 90% of the content that is taught is derived from and structured around informational text from textbooks (Myers & Savage, 2005). In fact, many educators view textbooks as the primary source of the social studies curriculum (Brophy, 1992). Unfortunately, these texts are often dense, poorly structured, and riddled with irrelevant information that can distract readers from more important concepts (Beck, McKeown, & Gromoll, 1989).

Students are not given the tools with which to read such text, and without adequate skills, students—particularly those with learning disabilities (LD) and other students at risk for academic failure—may be unable to access and comprehend the information that is presented to them (De La Paz & MacArthur, 2003).

There is evidence that through explicit instruction in text structure, low-achieving students can develop and refine their ability to comprehend expository text. Bakken, Mastropieri, and Scruggs (1997) found that eighth-grade students with LD who were explicitly taught to apply specific strategies toward the reading of expository text were better able to recall important information from the text. Dickson (1999) found that instruction in compare-contrast structure was effective for middle school students with a range of learning needs. Only recently have there been studies indicating that elementary school students, too, can benefit from such instruction. Our own work (Williams, Hall, & Lauer, 2004; Williams et al., 2005) has demonstrated the effectiveness of explicit instruction in helping second graders at risk for academic failure to improve their reading comprehension of compare-contrast text via the use of text structure. Moreover, these studies indicated that embedding text structure instruction in content lessons (on science content) did not diminish the amount of content acquired.

Present Study

We have developed a program that provides instruction on a different text structure, cause–effect, embedded in a different subject matter domain, social studies. Will our previous findings hold? That is, will our instructional program help second graders at risk for academic failure to improve their comprehension? Can this goal be accomplished without a decrease in the amount of content knowledge that students acquire from the program?

As in our previous work, we used an explicit and structured instructional model that included explanation and modeling by the teacher and guided and then independent practice (Williams, 1998), because low-achieving students benefit from systematic and intensive instruction (Gersten, Fuchs, Williams, & Baker, 2001). Students were taught to use clue words, generic cause–effect questions, and graphic organizers to help them identify and analyze causes and effects in specially constructed, well-structured target paragraphs. As Goldman and Rakestraw (2000) noted, readers are better able to understand text when it has a clearly defined structure.

Within each lesson of our program, children were taught key vocabulary words. Learning domain-specific vocabulary allows students to become familiar with the language of social studies and to develop a level of expertise in the subject matter (Bryant, Ugel, Thompson, & Hamff, 1999). The social studies content taught in the program was aligned with New York state learning standards in social studies and English language arts. It covered three historical U.S. communities (colonists, pioneers, and immigrants at the turn of the 20th century). Each community was presented with a focus on the same three features: homes, schools, and jobs. The program also provided students with exposure to informational trade books related to the social studies content that was taught. Informational trade books can provide valuable sources of well-written and authentic text that appeals to young readers (Moss, 2005).

Most second-grade instruction involves a great deal of speaking and listening, because many students at that level are not yet fluent readers. We included in our program a typical second-grade mix of listening/speaking and reading/writing tasks. The same cognitive processes are basic to both listening and reading comprehension (Perfetti, Marron, & Foltz, 1996), and our goal was to improve comprehension as demonstrated in either oral or written language.

This study evaluated the effectiveness of our cause–effect instructional program for second graders at risk for academic failure. We randomly assigned intact classrooms (a) to our text structure program, (b) to a comparison content-only program that used the same materials as the text structure program but that did not focus on the cause–effect structure of the text, or (c) to a no-instruction control.

Method

Design

We used a pretest–posttest design. Fifteen classroom teachers from three elementary schools in New York City vol-
untrained to participate in the study. The three schools were of similar demographics; all three were categorized as Title I schools. The total enrollment across the schools included 76.5% Hispanic, 22% African American, 0.5% European American, and 1% Asian or other. Ninety-three percent of the students received state aid in the form of free or reduced lunch, and approximately 5% of the students were enrolled in either part-time or full-time special education services.

The teachers were randomly assigned to one of three experimental conditions: a text structure program ($n = 5$), a content-only program ($n = 5$), or a no-instruction control ($n = 5$). Conditions were blocked by school. All statistical analyses were performed with the classroom as the unit of analysis.

**Participants**

Three hundred thirty-seven students were eligible for participation, and 260 of these students returned consent forms; 243 students completed the study (the other 17 students were reassigned to other classrooms or moved out of the school district during the study). All students in the 10 instructional classrooms ($n = 160$) received the instructional program as taught by their classroom teacher. We randomly selected 12 students from each classroom for the statistical analysis. In one case, only 11 students completed the posttests; we added as a 12th score the mean score of these 11 students. Fifteen of the 179 students had Individualized Education Programs (IEPs), and 5 students had been referred for IEPs. Table 1 presents demographic information about the 179 students.

**Materials**

The content goal of the instructional programs was to teach students about three historical communities in the United States—specifically, about homes, schools, and jobs in these communities. Both programs used biographies, other trade books, and specially constructed cause–effect target paragraphs. Selection of the books was based on appropriateness of content and quality of photographs. Ten short, well-structured cause–effect paragraphs were written specifically for the program. In the first unit of the program (Colonists), each target paragraph consisted of several causation sentences; each sentence included one cause, one effect, and a clue word. In the second unit (Pioneers), each paragraph contained one cause and multiple effects. The cause and each effect appeared in separate sentences. The third unit (Immigrants) included both types of paragraphs. Examples of the two types of paragraphs are as follows:

**From Lesson 5: One cause–one effect paragraph:**

**Colonists and Their Schools**

The first school that colonial children went to was called Dame School. Children had to read books written for grown-ups because there were no storybooks for kids. In school, there were no pencils; therefore, children wrote with a piece of lead. Girls needed to learn how to spin, cook, and clean the house; thus, they stayed home after they finished Dame School. After Dame School, most boys continued to go to school, since the law said they had to go.

From Lesson 14: One cause–multiple effects paragraph (this paragraph also contained one sentence with noncausal information):

**Pioneers and Their Jobs**

When pioneers first moved to the prairie, it was difficult to find a job. Therefore, after the harvest, most farmers had to travel away from their families for a few months to work for the railroad. Some men had construction jobs in nearby towns. Children had to work by selling eggs. With the money the families saved, they bought leather, shoes, salt, and other things they could not make themselves.

The readability level of the target paragraphs was between third and fourth grade ($M = 3.40$, $SD = 0.84$) using the Dale-Chall Readability Scale (Chall & Dale, 1995)—rather high, because some of the words in the text (e.g., words relevant to the program content and some of the clue words) were unfamiliar words on the Dale-Chall reading list. However, the students in both the text structure and

**TABLE 1**

Demographic Characteristics and Reading Scores of Participants by Condition

<table>
<thead>
<tr>
<th>Measure</th>
<th>TS</th>
<th>CO</th>
<th>NI</th>
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<tbody>
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<td></td>
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<td>2.3</td>
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<tr>
<td>Grade equivalent</td>
<td>2.4</td>
<td>2.5</td>
<td>2.4</td>
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</table>

Note. TS = text structure condition; CO = content-only condition; NI = no-instruction condition; WRMT-R = Woodcock Reading Mastery Test–Revised (Woodcock, 1987).
content-only programs were quite familiar with these words because they were taught as vocabulary words. When we calculated the readability level with our vocabulary words considered as familiar words, the mean readability of the target paragraphs was between second- and third-grade level (M = 2.50, SD = 0.97).

**Overview of the Two Instructional Programs**

**Text Structure Program.** The instructional program contained three units, each of which focused on one historical community. There were 22 lessons in all. First, an introductory lesson introduced the concept of cause–effect and also the program content through a narrative book, *On the Town: A Community Adventure* (Caseley, 2002), which follows Charlie and his mother as they explore their community. Then, for each unit, there was a lesson that introduced the community via a biography of a young person living in that community. This lesson included a read-aloud and discussion and an introduction to the relevant vocabulary. There were six additional lessons in each unit: two lessons each on homes, schools, and jobs. Each pair of lessons was organized around a target paragraph and included further read-alouds from a second trade book. The first lesson on each feature included instruction on

1. **Concept of cause and effect.** The students were introduced to the definition of cause and effect. Effect was defined as a thing or event that happens, and cause, as the person, thing, or event that makes the effect happen. Students developed their understanding of these concepts through picture cards, matching, and cloze activities.

2. **Cause–effect clue words.** In Lesson 1, students were introduced to four cause–effect clue words: *because, since, therefore,* and *thus.* As the program continued, they memorized the clue words and used them to identify paragraphs as cause–effect paragraphs.

3. **Vocabulary.** The vocabulary concepts were related to the content of the program: *community, home, school, job, pioneer, colonist, immigrant, sod house, keeping room, tenement, schoolhouse, Dame School, public school, farmer, blacksmith,* and *sweatshop.* The vocabulary words were embedded in the target paragraphs; they were also presented as a list of words that were explained and illustrated through examples.

4. **Trade book read-aloud and discussion.** Specific passages from a trade book were read aloud. Students were encouraged to ask questions and share comments.

5. **Community chart.** There was a community chart for each unit, which was used for further review of the content vocabulary. During the second and third units, words from previous charts were reviewed.

6. **Cause–effect questions.** Beginning in Unit 2, with the introduction of the second type of paragraph (one cause–multiple effects), the students learned two generic questions. These questions were designed to help them focus on the cause–effect information in the text rather than on irrelevant details or prior knowledge. The two questions were (a) What is the cause? and (b) What is the effect?

7. **Read-aloud and analysis of the target paragraph.** Students read the target paragraph first silently and then aloud. The class analyzed the cause–effect structure of the first type of paragraph (one cause–one effect) by circling the clue word and underlining the part of the sentence that followed the clue word (the cause or the effect). Causes and cause clue words were marked with a blue crayon, and effects and effect clue words with a green crayon. For the second type of paragraph (one cause–multiple effects), the students circled the clue word and underlined what followed it. Then they used the cause–effect questions to guide the analysis of the rest of the paragraph. Sentences that included noncausal information were introduced in Lesson 12 and were identified as irrelevant to the causal analysis.

The second lesson on each feature included instruction on

1. **Graphic organizer.** The students completed a graphic organizer for the target paragraph. There were two organizers, one for each paragraph type (see Chambliss & Calfee, 1998, for examples). This helped the students visually organize the three elements (*cause, effect,* and *clue word*) in a cause–effect sentence.

2. **Comprehension questions.** Students answered three types of questions about the target paragraph. The first was noncausal (e.g., *How many teachers worked in a schoolhouse*?), the second asked about causes (e.g., *Why did a schoolhouse only have one teacher*?), and the third asked about effects (e.g., *What are the effects of having very little money for schools*?). We showed the students that they could find the answers to the comprehension questions in the completed graphic organizer as well as in the target paragraph. The students were encouraged to answer in complete sentences.

3. **Lesson review.** Each lesson ended with a review of the strategies (clue words, cause–effect questions, and graphic organizer) as well as the content covered.

**Content-Only Program.** The content-only program taught the same social studies content and used the same materials (target paragraphs, trade books, and charts) as the text structure program, but it did not focus on cause–effect structure. As in the text structure program, there were 22 lessons: one in-
The introductory lesson included instruction on the general content of the program via On the Town: A Community Adventure (Caseley, 2002). In Lesson 2, the Unit 1 biography was presented; the lesson included a read-aloud and discussion and an introduction to the vocabulary. The first lesson on each feature included instruction on

1. **KWL chart.** Comparison lessons began with a discussion of the students’ background knowledge about the community (Colonist, Pioneer, or Immigrant) and the feature (home, school, or job) that were the foci of the lesson. This was done through a KWL procedure (what I Know, what I Want to know, and what I Learned; Ogle, 1986). The teacher recorded responses to what I Know about a focus feature on a chart. Then the students, with the help of the teacher, generated questions about what they wanted to know, and the teacher recorded these. The what I Learned portion of the chart was completed after the trade book read-aloud, the vocabulary, and the community chart activity. At this point, the students attempted to answer the questions they had generated at the beginning of the lesson and added other details that were discussed during the course of the lesson.

2. **Vocabulary.** A review of the vocabulary words was conducted as in the text structure program.

3. **Trade book read-aloud and discussion.** This was the same activity as in the text structure program, and also included further discussion questions.

4. **Community Chart.** This was the same activity as in the text structure program.

5. **Graphic organizer (content).** Students filled in an information web. In the center of the web was a labeled depiction of a home, school, or job, surrounded by several blank circles connected by a line to the center picture. Students filled in the circles with information that they learned during the lesson.

The second lesson on each feature included instruction on

1. **Read-aloud of the target paragraph.** Students read, first silently and then aloud, the same target cause–effect paragraphs that were presented in the text structure program; however, they did not examine the text structure and identify it as a cause–effect paragraph. Rather, the paragraph was presented to the students as another opportunity to read and learn about the community and the feature that was targeted in the lesson.

2. **Comprehension questions.** The students in the content-only program answered the same noncausal questions that the students in the text structure program answered. As there were no causation questions, the students in the content-only program also answered additional questions pertaining to the information in the target paragraph. The students were encouraged to answer in complete sentences.

3. **Journal entry.** Students drew pictures of something related to the lesson’s topic (e.g., immigrant jobs) and wrote a paragraph about their drawing.

4. **Lesson review.** Each lesson concluded with a review of the content learned in that lesson, including the features learned about the communities (home, school, and job) and the vocabulary.

**Procedure**

**Introducing the Program to Teachers.** Individual training sessions (30–45 min) were held to familiarize teachers with the program that they were to teach. We discussed the program’s overall goals and reviewed each section of the lessons.

**Pretest.** The pretest, conducted in two 30–45-min sessions, consisted of audiotaped individual interviews. In the first session, students completed the Word Identification and Passage Comprehension subtests of the Woodcock Reading Mastery Test–Revised (WRMT-R), Form H (Woodcock, 1987). The second pretest session contained three strategy and two outcome measures. The strategy measures included locating clue words in a paragraph, locating cause–effect clauses, and recalling the cause–effect questions. The outcome measures assessed knowledge of vocabulary concepts and ability to provide well-structured cause–effect statements (i.e., sentences using accurate information from the text, including a clue word) in response to comprehension questions based on a one cause–one effect paragraph.

**Lesson Attendance and Feedback.** Teachers were asked to take attendance and to complete feedback sheets at the end of each lesson.

**Classroom Observations.** Observations were conducted in the 10 instructional program classrooms to assess fidelity to treatment. Each of the 10 classrooms was observed twice over the course of the instruction. Observers recorded whether each lesson section was completed. Three observers made independent observations of the same five lessons. Interrater reliability for each of the observer pairs was 100%. Thereafter, each observation was made by a single observer.

**Posttest.** The posttest consisted of individual, audiotaped interviews and was conducted in two sessions of 30–45 min each. During one session, the students completed Form G of the Word Identification and Passage Comprehension subtests of the WRMT-R (Woodcock, 1987). The other session included an extensive array of strategy
and outcome measures. The strategy measures included Locating Clue Words; Underlining Clauses; Completing the Graphic Organizer for a one cause–one effect paragraph; and Recalling the Cause–Effect Questions.

The content outcome measures assessed Feature Questions (knowledge of explicit information about the features of the three historical communities); Non-Feature Questions (knowledge of other content presented in the target paragraphs); and Vocabulary Definitions.

The comprehension outcome measures required students to answer three types of questions (noncausal, cause, and effect questions) concerning a series of paragraphs that for the most part involved social studies content. Several of these measures required oral responses:

- to a one cause–one effect paragraph that had appeared during instruction (assessing the effects of Explicit Teaching);
- to two novel one cause–multiple effects paragraphs, one of which contained information about an untaught feature (games) of an instructed community (Near Transfer), whereas the other contained information unrelated to the program content (Far Transfer); and
- to two paragraphs, one of each paragraph type, taken from less well-structured trade books (Transfer to Authentic Text).

Scoring. Scoring guidelines were developed for each measure on the basis of a small sample (n = 18) of randomly selected protocols, 6 from each of the three experimental conditions. Criteria for judging whether a response was correct, and how many points to give each response, were determined. Two scorers completed independent blind scoring of 25% of the protocols. Interrater reliability for scoring (number of agreements divided by the number of items) ranged from 95% to 100% across measures.

Teacher Debriefing. After the posttest, meetings were held with each teacher who taught an instructional program to explain the purpose of the study more fully and to get feedback. Teachers in the no-instruction control condition were also debriefed and were given the program materials for use with their classes.

Results

Characteristics of the Participants

No significant differences were found among the three experimental conditions (text structure, content-only, and no instruction) on mean age, F(2, 12) = 0.03; mean standard score on the WRMT-R Word Identification subtest, F(2, 12) = 0.52, and WRMT-R Passage Comprehension subtest, F(2, 12) = 0.13; and mean standard Total Reading score from the WRMT-R, F(2, 12) = 0.32 (see Table 1).

The proportion of lessons (out of 22) that each participant attended and the mean proportion for each of the 10 classrooms that received instruction (text structure and content-only) were calculated. The mean proportion of lessons attended was .93 (SD = .02) for the text structure group and .92 (SD = .05) for the content-only group, with no significant difference between the groups, t(8) = .41. The lowest mean proportion of lessons attended by any one of the 10 classrooms was .81.

Pretest

No significant differences were found as a function of instructional condition on any of the pretest measures.

Posttest

Mean proportions and standard deviations of the posttest measures are presented in Tables 2 and 3.

Four Strategy Measures. On the first measure, Locating Clue Words, 1 point was given for each clue word located in the paragraph; possible

<table>
<thead>
<tr>
<th>Measure</th>
<th>TSa</th>
<th>COa</th>
<th>NIa</th>
</tr>
</thead>
<tbody>
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<td>Locating Clue Words</td>
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<tr>
<td>Underlining Clauses</td>
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<tr>
<td>Recalling Cause–Effect Questions</td>
<td>.04</td>
<td>.00</td>
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</tr>
</tbody>
</table>

Note. TS = text structure condition; CO = content-only condition; NI = no-instruction condition.

* = n = 5.

***p < .001.
scores ranged from 0 to 4. There was an overall effect of treatment, \( F(2, 12) = 197.39, p = .000 \). Specific comparisons indicated that the text structure group scored significantly higher than either the content-only \((p = .000)\) or the no-instruction group \((p = .000)\). There was no difference between the content-only and the no-instruction groups (see Table 2).

On the next measure, Underlining Clauses, 1 point was given for each cause and each effect clause correctly underlined; possible scores ranged from 0 to 4. There was a main effect of treatment, \( F(2, 12) = 100.71, p = .000 \). The text structure group scored significantly higher than either the content-only group \((p = .000)\) or the no-instruction group \((p = .000)\). No difference between the content-only and the no-instruction groups was found (see Table 2).

On the next measure, Underlining Clauses, 1 point was given for each cause and each effect clause correctly underlined; possible scores ranged from 0 to 4. There was a main effect of treatment, \( F(2, 12) = 100.71, p = .000 \). The text structure group scored significantly higher than either the content-only group \((p = .000)\) or the no-instruction group \((p = .000)\). No difference between the content-only and the no-instruction groups was found (see Table 2).

On the Completing the Graphic Organizer measure, 1 point was given for each portion of the organizer that was filled in correctly. Possible scores ranged from 0 to 4. The effect of treatment was not significant, \( F(2, 12) = 3.71, ns \).

On the final strategy measure, Recalling Cause–Effect Questions, possible scores ranged from 0 to 2. The effect of treatment was not significant, \( F(2, 12) = 2.67, ns \) (see Table 2). It should be noted that the pattern of results on the latter two measures, though not significant, was in line with the expectation that the text structure group would outperform the other two groups.

Three Content Outcome Measures. These measures assessed the content taught in both instructional programs. Similar results were found for all three content outcome measures (see Table 3).

The first measure was Feature Questions, tapping information presented in the target paragraphs about the three features (home, school, job) of the communities. There were six feature questions; possible scores ranged from 0 to 6. There was a main effect of treatment, \( F(2, 12) = 8.57, p = .005 \). Specific comparisons indicated that the text structure group scored significantly higher than the no-instruction group \((p = .006)\), and the content-only group also scored significantly higher than the no-instruction group \((p = .003)\). There was no difference between the text structure and the content-only groups.

The next measure was Non-Feature Questions, tapping other information presented in the target paragraphs. There were four such questions; possible scores ranged from 0 to 4. There was an overall effect of treatment, \( F(2, 12) = 9.03, p = .004 \). The text structure group scored significantly higher than the no-instruction group \((p = .005)\), and the content-only group also scored significantly higher than the no-instruction group \((p = .002)\). No difference was observed between the text structure and the content-only groups.

The final content outcome measure was Vocabulary Definitions; there were eight items, and possible scores ranged from 0 to 8. There was an overall effect of treatment, \( F(2, 12) = 23.24, p = .000 \). Specific comparisons indicated that the text structure group scored significantly higher than the no-instruction group \((p = .000)\), and the content-only group also scored significantly higher than the no-instruction group \((p = .000)\). There was no difference between the text structure and the content-only groups.

Five Comprehension Outcome Measures. These measures involved, for the most part, paragraphs with social studies content, and they required students to answer three types of questions: noncausal questions, cause questions, and effect questions. Two kinds of paragraphs were used: one cause–one effect paragraphs and one cause–multiple effects paragraphs. With regard to the one cause–one effect paragraph, 1 point was given for each correct answer to the noncausal question, the cause question, and the effect question, respectively. With regard to the one cause–multiple effects paragraph (containing three to four effects), 1 point was given for each correct answer to the noncausal question and to the cause question, respectively. For the effect question, 1 point was given for each correct effect given.

Explicit Teaching. The first comprehension outcome measure assessed the effect of explicit teaching. It involved a one cause–one effect paragraph and required a written response. There was a main effect of treatment for the noncausal question, \( F(2, 12) = 5.82, p = .017 \). Both the text structure and the content-only groups scored significantly higher than the no-instruction group (both \( ps = .012 \)). No difference was found between the text structure and the content-only groups. For the cause question, there was no effect of treatment, \( F(2, 12) = 1.39, ns \). However, for the effect question, there was an effect of treatment, \( F(2, 12) = 4.89, p = .028 \); the text structure group scored significantly higher than either the content-only \((p = .029)\) or the no-instruction group \((p = .014)\). No difference was found between the content-only and the no-instruction groups (see Table 3).

Transfer. These four measures required oral responses to noncausal, cause, and effect questions. Two of the paragraphs, both one cause–multiple effects, were written in the same format as the target paragraphs (one near and one far transfer). Two were taken from trade books (i.e., they were authentic texts); one of them entailed one cause–one effect, and the other entailed one cause–multiple effects.

The three one cause–multiple effects passages (Near Transfer, Far Transfer, and Authentic) yielded similar results. There were no effects of treatment for the noncausal question, \( F(2, 12) = 1.59, 3.62, \) and 0.07, respectively; nor for the cause question, \( F(2, 12) = 0.51, 0.48, \) and 0.33, respectively. However, there was an effect of treatment for the effect question, \( F(2, 12) = 9.76, p = .003; F(2, 12) = 11.78, p = .001; \) and \( F(2, 12) = 9.81, p = .003 \), respectively. Specific comparisons indicated that the text structure group scored sig-
FIGURE 10.8

there was no effect for the noncausal question, the cause question, or the effect question, $F(2, 12) = 0.48, 0.83$, and $0.48$, respectively.

**Effect Sizes**

Effect sizes ranged from $6.14$ to $15.19$ on the strategy measures, from $2.55$ to $5.66$ on the content outcome measures, and from $1.57$ to $3.24$ on the comprehension outcome measures, all of which are considered large effects (Cohen, 1988).

**Fidelity to Treatment**

Because of scheduling difficulties, there were 19 classroom observations instead of 20. Teachers taught every section of every lesson, except for the
Discussion

This study extends the findings of Williams et al. (2005) to the content area of social studies and strengthens the conclusion that explicit comprehension instruction can be effective at the primary-grade level. On the Explicit Teaching paragraph, the text structure group scored higher than the other groups on the effect question. This group did not score higher on the cause question; perhaps the students were sufficiently familiar with the cause concept before the instruction began. The explicit instruction provided by the text structure program, however, was necessary for the more difficult effect concept. We did not expect a difference between the text structure and the content-only groups on the noncausal question; our program was focused specifically on cause–effect.

The performance of the two instructed groups did not differ on any of the three content outcome measures; thus, text structure instruction can be accomplished within the framework of content area instruction without a loss in the amount of content acquired.

The results of the present study, however, did not replicate the strong transfer effects found in the Williams et al. (2005) study, although the data suggest that some transfer occurred. That is, on three of the four comprehension outcome measures that assessed transfer, students who had been taught via the text structure program performed significantly better on questions that involved effects than did students who received the content-only program. However, the text structure group students were no better than the other students when answering questions about causes. The results on the noncausal question of the near and far transfer paragraphs showed the same pattern as was seen in the explicit teaching paragraph (i.e., the two instructed groups scored higher than the no-instruction group did), although the effect did not reach significance.

One of the four transfer paragraphs did not show the positive effects of the text structure training on the effect question. This was possibly due to the fact that its content was rather abstract (i.e., salt and its uses), and it was the only paragraph for which it was difficult to develop reliable scoring.

One possible reason why transfer effects were not as clear in this study is that the cause–effect structure is more difficult than the compare–contrast structure used in our earlier work (Ciardiello, 2002; McCormick, 2003; Richgels et al., 1987). If this is the case, then providing a greater amount of instruction on cause–effect than we did in the present study might lead to more transfer. Having two text types may also have proved too challenging for second graders. Furthermore, the cause–effect text structure was presented from the beginning in a paragraph format. For young novice readers, a text of this length might be too distracting.

Because this study was designed to evaluate the effectiveness of an intact instructional program, it cannot be used to determine the relative importance of any of the individual program components. Other experimental designs are required for that purpose. However, on the basis of a detailed examination of our results, of the informal data gathered during classroom observations, and of the teacher feedback, we have identified several areas where we believe modifications in the program are warranted. We have revised the program and have undertaken a replication of the study. We are devoting more attention to the concept of cause–effect using familiar content. We do this at the beginning of the program, although we do not completely eliminate activities involving social studies content early in the program. We also focus more heavily on text analysis of independent sentences (i.e., sentences that are not embedded in paragraphs). We are also teaching only the one cause–one effect pattern, rather than introducing one cause–multiple effects paragraphs. Clue words are added to the lessons gradually, and the graphic organizer and generic questions are simplified.

Many students at the second-grade level have not yet mastered word recognition. However, they should not be deprived of comprehension instruction before they become fluent readers. Our program represents the type of listening and reading instruction that can work at this grade level for all students, including those at risk for academic failure. We believe that this type of instruction has the potential for improving comprehension on both oral and written tasks, at the same time that it gives students the opportunity to acquire basic knowledge of social studies.

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AUTHORS’ NOTES

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