ABSTRACT

This study investigated the effectiveness of instruction in story mapping as a means to promote first-grade students' comprehension of central story elements in children's literature. Participants were 74 children in four first-grade classrooms, which were randomly assigned to one of four groups: (a) a Story Mapping 1 (SM1) group, in which students were taught to construct story maps for unadapted, unabridged children's stories they had read; (b) a Story Mapping 2 (SM2) group, which involved the same instruction as SM1 but included using story maps to compose stories; (c) a Directed Reading-Thinking Activity (DRTA) comparison strategy group, in which students read the same stories according to a predict-verify procedure; or (d) a directed reading activity (DRA) instructed control group, in which students engaged in a noninteractive, guided reading of stories. Quantitative analyses were conducted on five whole-sample dependent measures: an important idea test on a parsed story, a wh-question test of central story elements, a summary selection task, an important story element recognition test, and a delayed wh-question test. Results revealed that (a) some form of active comprehension instruction (SM1, SM2, or DRTA) was superior to the control-group DRA on most measures, (b) story mapping (SM1 and SM2) students consistently outperformed DRA controls, (c) story mapping was superior to DRTA on some measures but not on others, and (d) SM1 and SM2 groups did not differ on any measure. Qualitative data from student interviews generally supported these findings. It was concluded that instruction in story mapping is an effective instructional strategy for promoting first-grade students' ability to identify central narrative elements in authentic children's literature.
This article reports the results of an instructional study in story mapping. The research question was: What effect does instruction in mapping stories from popular children's literature have on first graders' recognition and recall of narrative elements? The rationale for this study is based upon descriptive and instructional research on story structure and comprehension.

**STORY STRUCTURE AND COMPREHENSION**

The cognitive structure created when comprehending a story has been referred to as a *story schema,* "an idealized internal representation of the parts of a typical story and the relationships among those parts" (Mandler & Johnson, 1977, p. 111). The term *story grammar* has been used as "a formal device for capturing the important properties of a story schema" (Graesser, Golding, & Long, 1991, p. 179). Various story grammars have been proposed and tested empirically (Mandler & Johnson, 1977; Rumelhart, 1980; Stein & Glenn, 1979; Thorndyke, 1977), the research demonstrating that story grammars are not only good descriptions of a class of narratives but also effective predictors of comprehension (see reviews by Fitzgerald, 1989, 1992; Graesser et al., 1991).

Research has revealed significant developmental differences in narrative comprehension. Most importantly for the study reported here, even though children develop a sense of story structure at an early age—perhaps as early as 4 years old (Fitzgerald, 1989)—their story schemata evolve to more elaborate and sophisticated levels as they mature (e.g., Applebee, 1978; Fitzgerald & Spiegel, 1983a; Yussen, Matthews, Buss, & Kane, 1980). Further, there is marked development of children's story schemata in Grades 4-6 (e.g., Mandler & Johnson, 1977; Whaley, 1981a), as noted by Fitzgerald (1989): "Knowledge of story structure becomes richer and more elaborate as children grow older, with considerable enhancement over the intermediate grade years" (p. 28).

A number of writers have suggested that story grammar could be used to craft questions as a means to promote students' narrative comprehension (e.g., Beck, 1984; Beck & McKeown, 1981; McConaughy, 1980; Nolte & Singer, 1985; Tierney, Readence, & Dishner, 1990; Wilson & Gambrell, 1988), and several studies have tested this empirically. For example, Beck, Omanson, and McKeown (1982) redrew a basal reader lesson along several dimensions, one of which involved rewriting questions to focus third-grade students' attention to central story content. Students experiencing the revised lessons demonstrated greater story recall and performance on forced-choice comprehension questions than students who completed the lesson in its original format. Other investigations in which story grammar was used to craft questions, to prompt students to create their own story questions, or to promote story retellings demonstrate that children's and adolescents' narrative comprehension can be enhanced through such procedures (Bow-

Many writers have proposed that various story grammar structures, outlines, or graphic representations (e.g., macrocloze, story maps) can be taught directly or used in informal ways to hasten students' development of story schema and thus promote narrative comprehension. Instructional strategies and techniques recommended for accomplishing these objectives abound (e.g., Baumann & Ballard, 1987; Bromley, 1991; Bruce, 1978; DeGroff & Galda, 1992; Gordon, 1989; Gordon & Braun, 1983; Irwin & Baker, 1989; Marshall, 1983; McNeil, 1992; Rand, 1984; Tierney et al., 1990; Whaley, 1981b), and other writers have provided descriptions and testimony of successful story structure instruction in classrooms (e.g., Cudd & Robert, 1987; Cunningham & Foster, 1978; Stahl-Gemake & Guastello, 1984).

A number of researchers have conducted experiments evaluating the efficacy of teaching story structure, using narratives from different sources and involving students in Grades 3 through 9, and the majority of these studies have demonstrated positive effects for teaching students about story parts. For example, Fitzgerald and Spiegel (1983b) used discussion, modeling, and guided practice in story structure to enhance narrative comprehension for fourth-grade students who had limited story schema development. After two phases of instruction spanning 16 lessons, students taught about story structure outperformed control-group children (who engaged in dictionary usage and word study lessons) on a written story production task, a scrambled story task, and story comprehension questions. Spiegel and Fitzgerald (1986) reported a similar pattern of results in a modified replication.

Other researchers have demonstrated that various types of story grammar or story mapping instruction enhance multiple dimensions of students' narrative comprehension (Buss, Ratliff, & Irion, 1985; Carnine & Kinder, 1985; Dimino, Gersten, Carnine, & Blake, 1990; Gordon & Braun, 1982; Greenewald & Rossing, 1986; Idol, 1987; Reutzel, 1985; Short & Ryan, 1984), and two experimenters used a story mapping heuristic and graphic very similar to the one used in the present study. Hartman (1986) instructed sixth-grade students for four weeks about story structure using story maps created for basal reader stories, and Ballard (1988) employed a similar story map to instruct eighth graders in story structure using American short stories. Both researchers reported that experimental-group students outperformed controls on a variety of dependent measures assessing story elements.

Several researchers have examined the impact of instruction in narrative structure on students' writing. For example, Fitzgerald and Teasley (1986) taught fourth-grade students to draw from story grammar when writing narratives and compared their compositions to students who received dictionary and word study instruction. Compositions by the experimental-group students were superior to those produced by children in the control group in both organization and quality of writing, although compositions did not differ by group on a "creativity" index. Gambrell and Chasen (1991) replicated and extended Fitzgerald and Teasley's work, reporting
that fourth- and fifth-grade students receiving explicit instruction in writing using story grammars wrote more complex and well formed stories than students in a simple awareness group.

In summary, although a few researchers have reported equivocal findings regarding the effects of instruction in narrative structure (Braun & Gordon, 1984; Dreher & Singer, 1980; Sebesta, Calder, & Cleland, 1982), the preponderance of research suggests that some form of explicit instruction in story grammar, structure, or mapping enhances students' ability to recognize central story ideas, to recall important story elements, or to compose well-formed narratives.

RATIONALE AND OVERVIEW OF THE STUDY

In spite of the extant research on the efficacy of instruction in story structure, there remain several unanswered questions. First, can very young children be taught to use story structure to enhance their ability to identify and recall central story elements? Unfortunately, there is little early childhood intervention data. Although Morrow's (1984, 1986) studies with kindergartners suggest that young children's listening comprehension can be guided by story grammar, no experimenters have taught story structure directly to students below Grade 3, and the preponderance of studies are for students in the upper elementary grades. Since story structure development accelerates rapidly during the intermediate grades (Fitzgerald, 1989), it may be that younger children, for whom story schemata are relatively immature, would benefit significantly from guidance in the development and application of story structure. To evaluate this hypothesis, first-grade children were used in the present study.

Second, will instruction in story structure be effective when the instructional and assessment texts are unadapted, unabridged selections from children's literature? Most of the instructional research on story structure has involved instructional and/or assessment texts that were adaptations or written specifically for the research (e.g., Buss et al., 1985; Carnine & Kinder, 1985; Fitzgerald & Spiegel, 1983b; Gordon & Braun, 1982). Other experimenters have used basal reader selections (e.g., Grenewald & Rossing, 1986; Hartman, 1986; Reutzel, 1985) or reading skill development materials (Nolte & Singer, 1985) which, given the dates of these studies, were likely to have involved adapted literature or selections written especially for the basal or skill series. The studies in which intact literature was used involved either the very young children in Morrow's (1984, 1986) read-aloud studies or much older students (e.g., 8th graders in Ballard, 1988; 9th graders in Dimino et al., 1990; 11th graders in Singer & Donlan, 1982). In their review of instructional research on narrative structure, Pearson and Fielding (1991) lamented that studies often "used specially constructed or shortened, adapted stories," and they noted "whether improved comprehension would extend to unedited basal reader
stories or, especially, to tradebook stories remains to be seen” (p. 822). To explore this question, natural children’s stories were used in the present study.

Third, will instruction in composition using story structure enhance the efficacy of teaching students to understand central story elements? McNeil (1992) is not alone in asserting that “one way to develop the schema [for stories] is to teach students to use story grammar in generating their own narratives. Story writing is an excellent way to enhance story comprehension” (p. 153). However, there is limited research that evaluates this hypothesis. Several studies have demonstrated that instruction in using story structure for writing improves students’ writing performance (Fitzgerald & Teasley, 1986; Gambrell & Chasen, 1991), but research examining the effects of such instruction on narrative comprehension is both limited and equivocal (Braun & Gordon, 1984; Gordon and Braun, 1982). To pursue this issue further, one intervention group in the present study was taught only to map stories to aide their comprehension, whereas for a second group, this instruction was complemented with instruction in using mapping to write stories.

To address these three unanswered questions, an instructional study was designed in which first-grade students read and responded to children’s literature in one of four ways. Students in one intervention group, Story Mapping 1, were taught to map stories as a means to develop story schema and promote their recognition and recall of central narrative elements. Students in a second intervention group, Story Mapping 2, received the same mapping instruction, but they also were taught how to write stories from a story map.

A third group was included to provide a strategy against which the story mapping approach could be compared. The Directed Reading-Thinking Activity (Stauffer, 1969, 1976) was selected for this group because it is an interactive reading strategy that involves substantial amounts of prediction, a process known to be helpful for promoting story comprehension (e.g., Anderson, Wilkinson, Mason, & Shirey, 1987; Hansen, 1981; Hansen & Pearson, 1983). Thus, the efficacy and efficiency of the Story Mapping 1 and the Story Mapping 2 instruction could be evaluated in comparison to a relatively simple strategy that had the potential to also promote narrative comprehension.

A fourth group, an Instructed Control, was included in the experiment to minimize the likelihood of a Hawthorne effect, a serious problem in comprehension strategy research (Lysynchuk, Pressley, d’Ailly, Smith, & Cake, 1989). Students in this group read the same stories as the other groups, but they did so according to the directed reading activity (Tierney et al., 1990). The directed reading activity was an appropriate instructed control group because it did not involve any explicit or implicit instruction in narrative comprehension.

In summary, the purpose of this study was to evaluate the effectiveness of explicit instruction in story mapping as a means to enhance young students’ recognition and recall of central narrative elements from unadapted children’s literature.
Before describing the research methods, it is important to acknowledge that there are critics of story grammars (e.g., Black & Wilensky, 1979; Lehnert, 1982; Weaver & Dickinson, 1982), and other writers have cautioned educators against employing story grammars instructionally (e.g., Moffett, 1983; Schmitt & O’Brien, 1986). The most common criticisms of teaching story grammars are that many stories do not follow the canonical structure of the grammars, children will learn story structure on their own, and story grammars place too much emphasis on one dimension of “storiness” (see Fitzgerald, 1989). Such arguments have merit, and we believe it is important that instruction in story structure not be viewed as an end itself but rather as one means to an end—understanding and appreciation of the story genre. Thus, we present our experiment and its implications in the manner that Gordon (1989) views story grammar instruction:

This instruction [in narrative text structure] is designed to complement actual story reading and story writing, not serve as a substitute for them. In addition, instruction in narrative text structure is an intermediary step, not an end in itself. It is a step toward automatic, unconscious, and independent use of text structure as a framework for comprehension and writing. It is a step toward making students strategic readers and writers. (p. 79)

METHOD

Subjects and Experimental Design

Seventy-four first-grade children from four classrooms in a rural Midwestern elementary school participated in the study. Children in the school were predominantly Anglo-American, and a sizeable number of children came from low-income farming families. As per district policy, students were assigned in a heterogeneous manner to classes, and all first graders in the four classrooms participated in the study.

A pretest-posttest, control group, quasi-experimental design (Campbell & Stanley, 1966) was employed. Classes were assigned randomly to one of four treatments: Story Mapping 1 (SM1), a class of 17 students; Story Mapping 2 (SM2), a class of 20 students; Directed Reading-Thinking Activity (DRTA), a class of 19 students; or Instructed Control (Control), a class of 18 students.

Pretesting

To account for possible preexperimental differences due to the use of intact groups, a Pretest that evaluated students’ ability to recognize story grammar elements was administered prior to instruction. The experimenter read aloud the traditional tale “Rabbit and the Long One: A Masai Folktale” (1985), inviting the children to read along silently from a copy of the story provided for each student.
Instruction in Story Mapping

After reading/listening to the story, students completed a 10-item, five-option, multiple-choice test that probed for central story elements (i.e., main characters, setting, main character's problem, major events, ending). The experimenter read the questions aloud and asked the children to read along silently.

To control statistically for potential inter-class differences in knowledge of story structure, Pretest scores were used as covariates in quantitative data analyses. Further, an analysis of variance conducted on Pretest scores failed to attain statistical significance \( F(3, 70) = 1.42, p < .243 \), suggesting that the four first-grade classes were similar in overall ability to identify story structural elements prior to the intervention phase of the study.

**Instructional Procedures**

The study was conducted in May as the students were nearing the completion of first grade. Students in all treatments participated in 10 sessions: one pretest session, six instructional sessions, and three posttest sessions. Sessions for all groups were conducted on the same days. In addition, 16 students, 4 from each treatment, participated in a post-instruction interview. One month elapsed from the initial pretesting through the study-ending delayed posttesting. Table 1 presents the instruction and testing schedule.

The first author, an experienced primary-grade teacher, conducted the experiment, providing all instruction and administering all group pre- and posttests. Three graduate students in education helped the first author conduct the student interviews.

In each session, students were read an unadapted, unabridged children's story or trade book (see Table 1), each of which was then used for assessment or instruction purposes. The literature selected for the study included engaging stories authored by well-known and respected children's authors, for example, Ezra Jack Keats, Arnold Lobel, and Charlotte Zolotow. Students were provided individual copies of each story, all of which were reproduced in primary type. The experimenter introduced each instruction and assessment story by asking the students to "read along with me as I read the story out loud." This listening/silent reading procedure was used to preclude limited decoding ability as a possible confounding factor in the experiment. A colorful illustration from the story that included the title of the book was reproduced on a large chart and presented when the experimenter introduced each story to the children, and it remained on display throughout the remainder of the session.

Each instruction and assessment session was 40 minutes long, and the order in which the experimenter met with the classes was counterbalanced across days. The contents of the four treatments were as follows:

*Story Mapping 1 group.* SM1 students were taught a simplified version of a story mapping procedure which had been recommended by various writers (Baumann
Table 1

**Instruction/Testing Schedule**

<table>
<thead>
<tr>
<th>Day</th>
<th>Book/Story</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Mon.</td>
<td><strong>“Rabbit and the Long One”</strong></td>
<td>Pretest</td>
</tr>
<tr>
<td></td>
<td>(Title, 1985)</td>
<td></td>
</tr>
<tr>
<td>2-Tues.</td>
<td><strong>Three Billy Goats Gruff</strong></td>
<td>Instruction 1</td>
</tr>
<tr>
<td></td>
<td>(Blair, 1963)</td>
<td></td>
</tr>
<tr>
<td>3-Wed.</td>
<td><strong>Whistle for Willie</strong></td>
<td>Instruction 2</td>
</tr>
<tr>
<td></td>
<td>(Keats, 1964)</td>
<td></td>
</tr>
<tr>
<td>4-Thurs.</td>
<td><strong>Heather’s Feathers</strong></td>
<td>Instruction 3</td>
</tr>
<tr>
<td></td>
<td>(Weiss, 1976)</td>
<td></td>
</tr>
<tr>
<td>5-Fri.</td>
<td><strong>Alfie Gets in First</strong></td>
<td>Instruction 4</td>
</tr>
<tr>
<td></td>
<td>(Hughes, 1981)</td>
<td></td>
</tr>
<tr>
<td>6-Mon.</td>
<td><strong>Are You My Mother?</strong></td>
<td>Instruction 5</td>
</tr>
<tr>
<td></td>
<td>(Eastman, 1960)</td>
<td>SM1: make individual maps</td>
</tr>
<tr>
<td></td>
<td>Student-written story</td>
<td>SM2: write group story (&quot;The Slow Leak&quot;); map provided</td>
</tr>
<tr>
<td>7-Tues.</td>
<td><strong>Mr. Rabbit and the Lovely Present</strong></td>
<td>Instruction 6</td>
</tr>
<tr>
<td></td>
<td>(Zolotow, 1962)</td>
<td>SM1: make individual maps</td>
</tr>
<tr>
<td></td>
<td>Student-written story</td>
<td>SM2: do map &amp; write original group story (&quot;The Rabbit Trap&quot;)</td>
</tr>
<tr>
<td>8-Wed.</td>
<td><strong>Fish Story</strong></td>
<td>Posttests 1 and 2</td>
</tr>
<tr>
<td></td>
<td>(Tallon, 1977)</td>
<td></td>
</tr>
<tr>
<td>9-Thurs.</td>
<td><strong>&quot;A Lost Button&quot;</strong></td>
<td>Posttests 3 and 4</td>
</tr>
<tr>
<td></td>
<td>(chapter from Lobel, 1970)</td>
<td></td>
</tr>
<tr>
<td>10-Fri.</td>
<td><strong>No Roses for Harry</strong></td>
<td>Student Interviews</td>
</tr>
<tr>
<td></td>
<td>(Zion, 1958)</td>
<td>(16 students, 4 from each treatment)</td>
</tr>
<tr>
<td>11-Fri.</td>
<td><strong>A Pocket for Corduroy</strong></td>
<td>Delayed Posttest (2 weeks after interviews)</td>
</tr>
<tr>
<td></td>
<td>(Freeman, 1978)</td>
<td></td>
</tr>
</tbody>
</table>

& Ballard, 1987; Beck & McKeown, 1981; Pearson, 1982) and had been used in several story map instructional studies (Ballard, 1988; Hartman, 1986). Specifically, the story map used in the study included the elements *characters, setting* (time and place), *problem* (consolidation of protagonist’s problem and goal), *major events*, and *ending*. Figure 1 is a reproduction of the large chart that was used to present and teach the story map heuristic to the students. Common story map ter-
minology was modified somewhat (e.g., *Characters* became *Who?*) so that the vocabulary was readily understandable to first-grade students. Additionally, each story map element was phrased as a question—for example, the *What's the Problem?* box contained the main character's problem—to further simplify the story mapping strategy for young children.

An explicit instruction model (Baumann & Schmitt, 1986) was used to teach all SMI lessons. This model, which had been used successfully in another comprehension instructional study (Baumann, Seifert-Kessell, & Jones, 1992), was designed to provide students the declarative, procedural, and conditional knowledge (Paris, Lipson, & Wixson, 1983) required to learn a comprehension strategy and to apply it independently. The model consists of four steps: (a) *What* (declarative knowledge)—a description, definition, or example of the comprehension strategy to be taught; (b) *Why* (conditional knowledge)—an explanation of why the strategy is important and how its acquisition will make students better readers; (c) *How*

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**PARTS OF A STORY MAP**

<table>
<thead>
<tr>
<th><strong>WHO?</strong></th>
<th>The most important persons or animals in the story.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WHERE?</strong></td>
<td>The places the story happens.</td>
</tr>
<tr>
<td><strong>WHEN?</strong></td>
<td>The times the story happens.</td>
</tr>
<tr>
<td><strong>WHAT'S THE PROBLEM?</strong></td>
<td>The problem or difficulty a person or animal has.</td>
</tr>
<tr>
<td><strong>WHAT HAPPENED?</strong></td>
<td>The things that happened in the story. What was done to try to solve the problem.</td>
</tr>
<tr>
<td><strong>WHAT'S THE SOLUTION?</strong></td>
<td>How the problem was solved.</td>
</tr>
</tbody>
</table>

*Figure 1. Story map heuristic.*
(procedural knowledge)—explicit instruction in the use of the strategy, which involves the sequence of verbal explanation, teacher modeling, guided practice, and independent practice; and (d) When (conditional knowledge)—an explanation of the conditions under which the strategy should and should not be used and how to evaluate strategy use. A synopsis of the SM1 Instruction 1 lesson follows to illustrate the application of this strategy.

In the What step, an analogy was used to introduce the story map concept to the children. The experimenter compared a story map to a road map, explaining that a road map guides a traveler from one place to another just as a story map leads a reader from the beginning of a story, through the middle of it, and finally to the end of the story. Local towns and cities familiar to the children were used to exemplify the story map/road map analogy.

In the Why step, students were provided conditional knowledge that justified the story map technique and explained how it might be a useful reading strategy. Specifically, the experimenter informed the children that the story map would help them to understand, remember, and enjoy stories more.

In the How step, the experimenter used the “Parts of a Story Map” teaching chart (Figure 1) to explain to the children the story map components (verbal explanation phase). Next, he demonstrated how to identify the Who?, Where?, and When? elements of the map while reading aloud the first portion of the story for Instruction 1, *Three Billy Goats Gruff* (Blair, 1963) (modeling phase). These story map elements were recorded on a second teaching chart (Figure 2) that contained the story map template, that is, the headings Who?, Where?, What's the Problem?, What Happened?, and What's the Solution? within blank boxes. Next, the experimenter invited the students to join him in identifying the remaining parts of the map as he read aloud the remainder of *Three Billy Goats Gruff* (guided practice phase). Figure 2 is a transcription of the collaboratively completed story map that was created during the SM1 Instruction 1 lesson.

No formal independent practice was included in this first lesson because the students were just beginning to learn how to map stories, and they still required considerable scaffolding through verbal explanation, modeling, and guided practice. However, the children assumed more responsibility for application and independent practice as instruction progressed across lessons. For example, later on in the instructional sequence (Instruction 4–6 lessons), the experimenter simply reviewed the parts of a story map, engaged in some guided practice using that day’s story, and then moved on to various independent practice activities, such as inviting small groups of children to collaboratively complete a map for the day’s story.

*When* information was conveyed to students throughout the course of the experiment at appropriate times. Examples of *When* information shared with the students in subsequent lessons include the following:

> Use a story map only when reading a story, not when you read an information book. For example, you could think of a story map when reading a book like
Whistle for Willie (Keats, 1964), but you wouldn’t use one when reading a book that only has information about dogs.

Think about a story map as you read a story. Then you can look for the important ideas in a story, such as who the main character is or where the story takes place—like in today’s story [Alfie Gets in First (Hughes, 1981)], Alfie was the main character, and the story took place mostly near the front door of Alfie’s house.

Use a story map when you get mixed up when you are reading a story. For example, in today’s story [Are You My Mother? (Eastman, 1960)], you might ask yourself, “What problem does the little bird have?” to help you figure out what is happening in the story.

It is important to note that although SM1 group students did construct story maps for all stories they read, a major emphasis was also placed on the children’s

**STORY MAP FOR "THREE BILLY GOATS GRUFF"**

<table>
<thead>
<tr>
<th><strong>WHO?</strong></th>
<th>First Billy Goat Gruff; Second Billy Goat Gruff; Third Billy Goat Gruff; Troll.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WHERE?</strong></td>
<td>Near a grassy hillside.</td>
</tr>
<tr>
<td><strong>WHEN?</strong></td>
<td>Once upon a time . . . ; the springtime; the summertime.</td>
</tr>
<tr>
<td><strong>WHAT'S THE PROBLEM?</strong></td>
<td>The Billy Goats want to cross the bridge and go up the hillside, but the mean Troll might eat them.</td>
</tr>
</tbody>
</table>
| **WHAT HAPPENED?** | • The First Billy Goat told the Troll to wait for the Second Billy Goat.  
                      • The Second Billy Goat told the Troll to wait for the Third Billy goat.  
                      • The Third Billy Goat beat up the Troll.  
                      • The three Billy Goats Gruff went up the hillside to eat grass. |
| **WHAT'S THE SOLUTION?** | The Third Billy Goat was BIG and beat up the mean Troll. |
appreciation of the narratives. For example, the lessons included discussions about an author’s use of characterization, humor, and description, and how the stories related to the children’s personal experiences. In other words, although the primary objective in SM1 was to teach the story mapping procedure, the aesthetic aspects of the literature the students were reading were also addressed. Story appreciation was likewise addressed in the SM2, DRTA, and Control groups.

**Story Mapping 2 group.** The initial research plan was to devote 10 days to instructional lessons for all treatment groups. For the SM2 group, these 10 days were to consist of a combination of story mapping reading and writing activities. Specifically, the first 5 days were to be identical to the instruction provided the SM1 class, that is, instruction in mapping stories that were read (detailed lesson plans were used to ensure comparability of SM1 and SM2 instruction). The remaining 5 days were to be devoted to composing stories using story maps, according to a sequence of structured writing activities followed by more open-ended writing tasks. However, after data collection was underway for several days, the building principal requested that the study be shortened due to the necessity of completing end-of-year standardized achievement testing. As a result, the amount of time devoted to composing in SM2 had to be reduced from the 5 days that were planned to only 2 days, specifically in Instruction 5 and 6 lessons (see Table 1). Likewise, the number of lessons for the SM1, DRTA, and Control groups was reduced to a total of six instructional sessions.

In the Instruction 5 lesson, SM2 students were presented with a completed story map for a story titled “The Slow Leak” (adapted from Baumann, 1986, pp. 36–37), a story about two children who use bubble gum to plug a hole in the inner tube on which they are floating on a lake. In this lesson, the experimenter explained that an author had decided to make a story map to organize the ideas for a story, but the author never got around to actually writing the story. Subsequently, he asked the children if they could help write a story from the story map. Next the experimenter presented a completed story map for “A Slow Leak,” had the students read and discuss the map, and finally had them compose a story from it, a process that proceeded much like the writing of a group language experience story. Finally, the experimenter engaged the children in various shared rereadings of the story.

In the Instruction 6 lesson, SM2 students were asked to create an original story map and then write a story from it. After negotiating a topic, the students constructed a story map as a group activity and then collaboratively drafted the accompanying story, which they titled “The Rabbit Trap.” This story represented an intertextual hybrid (Cairney, 1990) of earlier stories the students had read and mapped, bearing particular resemblance to “The Rabbit and the Long One,” the Pretest story. After the children completed the map and story (see Figure 3), the experimenter and students engaged in shared rereadings of “The Rabbit Trap.”
STORY MAP FOR "THE RABBIT TRAP"

**WHO?** Rabbit, Mother Rabbit, Mouse

**WHERE?** In the woods

**WHEN?** In the afternoon

**WHAT'S THE PROBLEM?** The Rabbit is stuck in a trap.

**WHAT HAPPENED?**
- He got caught
- The Mother Rabbit tried to jump up and chew him out.
- A mouse says he will burn him out.
- The Rabbit chewed his way out.

**WHAT'S THE SOLUTION?** The Rabbit chewed his way out of the trap.

"THE RABBIT TRAP"

The Rabbit was playing in the forest one afternoon. When he was playing, he got caught in a rabbit trap. It was a net trap. Mother Rabbit tried to jump up and chew him out, but she couldn't. The mouse said he would burn the Rabbit out. The Rabbit said, "NO!" The Rabbit chewed himself out of the trap. The Rabbit never played alone in the forest again.

The End

*Figure 3. Story map and accompanying story for SM2 group Instruction 6 lesson.*
**DRTA group.** This group read and responded to the same six instructional stories as the SM1 group, using the listening/silent reading procedure employed in the SM groups; however, rather than mapping stories, students responded to them according to a simplified version of Stauffer's (1969, 1976) DRTA. This procedure consisted of four steps:

1. Students made initial predictions about the story from the story title and picture. These predictions were recorded on the chalkboard for subsequent evaluation.
2. Students and the experimenter read one-third to one-half of the story, using the same reading/listening procedure. After the reading, the students' initial predictions were evaluated by writing on the board $T$ for true predictions, $F$ for false predictions, and $CT$ for predictions which one "can't tell" yet whether they are true or false.
3. Students modified their predictions as appropriate and made additional ones based upon the new story information.
4. Steps 2 and 3 were repeated once or twice more, depending upon the length of the story. Closure was achieved at the end of the story by checking all remaining predictions for which judgment had been previously suspended.

**Instructed control group.** Control group students used the reading/listening procedure to read the same six instructional stories as the SM1 group but did so according to the directed reading activity (DRA) (Tierney et al., 1990). The DRA involved the following components: (a) reading and discussing preselected vocabulary prior to reading, (b) activating or building relevant background information from the title and illustration, (c) engaging in a teacher-directed, guided reading/listening of the story, and (d) conducting a postreading story discussion, which involved a combination of literal, inferential, and interpretive questions. As a follow-up, students were given a paper to complete that involved either literal-level, short-answer questions or a word search for key vocabulary from the story.

**Dependent Measures**

Five posttests evaluating students' ability to comprehend central story elements were administered to all participants in the experiment. These posttests provided whole-sample quantitative data. In addition, individual student interviews were conducted with four students from each of the treatment groups. These interviews provided qualitative self-report data regarding the strategies students used while reading and writing stories.

**Posttest 1.** Posttest 1 (PT1) probed students' ability to identify central story elements from a selection. PT1 consisted of the book *Fish Story* (Tallon, 1977), which was parsed into 41 major story units (Clark, 1982) that were one to three sentences in length. Students were told to "mark the most important parts of the story" by placing checks in front of three sections of the story on each page (the story ran four pages when reproduced in primary type). The experimenter followed
the reading/listening format, reading the complete story initially. Then the story was reread page-by-page, and the students marked the three text sections they deemed most important following the reading of each page. To illustrate the format for PT1, an excerpt showing the first four sections of *Fish Story* follows (the meaning of the parenthetic numerals is explained in the Scoring and Data Analyses section):

"I've got to get out of here!" Little Fish said. "I'm tired of swimming in the same water. I want a bigger pond." (4)

Big Cat, walking by, heard him. "May I be of help?" Big Cat asked. (2)

"I want to see the world," Little Fish said. (0)

"The world is beautiful up here, really beautiful," Big Cat said. "The flowers and the trees are beautiful. So is the ocean just over the hill." (1)

**Posttest 2.** Posttest 2 (PT2) evaluated students' ability to answer questions about story map components after reading/listening to *Fish Story* (administration of PT2 followed the administration of PT1 on the same day). PT2 consisted of 10, five-option, multiple-choice questions and was identical in form to the Pretest and to the Delayed Posttest (see following discussion). The average proportions of test items across these three instruments that assessed story map components are as follows: main characters=30% (3 items per test), setting=13% (1–2 items per test), problem=13% (1–2 items per test), major events=27% (2–3 items per test), solution=17% (1–2 items per test).

**Posttest 3.** Posttest 3 (PT3), administered the day after PT1 and PT2, evaluated students' ability to select a concise story summary statement for "A Lost Button" (Lobel, 1970). After reading/listening to the story, students were directed to "put a check in front of the one statement [from a list of six] that best tells what the story is about." The experimenter read aloud all 6 answer choices for the students. The correct summary, which follows, contained the main characters, the problem, the major events, and the solution:

Toad lost one of the buttons on his jacket. Frog, a sparrow, and a raccoon found buttons, but none of them belonged to Toad. Toad went home and found his lost button on the floor.

Incorrect summary options included global statements:

Toad and Frog are friends. They went for a walk. They had an adventure.

specific episodes in the story:

Toad was angry when he could not find his lost button. He jumped up and down and screamed, "The whole world is covered with buttons, and not one of them is mine."
or syntheses of specific, noncentral story events:

Toad took all the buttons Frog, sparrow, and raccoon found and sewed them on his jacket. Then he gave the jacket to Frog. None of the buttons fell off.

Posttest 4. Posttest 4 (PT4), which was administered following PT3 on the same day, assessed students’ ability to identify central story components from “A Lost Button.” Students were presented with seven, three-option items and were directed to “place a check in front of the sentence that tells about an important part of the story.” For example, the following item assessed students’ understanding of the story problem, the third option being the correct response:

___ Frog and Toad like to take walks.
___ Raccoon found a square button.
___ Frog lost a button off his jacket.

Delayed posttest. The Delayed Posttest (DPT) was used to determine if any initial treatment effects would persist across a brief span of time. The DPT, identical in format to the Pretest and PT2, probed students’ understanding of central story elements for the book A Pocket for Corduroy (Freeman, 1978). The DPT was administered two weeks after the conclusion of the experiment.

Student interviews. In order to obtain qualitative data on students’ ability to understand and apply the story mapping heuristic, 16 students were purposively selected (Manheim, 1977; Patton, 1980) from the larger sample for in-depth interviews. Specifically, four students from each treatment (two boys and two girls) were selected such that (a) they were verbal (as determined by experimenter and teacher judgment) and hence would be likely to communicate freely with the experimenters and produce responses of sufficient quantity for analysis, and (b) they represented a stratified range of reading abilities of students in the four classrooms (for each treatment, two “high” and two “average/low” reading ability students were selected as per the judgment of the classroom teachers).

The interviews were conducted by the first author and three graduate students in education who had been trained in the interview procedures. The story No Roses for Harry (Zion, 1958) was used for the interview, and the researchers engaged in the same reading/listening procedure that was used for the other instruction and assessment stories. A small (8½ x 11 in.) colored illustration from the story that included the title was displayed for the students during the interview.

The interviewers worked from a prepared script that included general interview guidelines, physical set-up directions, introductory statements to be read to the students, specific interview questions to ask, and follow-up probes and “rules” for using them. Interview protocols were audio recorded. There were three parts to the interviews:

1. Oral retelling: After engaging in the reading/listening of No Roses for Harry,
the students were asked to retell the story in the correct sequence, using the author's original words if at all possible. Nonintrusive probes (e.g., "Can you think of anything else?") were used to elicit additional information.

2. Story map follow-up questions: Next the students were asked 10 questions about the story map components. These questions assessed students' ability to (a) identify story characters, (b) identify the main character and provide a rationale for selecting that character, (c) provide setting and time information, (d) identify and elaborate on the main character's problem and solution, and (e) describe important events in the story.

3. General narrative comprehension questions: The final set of five questions probed students' knowledge of (a) story reading strategies (e.g., "Can you explain what you do when you read stories?"), (b) story parts (e.g., "Do you look for any parts of stories when you read?"), and (c) story writing strategies (e.g., "What do you do when you write stories?").

Scoring and Data Analyses

*Whole-sample measures.* The Pretest, PT2, and the DPT were scored by awarding one point per question when students selected the response that corresponded to a central story element. The maximum possible score for each of these measures was 10.

PT1 was scored by assigning weighted values (0 points to 4 points) for various text portions the students checked, depending upon how closely they corresponded to story map components. The PT1 scoring key was generated by having three faculty in literacy education rate the 41 ideas in *Fish Story* on a 5-point scale relative to how congruent each was with a central story idea. Then the raters' responses were averaged, and each of the 41 units was assigned a score from high in story centrality (4) to low (0). The raters for PT1 were quite consistent in their ranking, with most rankings ranging within 1 point of one another (e.g., the ratings for the first section of "Fish Story," which received an overall ranking of 4, were 4, 3, and 4 by the raters). The parenthetic numerals in the test excerpt in the preceding "Posttest 1" section indicate the weighted values for those text units. The maximum attainable score for PT1 was 30.

For PT3, students were awarded 1 point if they selected the correct summary statement and 0 points if they chose one of the distractors (maximum possible score for PT3=1). For PT4, students received 1 point each for selecting the most important statement from each set of statements (maximum possible score for PT4=7).

A multiple analysis of covariance (MANCOVA) was conducted for PT1, PT2, PT4, and the DPT using Pretest scores as covariates. Planned contrasts were established as potential follow-up procedures to a significant MANCOVA. Specifically, four contrasts within a univariate analysis of covariance model (Pretest score as covariate) were specified:
1. Effect of instruction: any type of intervention versus the instructed control (SM1 + SM2 + DRTA vs. 3 × Control).
2. Effect of mapping instruction: any story map instruction versus the instructed control (SM1 + SM2 vs. 2 × Control).
3. DRTA effectiveness: any story map instruction versus DRTA instruction (SM1 + SM2 vs. 2 × DRTA).
4. Relative story mapping effectiveness: a comparison of the two story map groups (SM1 vs. SM2).

PT3 was excluded from the MANCOVA because it produced dichotomous data (correct or incorrect responses). Thus, PT3 was analyzed separately using a Chi-Square test.

**Student interviews.** The 16 audio-recorded student interviews were transcribed and then analyzed. The experimenters were blind to students' group membership during protocol analyses.

The oral retelling portion of the interview was scored by comparing the transcribed protocol for each student to a story template (Baumann, 1988, pp. 222–228). The template consisted of the story divided into idea units (independent clauses), each of which was then identified as being high, middle, or low in importance (Clark, 1982). According to this procedure, *No Roses for Harry* consisted of 73 idea units (28 high ideas, 19 middle ideas, 26 low ideas). Each transcribed protocol was then analyzed, and idea units found in the protocol were marked on the template. This analysis produced for each student scores for total number of ideas recalled as well as total scores for high-, middle-, and low-level ideas recalled. The two researchers independently analyzed four protocols and achieved an interscorer agreement of 95%. Disagreements in scoring were resolved in conference.

A protocol analysis sheet was created for recording and scoring students' responses to the story map follow-up questions. Using this sheet, responses were tabulated for each interviewee for the presence of character, setting, problem/solution, and major events in the protocol. The two researchers independently analyzed four protocols using this analysis sheet, agreeing in their analyses 91% of the time and resolving disagreements in conference. Another simple protocol analysis sheet was used to consolidate each student's responses to the general narrative comprehension questions, which probed students about their use of story reading strategies, knowledge of story parts, and presence of story-writing strategies.

**RESULTS AND DISCUSSION**

Results for the whole-sample quantitative dependent measures are presented and discussed first. Next, the interview data are described and discussed.
Whole-Sample Measures

PT1, PT2, PT4, and DPT: MANCOVA and planned contrasts. Table 2 presents mean observed scores, standard deviations for mean observed scores, and mean adjusted scores for PT1, PT2, PT4, and DPT by treatment group. The MANCOVA for these four dependent measures was significant according to Wilks’ lambda, $F(12, 175)=5.32$, $p<.001$, indicating the presence of overall group differences among dependent measures.

Planned contrast results are presented in Table 3. Results of these contrasts are summarized as follows:

Effect of instruction: This contrast was significant at the criterion level of .05

Table 2

Mean Scores, Standard Deviations, and Adjusted Means for PT1, PT2, PT4, and the DPT by Treatment

<table>
<thead>
<tr>
<th></th>
<th>Story Mapping 1</th>
<th>Story Mapping 2</th>
<th>DRTA</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M*</td>
<td>SD*</td>
<td>M*</td>
<td>SD*</td>
</tr>
<tr>
<td>Posttest 1\textsuperscript{d}</td>
<td>17.765</td>
<td>3.192</td>
<td>17.717</td>
<td>2.778</td>
</tr>
<tr>
<td>Posttest 2\textsuperscript{e}</td>
<td>8.000</td>
<td>1.871</td>
<td>7.600</td>
<td>1.465</td>
</tr>
<tr>
<td>Posttest 4\textsuperscript{f}</td>
<td>4.941</td>
<td>1.298</td>
<td>5.100</td>
<td>1.119</td>
</tr>
<tr>
<td>Delayed posttest\textsuperscript{g}</td>
<td>8.765</td>
<td>1.300</td>
<td>8.100</td>
<td>1.651</td>
</tr>
</tbody>
</table>

Note. Subjects per treatment: SM1=17; SM2=20; DRTA=19; Control=18.

\textsuperscript{a}Unadjusted means. \textsuperscript{b}Standard deviations for unadjusted means. \textsuperscript{c}Adjusted means. \textsuperscript{d}Maximum possible score=30. \textsuperscript{e}Maximum possible score=10. \textsuperscript{f}Maximum possible score=7. \textsuperscript{g}Maximum possible score=10.
Table 3

Probability Values for the Four Planned Contrasts by Posttest

<table>
<thead>
<tr>
<th>Contrast</th>
<th>Probability Value</th>
<th>Probability Value</th>
<th>Probability Value</th>
<th>Probability Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect of instruction</td>
<td>.001</td>
<td>.074</td>
<td>.001</td>
<td>.001</td>
</tr>
<tr>
<td>(SM1 + SM2 + DRTA vs. 3 x Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect of mapping instruction</td>
<td>.001</td>
<td>.008</td>
<td>.001</td>
<td>.001</td>
</tr>
<tr>
<td>(SM1 + SM2 vs. 2 x Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRTA effectiveness</td>
<td>.001</td>
<td>.002</td>
<td>.159</td>
<td>.163</td>
</tr>
<tr>
<td>(SM1 + SM2 vs. 2 x DRTA)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative story mapping effectiveness</td>
<td>.361</td>
<td>.825</td>
<td>.557</td>
<td>.407</td>
</tr>
<tr>
<td>(SM1 vs. SM2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes. Degrees of freedom for all contrasts are 3 and 69. Probability values in bold print indicate significance at or beyond the criterion level of .05.

or less for all MANCOVA posttests with the exception of PT2, although results for it (p<.074) approximated the criterion level. These tests suggest that some form of interactive intervention—be it story mapping or DRTA—was more effective, immediately and after a short delay, than the Control-group DRA for enhancing students’ comprehension of central story elements.

Effect of mapping instruction: This contrast was significant at the .05 criterion level or less for all four MANCOVA posttests, indicating that instruction specifically in story mapping promoted students’ narrative comprehension, immediately and in a delayed fashion, when compared to students who read the same selections according to a DRA.

DRTA effectiveness: This contrast was significant for PT1 and PT2 but failed to attain statistical significance for PT4 (p<.159) and DPT (p<.163). Thus, there is some indication that story mapping may be more effective than DRTA instruction in promoting young children’s comprehension of important story elements, although these findings are not conclusive.

Relative story mapping effectiveness: This contrast failed to attain statistical significance for any of the four MANCOVA posttests, indicating no difference in narrative comprehension performance between the two story mapping groups.

Results of the first two contrasts suggest that instruction in story mapping promotes students’ comprehension of central story elements. These findings are consistent with a number of extant studies of story mapping instruction (Ballard, 1988; Buss et al., 1985; Carnine et al., 1985; Dimino et al., 1990; Fitzgerald & Spiegel, 1983b; Gordon & Braun, 1982; Greenewald & Rossing, 1986; Hartman,
1986; Idol, 1987; Reutzel, 1985; Short & Ryan, 1984). Further, our data extend the literature by demonstrating that young children can be taught to use story mapping to enhance their recognition and recall of narrative elements in unfamiliar stories, and that such instruction is effective when the stories are unadapted, unabridged selections from children's literature.

Results of the third contrast suggest an equivocal response to the question of DRTA effectiveness relative to story mapping. Although students in the story mapping classrooms outperformed students in the DRTA classroom on ability to mark hierarchically important story ideas (PT1) and respond to questions about central story elements (PT2), there were no significant group differences on the task that had them select important story ideas (PT4) and on a delayed measure of story comprehension (DPT). These findings might be partially explained by the apparent power predicting and verifying—the central strategies in DRTA—have on story comprehension, since several studies have demonstrated that heavy doses of prediction promote students’ comprehension of narratives (e.g., Anderson et al., 1987; Baumann et al., 1992; Fielding, Anderson, & Pearson, 1990; Hansen, 1981; Hansen & Pearson, 1983; Schmitt, 1988).

Results of the fourth contrast reveal that the two forms of story mapping instruction did not produce differential effects. These findings, on the surface, seem to contradict the enhancing effect of story mapping as a writing heuristic as reported by Fitzgerald and Teasley (1986) and Gambrell and Chasen (1991). However, they are not surprising given the reduction of SM2 lessons on writing from the five that were planned to the two that were actually implemented, due to the principal's request to truncate the study to accommodate standardized testing. Logic suggests that two lessons are insufficient to help first-grade children learn how to use mapping when writing stories as a means to aid their story comprehension.

PT3: Summary selection task. The percentages of students, by treatment group, who selected the PT3 summary statement that included the story map components are as follows: SM1=58.8%, SM2=50.0%, DRTA=31.6%, Control=44.4%. Although these percentages indicate that the story map group students selected the correct summary more often than DRTA and Control students, a Chi-Squared test of homogeneity of proportions did not attain statistical significance, $\chi^2(3)=2.863, p>.05$. Thus, this measure does not provide support for the efficacy of the story mapping instruction. Interestingly, Ballard (1988) also reported no significant differences on a summary task following instruction in story mapping, whereas students receiving story mapping instruction outperformed comparison and control group students on a variety of other comprehension and composition measures. One possible explanation for the apparent insensitivity of summary tasks to story mapping instruction can be drawn from Baker and Stein's (1981) observation that young children's ability to identify main story points is below their level of awareness. Consequently, they have difficulty selecting central story ideas, such as summary statements, but focus instead on actions or salient details.
Table 4

Oral Retelling Portion of the Student Interviews

<table>
<thead>
<tr>
<th></th>
<th>SM1</th>
<th>SM2</th>
<th>DRTA</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean total ideas recalled(^a)</td>
<td>17.5</td>
<td>20.0</td>
<td>14.5</td>
<td>8.5</td>
</tr>
<tr>
<td>Mean percentage total recall(^a)</td>
<td>23.9%</td>
<td>27.4%</td>
<td>19.9%</td>
<td>11.6%</td>
</tr>
<tr>
<td>Mean Level 1 ideas recalled(^b)</td>
<td>10.3</td>
<td>12.2</td>
<td>10.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Mean percentage Level 1 recall(^b)</td>
<td>36.6%</td>
<td>43.8%</td>
<td>35.7%</td>
<td>21.4%</td>
</tr>
</tbody>
</table>

Note. Four students per treatment; all means are per-subject.

\(^a\)73 total idea units in story. \(^b\)28 Level 1 idea units in story.

Student interviews

Oral retelling. Table 4 summarizes selected numerical analyses of the oral retelling protocols. Although story recall was generally low (21% recall across all groups), students in the SM1 and SM2 groups recalled more information (24% and 27% recall respectively) than students in the DRTA (20%) or Control (12%) groups. However, when looking only at recall of the more important information in *No Roses for Harry* (Zion, 1958), the Level 1 ideas, results revealed that the first graders recalled more central story content overall (34% recall of Level 1 ideas across all groups) when compared to their recall of middle- and low-level ideas. Further, story mapping students demonstrated the greatest recall of Level 1 ideas (SM1=37%, SM2=44%) when compared to DRTA (36% recall) and Control-group students (21% recall).

In addition to their added length and inclusion of more important story elements, the SM1 and SM2 oral retellings were generally coherent and sequentially consistent. For example, consider the retelling of *No Roses for Harry* by Josh, a SM2 group first grader (all names are pseudonyms):

Interviewer: All right, now what I’d like you to do is to tell the story back to me. Try to use the words from the story if you can. Also, try to say things in the same order that they happened in the story.

Josh: Harry got a sweater from his Grandma. And when he tried it on, he didn’t like it cause it had red like flowers on it and the kids would laugh at him and the dogs would bark. And when he went in the pet store, he tried to lose it, but a man found it and gave it back. And when he went into the grocery store, somebody found it and gave it back to him. And he went into a flower store, and a kid found it and gave it back to him. When he went outside, the dogs wanted to play with him, but Harry didn’t feel like playing, so the dogs left him alone. But when he was outside, he started pulling this wool and it came out. And the bird came down and took the...
piece of fur and took it all off. And it happened as quick as a wink. And Grandma came over, and they thought Grandma was going to come over because she called. And they went for a walk, and they saw that sweater was all locked up in the bird’s nest. And after that at Christmas, she gave him a new sweater with black spots on it.

In contrast, Control and DRTA group students’ retellings were less complete and well formed, as evidenced by the retelling produced by Jim, a Control-group student:

Interviewer: All right, now what I’d like you to do is to tell the story back to me. Try to use the words from the story if you can. Also, try to say things in the same order that they happened in the story.

Jim: [no response]

Interviewer: Okay. Tell me the story. Pretend you’re telling it to me. What happened first?

Jim: [I] forgot it.

Interviewer: What’s the first thing you remember about the story?

Jim: I just remember the end.

Interviewer: Okay. Tell me what happened at the end.

Jim: Grandma came for Christmas, and he got a Christmas present from Grandma. And it was a sweater with black spots like him.

Interviewer: Okay. Anything else you can remember about the story No Roses for Harry?

Jim: He gave the sweater to the bird. The bird just pulled on the string and unraveled it.

Interviewer: Anything else about the story you can remember?

Jim: No.

Story map follow-up questions. Table 5 summarizes the results of the follow-up questions. Although these data provide some suggestion of the effectiveness of the story mapping instruction compared to DRTA or Control groups (e.g., SM1 and SM2 students were more likely to correctly identify the main character and provide a plausible rationale for doing so), there is no clear trend favoring one group over another from these results.

General narrative comprehension questions. Students responded to the interview-concluding general questions in ways consistent with their group membership. For example, when asked to explain what he did when he read stories, Kevin, a DRTA-group student, responded, “You ask questions and then you answer them.” Similarly, Cassie, another DRTA student, responded to the same question with, “You think of . . . like the answers.”

SM1 and SM2-group students often reported that they looked for important information in stories, as typified by SM1-group student Nick’s comment about what he did while reading stories: “Well, you kind of keep all the real important things in your mind and the whos and the whens and stuff.” Nick elaborated further when asked about parts of stories:
Table 5

**Story Map Follow-Up Questions Portion of the Student Interviews**

<table>
<thead>
<tr>
<th></th>
<th>SM1</th>
<th>SM2</th>
<th>DRTA</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characters identified (out of 4)*</td>
<td>3.25</td>
<td>3.25</td>
<td>3.50</td>
<td>3.25</td>
</tr>
<tr>
<td>Main character identified (Harry)*</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Rationale for selecting main char.*</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Settings identified (out of 3)*</td>
<td>2.75</td>
<td>1.75</td>
<td>1.75</td>
<td>1.75</td>
</tr>
<tr>
<td>Time identified*</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Problem identified*</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Solution identified*</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Main events identified (out of 8)*</td>
<td>4.0</td>
<td>1.25</td>
<td>2.5</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**Note.** Four students interviewed per treatment.

*Mean scores across four students. *Questions scored correct (1) or incorrect (0); values represent total correct across four subjects (possible score range is 0–4).

---

Interviewer: Do you look for any parts of stories when you read?

Nick: Yeah. If there's like one part of the story's real important, the other isn't, one part that's important. If you were going to throw part of it away, you would throw away the part that's not important.

Interviewer: Okay. That's a good idea. What would be the parts that you'd keep?

Nick: The whos, the whens, the wheres, what happened.

Interviewer: Any other parts that are important that you'd keep?

Nick: Problem and solution.

Control students either failed to respond to questions about story reading strategies or story parts, or they did so in ways unrelated to narrative structure, as did David, Joan, and Brooke:

Interviewer: Is there anything else you do to help you understand or remember stories better?

David: Put a bookmark thing when you leave where you're going.

Interviewer: Do you look for any parts of stories when you read?

Joan: Yes.

Interviewer: What parts do you look for?

Joan: In this one book, I looked for when the cat was in the tree and a bird that pecked his head and it hurt real bad.

Interviewer: Can you explain what you do when you read stories?

Brooke: You have to look at the word and try to sound it out.

Interviewer: Can you tell me any more about what you do when you read stories?

Brooke: You have to think what the word is.

When asked about strategies used for writing stories, students responded in
various ways, most of which were unrelated to story structure. For example, Geoff, a DRTA-group student thought that he would "Maybe draw a picture with it [the story]." When asked about a story-writing strategy, Brooke, a Control-group student, responded that she would try "copying out of a book." When asked about what he’d do to get ready to write a story, Josh, a SM2-group student responded, "Well, I can think about the title first and think about it and write it."

Only one of the 16 students noted the use of story map components as a strategy for writing stories. Interestingly, this was not a SM2 student, as might be expected since this group had several lessons on the use of story mapping as a writing heuristic. Rather, it was Nick, a SM1 student:

Interviewer: Do you ever write stories?
Nick: No, not really.
Interviewer: Well, let’s pretend that you’re going to write a story. Is there anything that you could do to help you write a story better?
Nick: Before you write it down—just think about it.
Interviewer: Okay. That’s a good idea. What would you be thinking about before you wrote it down?
Nick: You’d think about what the animal or person is going to do.
Interviewer: Okay. What else would you be thinking about?
Nick: Like who’s going to be in the story, and if it’s going to have a problem or not.

In summary, results from the student interviews generally were consistent with the whole-sample quantitative data. First, the interview data indicate that children in the story mapping groups provided longer retellings that included more central story ideas. Further, the retellings from story group students were generally more coherent and sequentially consistent than those of DRTA and Control group students. Finally, as for the whole-sample quantitative data, the interview results did not reveal noticeable differences between the two story mapping groups.

CONCLUSION

Results of this study affirm the findings of prior research on story mapping, namely, that teaching students about story parts enables them to recognize and recall important elements in narrative selections (Ballard, 1988; Buss et al., 1985; Carnine et al., 1985; Dimino et al., 1990; Fitzgerald & Spiegel, 1983b; Gordon & Braun, 1982; Greenewald & Rossing, 1986; Hartman, 1986; Idol, 1987; Reutzel, 1985; Short & Ryan, 1984). More importantly, beyond the replication aspects of this study, the present findings extend the research literature along two dimensions.

First, the results demonstrate that young children can be taught to employ a simplified story mapping heuristic as a means to enhance comprehension of important narrative elements in unfamiliar stories. Prior studies exploring the effects of story structure instruction have not involved children below Grade 3, and most
studies involved students in the upper elementary grades and beyond. This study
demonstrates that young children, who possess less sophisticated story schemata
than their older peers, benefit from formalized instruction in story structure through
the vehicle of story mapping.

Second, this study demonstrates that teaching students about story structure is
effective when the texts used for instruction are unabridged and unadapted. Prior
story structure instructional research typically involved shortened, specially writ-
ten, or contrived narratives. Hence, the external validity of much of this research
was limited. This study demonstrates that the story mapping heuristic is both ap-
pllicable and effective when intact, popular children's stories are used for instruc-
tion.

Thus, the implications for instruction from this experiment are clear: Story
mapping is a useful, effective technique primary-grade teachers can add to their
repertoire of comprehension instructional strategies. Further, story mapping in-
struction can be employed using the children's literature that is readily available in
classrooms and school libraries.

The conclusions and pedagogical implications must be considered along with
several limitations of this study. The study involved primarily Anglo-American,
first-grade children in a rural, agricultural community, so results may not general-
ize to other locations and student populations. Additionally, in spite of the demon-
strated preexperimental comparability of the students across the four classrooms
used in the study and the application of statistical covariance, the use of intact
classes limits the interpretation of the findings. Also, since the instruction was
provided by one of the experimenters, it remains to be determined if classroom
teachers can employ the story mapping instruction.

Another limitation involved the instructional materials. Though the use of
intact, unabridged popular literature selections enhanced the external validity of
the study, it may have simultaneously diminished the internal validity, since stu-
dents' familiarity (or lack of) with the stories was considered a random variable.
Therefore, had more students in one group been familiar with the stories, they may
have already internalized a text structure and provided those children an advan-
tage during the intervention or assessment phases of the study.

Finally, the measures used to evaluate the impact of story mapping instruction
limit the generalizability of the study. Although the student interviews involved an
oral retelling and more open-ended questions about story processing, the primary,
whole-sample dependent measures were product-oriented: selecting important story
parts, responding to multiple-choice questions about central story elements, and
choosing the most appropriate summary selection. Thus, the impact of the story
mapping instruction is essentially limited to students' ability to recognize or iden-
tify central story elements. Future research is needed to determine the degree to
which the mapping instruction might influence more generic or generative aspects
of story comprehension.
This study presents several additional questions that remain to be answered by future research. What is the relative effectiveness of the DRTA versus story mapping instruction for promoting narrative comprehension? Can this study be replicated when lessons are provided by classroom teachers? And what effect does more prolonged instruction in writing from a story map heuristic have on both students' narrative comprehension and production? Additional experiments will need to be conducted to address these questions.

In conclusion, this study adds to the accumulating evidence that teachers can provide students instruction in story mapping to promote their comprehension of narrative discourse. As Gordon (1989) has noted, however, story structure instructional techniques are not pedagogical ends themselves, but rather means to provide children frameworks for comprehending narratives. This caveat should be kept in mind by those who recommend or employ story structure instructional activities. However, when strategies like story mapping are viewed as vehicles to facilitate comprehension and are incorporated into a language arts curriculum that includes daily self-selected reading, ample opportunities for oral expression, regular written composition activities, and teachers reading aloud and modeling literacy abilities, children may receive the best of both worlds—skillful, judicious instruction within a literacy-rich environment.

REFERENCES


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AUTHOR NOTE

The preparation of this manuscript was supported in part by the National Reading Research Center of the University of Georgia and the University of Maryland, which is within the Educational Research and Development Centers Program (PR/ AWARD NO. 117A20007) as administered by the Office of Educational Research and Improvement, U.S. Department of Education. The findings and opinions expressed here do not necessarily reflect the position or policies of the National Reading Research Center, the Office of Educational Research and Improvement, or the U.S. Department of Education.

We wish to thank most sincerely the children and faculty of Battle Ground Elementary School in Battle Ground, Indiana, for allowing us to conduct this research at their school and in their classrooms. Specifically, we thank first-grade teachers Lynn Branson, Kay Howell, Nancy Skelton, and Geri Wachs and the principal, Ted Hunt. We also thank Diane Gunstra, Nancy Seifert-Kessell, and Roger Stewart for helping us gather the interview data. Finally, we thank Deborah Dillon, Carol Hopkins, and David O'Brien for serving as raters.

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Manuscript submitted: February 15, 1993
Revision requested: April 23, 1993
Revision received: June 28, 1993
Accepted for publication: July 17, 1993