Using Graphic Organizers to Facilitate Elementary Students’ Comprehension of Informational Text

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Abstract

Students in second, fourth and fifth-grade classrooms in a South Texas elementary school served as both the experimental group and the control group to compare the traditional read-and-discuss method of instruction with reading instruction that included the use of various graphic organizers to aid in comprehension. First, the students in the control groups received the traditional read-and-discuss instruction while reading an informational children’s picture book. Next, the same group of students became the experimental groups, as they received reading instruction using an informational children’s picture book that included the use of graphic organizers. Prior to both reading sessions, a pretest was administered to the students, and after both methods of instruction, a posttest was given. The pretest scores of the students in both the control groups and the experimental groups were not significantly different. However, the posttest scores of the students who received reading comprehension instruction which included the use of graphic organizers were statistically significantly higher than the posttest scores of the students who received the traditional read-and-discuss comprehension instruction.

Teaching children how to learn from informational text is an important component of the school curriculum, starting in the upper elementary grades. As students advance through the grades, they spend a great deal of their academic time reading and learning from expository text. So, it is believed that if learning from informational text became an integral part of the lower elementary school reading program, it may help to provide the foun-
dation that students need to become successful with learning content area subjects when they reach the upper elementary grades. Since nonfiction text can prove challenging for many students, teaching methods need to be explored that help our children understand content area textbooks and the vast array of informational children's books available for students to read. One such method, graphic organizers, offers much promise for improving students' reading comprehension.

**Study Purpose and Research Question**

The purpose of this study was to examine the effect of utilizing graphic organizers on second, fourth, and fifth-grade students' comprehension. This study adds to the body of knowledge on the use of graphic organizers at various grade levels to help students with their comprehension. The study was designed to answer the following question regarding the use of graphic organizers: Does the use of graphic organizers with shared reading of informational text in second, fourth and fifth grade result in greater reading comprehension than traditional read-and-discuss instruction without the use of graphic organizers?

**The Role of Informational Text in the Elementary Grades**

Experts in literacy emphasize the need to develop proficiency in comprehending not only narrative text but also expository text (Snow, Burns, & Griffin, 1998). Reading informational text has many benefits for elementary-age students. First, nonfictional text provides a meaningful framework for students to learn word identification skills. Second, children gain powerful knowledge about the world around them (Duke & Kays, 1998). Third, children gain knowledge of new vocabulary words in context (Dreher, 2003).

Comprehension, which is necessary to successfully advance in school, is also positively impacted by reading informational texts that spark the student's curiosity. A study done by Smolkin and Donovan (2001) found that reading informational texts about science concepts not only helped students build their comprehension skills, but provided motivation to help the students learn. Young children are naturally curious about the world around them and have many questions. These questions provide a strong purpose and motivation to read (Dreher, 2003; Norton, 2007).

Despite the importance of reading informational text in elementary school, researchers have found that the vast majority of reading materials in first grade are narrative text or stories (Duke, 2000; Palmer, & Stewart, 2003). Doiron's (2003) study showed that children were choosing twice as many informational books as fictional books from their school library, but access to informational books was limited in their classroom libraries. Neuman (2001) suggested that one reason fiction is preferred in primary classrooms is that early
childhood programs often emphasize process to the exclusion of content. In other words, the belief that children need to be taught how to read before they can read to learn may still be prevalent (Duke & Tower, 2004). Also, Palmer and Stewart (2003) found that what hindered some teachers from including nonfiction in their classroom instruction was lack of knowledge of what is available and lack of access to quality nonfiction books.

The Challenges of Comprehending Informational Text

Expository text can prove challenging to comprehend for many students. (Griffin & Tulbert, 1995; Neuman, 2001). Thus, it is important for every teacher to understand the challenges that reading informational text presents so they can help their students meet the variety of challenges understand the informational text being read.

First, expository text includes a textual, or organizational structure very different from that of the narrative text structure that students in the early grades are taught. Informational books can be organized in a variety of patterns. Five of the most common organizational patterns that are used in informational books are (a) description, (b) sequence, (c) comparison, (d) cause and effect, and (e) problem and solution (Goldman & Rakestraw, 2000).

Second, vocabulary knowledge is critically important in comprehending expository text. Herber and Herber (1993), express the belief of many educators when they state:

Students are often outsiders because they have limited schemas about topics and words that make up content subjects, thereby affecting their ability to read, understand, and communicate about the subject itself... One of the most important instructional goals for any content teacher is to take students who are by and large outsiders, in terms of vocabulary and concept knowledge, and make them insiders. (p. 5)

Expository materials, even those written for young children, often contain a high density of specialized vocabulary, making them difficult for readers to grasp.

Third, possessing and activating background knowledge, although important to comprehending all text, is especially essential when reading expository text. The ability to understand the author's intended message is greatly restricted when a student does not have adequate prior knowledge or does not have the means to activate prior knowledge while reading (Alao & Guthrie, 1999) in order to build connections between the old information and the new information (Searfoss & Readence, 1994). In order to comprehend, this background knowledge must be activated, so it can provide a framework for new learning to occur.

Therefore, teachers must implement comprehension strategies for infor-
mational text that correlate to each expository text structure, enhance vocabulary knowledge, and build and activate prior knowledge. One such strategy is the graphic organizers.

**Graphic Organizer Research**

Graphic organizers, also known as cognitive maps, semantic webs, and concept maps, highlight main ideas and represent relationships among key concepts. Properly constructed, they make visually explicit the organizational patterns of text. Of the numerous types of graphic organizers, four are the most common: hierarchical, conceptual, sequential, and cyclical. The content and organization of the material being read determines the type of graphic organizer the reader uses.

Hierarchical graphic organizers present a main concept or idea and supporting details in ranking order. Hierarchical graphic organizers are familiar to many in the form of family trees. They can be used to explore a subject that has several ranks or levels, such as the branches of the U.S. government. Sequential graphic organizers illustrate a series of events or steps in chronological order. A timeline of the major events of the Civil War would be an example of this type of organizer. In addition, sequential graphic organizers are often used for outlining a story plot. Figure 1 shows the organizational pattern of each of these graphic organizer types.

This study also used conceptual and cyclical graphic organizers (See Figure 1). Conceptual graphic organizers display a main concept and supporting facts or characteristics in such a way that relationships are evident. In this study, a conceptual graphic organizer was used to organize informa-

**Figure 1: Types of Graphic Organizers**

<table>
<thead>
<tr>
<th>Hierarchical</th>
<th>Conceptual</th>
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</thead>
<tbody>
<tr>
<td><img src="image" alt="" /></td>
<td><img src="image" alt="" /></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Sequential</th>
<th>Cyclical</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="" /></td>
<td><img src="image" alt="" /></td>
</tr>
</tbody>
</table>
tion about the Cherokee (see Figure 2). A map with the main concept, Cherokee, branched out with related concepts (appearance, food, celebrations, etc.). Another example of a conceptual graphic organizer is a Venn diagram, used to compare and contrast concepts. Cyclical graphic organizers depict information that is circular or cyclical and has no beginning or end. This kind of organizer is useful for showing cycles, such as the life cycle of the penguin in this study (See Figure 3).

Studies have shown that graphic organizers can help students to understand how content ideas and concepts are organized and related. The Report of the National Reading Panel (2000) analyzed 203 studies on instruction of text comprehension. The research reviewers felt that eight instructional strategies “offered a firm scientific basis for concluding they improve comprehension” (pp. 4-5). One of the eight strategies listed by the Panel as beneficial in improving comprehension was the use of various organizers, “Graphic and semantic organizers allow the reader to represent graphically (write or draw) the meanings and relationships of the ideas that underlie the words in the text” (pp. 4-6).

Although a number of research studies have investigated the use of
Three studies were found that compared instruction that included the use of graphic organizers with instruction that did not include graphic organizers. First, Prater and Terry (1988) examined the effect of key concept mapping strategies on the reading comprehension and writing performance of fifth graders using basal reader selections. Graphic organizers were found to positively affect the comprehension of the reading selections that were factual or informative in nature. Another study conducted by Armbruster, Anderson and Meyer (1991) compared two instructional approaches during a social studies lesson. It was found that the instruction using a graphic organizer was a more effective instructional technique than the instruction that was suggested in the teacher's edition of the textbook. Also, adding to the research on graphic organizers, Wachter (1993) investigated the effectiveness of studying a semantic map on delayed recall. This study had an experimental group of fourth-grade students study a semantic map before reading a text passage. The comparison group read the text passage without the benefit of the seman-
tic map. The experimental group outperformed the comparison group in assessments of comprehension and retention of the expository prose.

Several previous studies investigated how best to implement graphic organizers and to determine if the use of graphic organizers made instruction more effective. Wanting to determine if graphic organizers were more effective if completed in cooperative groups, Seaman (1990) conducted a study with fifth graders in which she set up three groups: (a) a cooperative concept mapping group, (b) a standard concept mapping group, and (c) a control group. Seaman found that fifth graders in both concept-mapping groups received higher scores on weekly vocabulary tests and on a final unit test than the control group which received general classroom instruction without the use of mapping. Also, Chang, Chen, and Sung (2002) conducted graphic organizer research with fifth graders in Taipei, Taiwan. These researchers designed three concept-mapping approaches: (a) map correction, (b) scaffold fading, and (c) map generation. The experimental results showed that text comprehension and summarization abilities were enhanced when students completed map-correction activities. The map-correction method consisted of students correcting a concept map in which 40% of the map contained incorrect information according to the text content. In addition, the summarization ability of these fifth graders was enhanced when a scaffold-fading method was used. The scaffold-fading method consisted of assisting learners in constructing concept maps until they were able to complete a concept map independently. In both cases, the experimental group scored statistically higher on comprehension assessments when compared to the control group which read the text provided without constructing a concept map.

Appendix 1 presents a summary of the research studies found over the past 20 years that examined graphic organizer use at the elementary grade level.

Methodology
Setting and Participants
The location of this study was a parochial school located in a small South Texas town (population approximately 25,000). One hundred fifty-five students in grades prekindergarten through fifth grade attend this school. All classrooms were self-contained. The curriculum at this elementary school was aligned with Texas curriculum standards, the Texas Essential Knowledge and Skills (TEKS), which designated the instructional objectives for each grade and subject. The school had approximately 50% diversity (African American, Asian, and Hispanic) with Hispanic students making up the largest minority group.
Thirty-five elementary students attending this school served as participants for this study. The second-grade class consisted of 10 students (6 boys and four girls). Of the 10 students, the ethnic background included six Whites, three Hispanics, and one African American. The fourth-grade class had 11 students (seven girls and four boys). The ethnic background of these 11 students included five Whites, four Hispanics, one African American, and one Asian American. Fourteen students made up the fifth-grade class (five girls and nine boys). The ethnic background of this class included eight Whites, five Hispanics, and one Asian American. The 19 boys and 16 girls that participated in this study came from lower-middle class families.

The three female teachers who volunteered to participate in the study each had more than 10 years of experience teaching elementary school students. An informal discussion with teachers before training began determined that the teachers had some knowledge of graphic organizers but were not using them in their classrooms.

**Training**

The three teachers who volunteered to participate in this study, along with the other ten teachers employed at this elementary school, were given 16 hours of training in the use of graphic organizers. The training consisted of two 8-hour workshops.

During the first workshop, teachers reviewed the available literature and research on the importance and challenges of including informational text in the elementary classroom. Also, teachers were shown examples of graphic organizers and the research studies involving graphic organizer use with elementary students were discussed. With guidance from school administrators and university reading professors, teachers developed a plan for implementing more graphic organizer strategy use in their instruction. The training also included a discussion of attributes for effective use of graphic organizers. According to Merkley and Jefferies (2000), when using graphic organizers the teacher should do the following:

- verbalize relationships (links) among concepts expressed by the visual,
- provide opportunity for student input,
- connect new information to past learning,
- make reference to the upcoming text, and
- seize opportunities to reinforce decoding and structural analysis (p. 354)

Day 2 of the training showed teachers how to take lessons to higher levels of thinking by guiding students to organize graphically new concepts being learned from reading nonfiction. Teachers focused on ways to process the concepts of nonfiction texts at various levels of depth and complex-
ity by using specific types of graphic organizers in daily classroom lessons. Specifically, teachers explored when each of the following types of graphic organizers was most appropriate: hierarchical, conceptual, sequential, and cyclical. Teachers constructed graphic organizers and teaching guides using the children's literature they were currently using in their classroom, selections from the basal reader, and content area textbooks. Teachers also constructed sample graphic organizers and teaching guides using the children's books that were to be used in this study. The workshop presenter reviewed the materials that teachers created to ensure learning and to provide feedback. Some of the criteria used to evaluate the appropriateness of the teacher constructed graphic organizers and teaching strategy guides included:

- Macrostructure of text is presented using a graphic organizer
- Graphic organizers do not contain too much detail as to result in cognitive overload
- Adequate scaffolding during graphic organizer activity is provided
- Graphic organizer activity provides for maximum student participation (partially complete graphic organizers)
- Structure of graphic organizer is appropriate for structure of text
- Graphic organizer is creative, consistent, and coherent.

Teachers made improvements to graphic organizers based on feedback from presenter. Teachers were also given additional assistance with implementing the graphic organizer strategy during the course of this study.

Measure

Six criterion-reference tests were developed by the researcher of this study based on the content and vocabulary of each children's book chosen for this study. Two university reading faculty and the three elementary teachers participating in this study evaluated each test to determine if it assessed the major concepts presented in each of the children's books and to ensure that the difficulty of each test used to assess the comprehension of both the control group and the experimental group were similar. For example, in second grade the experimental group test included the following question: "In the winter, the Cherokee lived in a kind of house called a __." The control group was asked to answer the following question: "The Sioux lived in a kind of house called a __." The tests used in second grade consisted of 10 multiple-choice questions. The fourth and fifth-grade tests contained 20 multiple-choice items each. The dependent variable in this study was the comprehension ability of students determined by researcher-constructed comprehension tests.

Materials

The two books chosen for each grade level were very similar in readability and format. For second grade, *If You Lived With the Sioux Indians*
Navigating the Literacy Waters: Research, Praxis, and Advocacy

(McGovern, 1992) was read by students in the control group, and If You Lived With the Cherokee (Roop & Roop, 1998) was read by students in the experimental group using a graphic organizer to introduce a unit on Native Americans. Both concept dense (approximately 80 pages each) children's books presented detailed information about a selected Native American tribe utilizing a question and answer format.

Fourth-grade students participating in the control group read The Whale (Crewe, 1997). The Penguin (Crewe, 1998) was read by the fourth grade experimental group receiving shared reading comprehension instruction, which included the use of graphic organizers. The picture books, containing large and easy text, were read as part of an integrated unit on life cycles.

Fifth-grade students participating in the control group read Volcanoes (Morris, 1996). Fifth grade students participating in the experimental group read Earthquakes (Morris, 1998). These children's books (approximately 40 pages each) contained very detailed scientific information and were used to introduce a class study on the wonders of our world.

**Design of Study**

In order to address the research question, a field experiment was conducted. A pretest-posttest control-group design was used. This design is among the most commonly used experimental designs in education research. To further enhance internal validity, the same teachers and students were used for the control and the experimental groups.

The following steps were followed in using a pretest-posttest, one group design.

1. Three teachers, who volunteered to be part of this study, received 16 hours of training on the use of graphic organizers presented by the researcher.
2. Parent permission was sought from children enrolled in the classrooms of the teachers who volunteered to be part of this study.
3. A pretest was administered to each control group in second, fourth, and fifth grade.
4. Traditional comprehension instruction was delivered to the three control groups. Second and fifth grade received instruction over 3 days for a total of 3 hours and fourth grade received instruction in 1 day lasting 1 hour. All reading was conducted utilizing a shared reading format.
5. A posttest was administered to each control group.
6. A pretest was administered to each experimental group.
7. Comprehension instruction which included the use of graphic or-
organizers was delivered to the three experimental groups. Second and fifth grade received instruction over 3 days for a total of three hours and fourth grade received instruction in 1 day lasting 1 hour. All reading was conducted utilizing a shared reading format.

8. A posttest was administered to each experimental group.

The groups were treated as nearly alike as possible during both the traditional and nontraditional instruction, except for the use of graphic organizers.

Serving as the control groups, the second, fourth and fifth grade classes were given a pretest on the children's books chosen for each class. The teacher at each grade level introduced the reading by having students look at the cover and predict what the book was about. Next, the teacher and the students discussed background knowledge related to the topic of the book. The students then participated in a shared reading of the book stopping often to discuss and answer questions posed by the teacher. When the reading of each book was concluded, the teacher led the students in a retelling and further discussion. Second and fifth grade students read longer concept dense picture books over a 3 day period, breaking the reading and discussion up into three 1 hour segments. The picture book chosen for fourth grade contained a simpler shorter text and the shared reading was completed in one hour long session. Students were then given a posttest to access comprehension.

Serving as the experimental groups, the same second, fourth and fifth grade classes were given a pretest over the children's books chosen for each class. The format and readability of each book was matched as closely as possible to the books which were used with the traditional read-and-discuss instruction delivered to the control groups. The books were introduced by having the students look at the cover, predict what the book was about, and then discuss what they knew about the topic of the book. The students also began constructing a graphic organizer. The second and fifth-grade classes began to construct a conceptual map graphic organizer. The concept map was started by writing the title of the book in a circle at the center of the map and the titles of the sections of the book in smaller circles around the center circle. The nature of the book chosen for fourth grade made a cyclical graphic organizer most appropriate. Before reading, the teacher explained to students how the graphic organizer would be completed. As the teachers of each class led students on a shared reading of the book, they would stop and discuss the new concepts introduced and add the main ideas from the text to their class graphic organizer. Each student also completed a graphic organizer of their own. At the conclusion of the reading, students were asked open-ended and higher-level questions. They were also given time to study
the graphic organizer before taking the posttest. As with the control groups, the second and fifth-grade experimental groups received 3 hours of instruction and the fourth-grade experimental group completed the shared reading and graphic organizer activity in 1 hour.

Results

Table 1 presents the descriptive statistics for the pretest and posttest scores for the students in the experimental group, which utilized graphic organizers (GO) and the traditional read-and-discuss instruction groups (TI).

Table 1: Descriptive Statistics for Comprehension Scores for Graphic Organizer (GO) Experimental Groups and Traditional Instruction (TI) Control Groups

<table>
<thead>
<tr>
<th>GROUP</th>
<th>N</th>
<th>MEAN Pretest</th>
<th>STD. DEV.</th>
<th>MEAN Posttest</th>
<th>STD. DEV.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd TI</td>
<td>10</td>
<td>58.00</td>
<td>11.35</td>
<td>88.00</td>
<td>10.33</td>
</tr>
<tr>
<td>2nd GO</td>
<td>10</td>
<td>56.00</td>
<td>15.06</td>
<td>96.00</td>
<td>5.16</td>
</tr>
<tr>
<td>4th TI</td>
<td>11</td>
<td>46.36</td>
<td>17.48</td>
<td>80.91</td>
<td>11.36</td>
</tr>
<tr>
<td>4th GO</td>
<td>11</td>
<td>48.18</td>
<td>19.40</td>
<td>93.18</td>
<td>6.0</td>
</tr>
<tr>
<td>5th TI</td>
<td>14</td>
<td>37.50</td>
<td>8.26</td>
<td>80.36</td>
<td>5.71</td>
</tr>
<tr>
<td>5th GO</td>
<td>14</td>
<td>38.92</td>
<td>10.22</td>
<td>88.93</td>
<td>8.59</td>
</tr>
</tbody>
</table>

Table 2 reports the paired samples test results comparing mean comprehension pretest and posttest scores. Results show that the pretest scores of the experimental and control groups were very similar. Results also show that the posttest scores of students receiving comprehension instruction which included the use of graphic organizers were statistically significantly higher than the posttest scores of students receiving traditional read-and-discuss instruction ($p < .05$).

Table 2: Paired Samples Test Comparing Comprehension Scores of GO Experimental Groups and TI Control Groups

<table>
<thead>
<tr>
<th>GROUP</th>
<th>T-VALUE</th>
<th>df</th>
<th>sig. (2-tailed)</th>
<th>SIGNIFICANT ($p &lt; .05$)</th>
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</thead>
<tbody>
<tr>
<td>2nd Grade</td>
<td>802</td>
<td>9</td>
<td>.443</td>
<td>no</td>
</tr>
<tr>
<td>4th Grade</td>
<td>-.311</td>
<td>10</td>
<td>.762</td>
<td>no</td>
</tr>
<tr>
<td>5th Grade</td>
<td>-.446</td>
<td>13</td>
<td>.663</td>
<td>no</td>
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<tr>
<td>2nd Grade</td>
<td>-2.449</td>
<td>9</td>
<td>.037</td>
<td>yes</td>
</tr>
<tr>
<td>4th Grade</td>
<td>-2.865</td>
<td>10</td>
<td>.017</td>
<td>yes</td>
</tr>
<tr>
<td>5th Grade</td>
<td>-2.917</td>
<td>13</td>
<td>.012</td>
<td>yes</td>
</tr>
</tbody>
</table>
Discussion

This investigation explored the use of graphic organizers for improving comprehension of elementary students. Current research supports the use of graphic organizers; however, few studies exist that involve students in the elementary grades.

This study suggests that graphic organizers have the potential of increasing elementary grade students' comprehension of informational text. Unlike the Armbruster, Anderson and Meyer (1991) study, all grade levels examined benefited from the use of graphic organizers. Students receiving traditional read-and-discuss instruction did comprehend and gain knowledge from reading informational text. However, they did not comprehend and learn as much as when graphic organizers were included in the instruction. The posttest scores of students showed that students gained more knowledge and vocabulary when the information they were acquiring through reading was organized visually on a conceptual map (See Figure 1) or, as in the case of the fourth grade, a cyclical map (See Figure 2). The content and organization of the book led teachers to choose the type of graphic organizer that was most appropriate.

The students who benefited the most from the graphic organizer used in this study were students who scored the lowest on preassessments. Students in the control groups who scored less than 50% on the pretests gained an average of 44% on posttests given after instruction. In contrast, students in the experimental groups who scored less than 50% on the pretests gained an average of 53% after instruction. This shows that graphic organizers may be especially useful in helping students who lack background knowledge. This would support Alao and Guthrie's (1999) contention that background knowledge is one of the key factors in conceptual learning.

Limitations

There are several limitations to this study. Mainly, the sample size was small (35 students). The sample was not randomly selected and students at this school may come from families with average higher socioeconomic status (lower middle class) than the community at large (upper lower class). Despite these limitations, this study does add to the research on using graphic organizers.

Conclusion

Teachers are being asked to include more informational text in the elementary grades (Duke, 2000); therefore, they will need to know what strategies will effectively help young children comprehend this genre. The find-
nings of this study demonstrate that graphic organizers may serve as a useful strategy for improving the comprehension of informational text. There were statistically significant differences found between the control groups and the graphic organizer groups at all three grade levels. In addition to enhancing comprehension, graphic organizers may present a practical way to infuse variety and excitement into the traditional read-and-discuss lessons.

**Implications of the Study**

This study has provided some insights into a possible strategy for assisting young readers in their understanding of expository text. It suggests that teachers should be trained in how to use various graphic organizers; so that they can implement the strategy correctly while delivering comprehension instruction utilizing informational text. Concept maps and cyclical maps, especially, may be suitable for use with elementary students.

The positive outcomes of this study provide evidence that further research using the various graphic organizers in the elementary grades, especially the primary grades, is needed. Experimental studies with larger sample sizes and random assignment of participants that are assigned to both the treatment group and the control group are essential in order to acquire a clearer understanding of the importance of graphic organizers on comprehension.

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**Children’s Books Cited**


**References**


### Appendix 1. Elementary Level Graphic Organizer Research

<table>
<thead>
<tr>
<th>Research</th>
<th>Grade Level</th>
<th>Results of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002 Chang, Chen, and Sung</td>
<td>5th grade</td>
<td>Concept maps enhanced text comprehension and summarization abilities.</td>
</tr>
<tr>
<td>1993 Wächter</td>
<td>4th grade</td>
<td>Reviewing a semantic map before studying a text passage resulted in higher comprehension scores.</td>
</tr>
<tr>
<td>1991 Armbruster, Anderson, and Meyer</td>
<td>4th &amp; 5th grade</td>
<td>Completing an instructional graphic during social studies instruction resulted in higher unit assessment scores of 5th graders.</td>
</tr>
<tr>
<td>1990 Seaman</td>
<td>5th grade</td>
<td>Completion of a concept map while reading a science text resulted in higher scores on weekly vocabulary tests and a final unit test.</td>
</tr>
<tr>
<td>1988 Prater &amp; Terry</td>
<td>5th grade</td>
<td>Graphic organizers positively affected the comprehension of informative basal reader selections.</td>
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</tbody>
</table>