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ABSTRACT

Historically, research has shown that a reader's recall of ideas from text is enhanced when the reader uses relations among concepts to organize information. Text structure is a term used to describe the various patterns of how concepts within text are related. Knowledge of text structures assists a reader to comprehend text by allowing the reader to anticipate information and by helping the reader infer information that may have been omitted by the author. Research shows that it is important to teach text structure because knowledge of text organization patterns has been shown to facilitate comprehension. Text structure may be considered a blueprint to help a reader build meaning from text. As research has indicated, teaching students to utilize organizational patterns in text facilitates their comprehension of text. Computer programs are available to assist in creating visual representations of text by providing a framework for teachers and students to arrange concepts and show how ideas are related. (Contains 19 references.) (MES)

Building Awareness of Text Structure through Technology

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Text Structure Overview

Reading is defined as the ability "to get the literal or stated meaning from something read" and "to transmit meaning; to comprehend text by engaging in an interchange of ideas or a transaction between the reader and the text" (Harris & Hodges, Eds. 1995, p. 203). Historically, research has shown that a reader's recall of ideas from text is enhanced when the reader uses relations among concepts to organize information (Meyer, 1975,1979). Text structure is a term used to describe the various patterns of how concepts within text are related. Knowledge of text structures assist a reader to comprehend text by allowing the reader to anticipate information and by helping the reader infer information that may have been omitted by the author (Leu, D.J. & Kinzer, C.H., 1995). Burns, Roe & Ross (1999) state that it is important to attend to teaching text structure because knowledge of patterns of text organization has been shown to facilitate comprehension. Text structure may be considered a blueprint to help a reader build meaning from text.

Text may be organized in various ways depending on the purpose of the author. Components of narrative discourse, often referred to as story grammar, include "setting information, a problem, and episodes that describe attempts to resolve the problem. (Leu & Kinzer, 1995, p.157). Informational text, also known as expository writing may be identified by the way in which concepts are related within a text. Meyer (1979) examined the relations between ideas and identified four organizational patterns by which text is frequently structured. She described those four top-level expository text structures as: (a) response (problem/solution); (b) adversative (comparison/contrast); (c) covariance (cause/effect); and, (d) attribution (collection). Meyer and Freedle (1984) examined the structure itself to determine if some text patterns facilitate recall better than other structures of organization. They found that the more complex a top-level structure, the more likely it is to facilitate recall. Specifically, they examined four ways to organize text, collection, causation, problem/solution, and comparison, to determine if one text structure promoted better recall than others. Content was held constant, but structure was varied to represent each of the four structure types. Results indicated that adult subjects recall most from passages organized in comparison structure, followed by causation, problem/ solution, and collection/description in that order.

Wilkinson (1995) states that teachers should provide "insights into the ways in which a proficient language user operates" and encourage "students to be aware of their own processes."(p. 7). Several studies support teaching text structures in order to improve reader's recall of information presented in text (Alvermann, 1982, Berkowitz, 1986, Raphael and Kirschner, 1985). Presenting patterns of text organization through visual aids has been found to be effective. As early as 1983, Geva found that actively involving students in creating flowcharts that represent text content and structure in a graphic form assisted students in identifying and clarifying their understanding of relations among text elements. Visual representations of text structure help students develop an image of the organization of concepts. Vacca and Vacca (1999) report that, "graphic or visual representations help learners comprehend and retain *textually important information.*" (p. 400). They also state that,

> ... when students learn how to use and construct graphic representations, they are in control of a study strategy that allows them to identify what parts of a text are

important, how the ideas and concepts encountered in the text are related, and where they can find specific information to support more important ideas (Vacca & Vacca, 1999, p. 400).

As research has indicated, teaching students to utilize organizational patterns in text facilitates their comprehension of text. Computer programs are available to assist in creating visual representations of text by providing a framework for teachers and students to arrange concepts and show how ideas are related.

Narrative Text

Story Grammar is usually the first text structure a young reader encounters. A story is described as a tale comprised of a plot, character(s), and setting. Harris and Hodges (1995) state that a plot describes the action of a story and is usually presented in three parts. Those three parts are "rising action, climax, and falling action leading to resolution or denouement" (p.189). The plot, which begins with an initiating event, usually involves a subsequent event or events describing how the character(s) responds to that event. Characters are the persons involved in the story. Setting includes the place and time in which the story occurs.

Teachers use visual representations of the key components of a story to illustrate these concepts. Story maps (Table 1), character maps (Table 2), and timelines (Table 3) are some of the more common formats used to visually represent components of a story. These visual representations are arrangements of frames that are created to prompt readers to record key ideas from the story being analyzed. Frames are connected to indicate how ideas are related. Arrows are used to connect ideas that occur in a sequence. Teachers can create these graphic representations on posters or chart paper for class-sized presentation. Smaller representations are made on sheets of paper for students to use in individual activities. These visual aids are often decorated with pictures and shapes that follow the theme of the story in order to build interest and cue students to expected information.

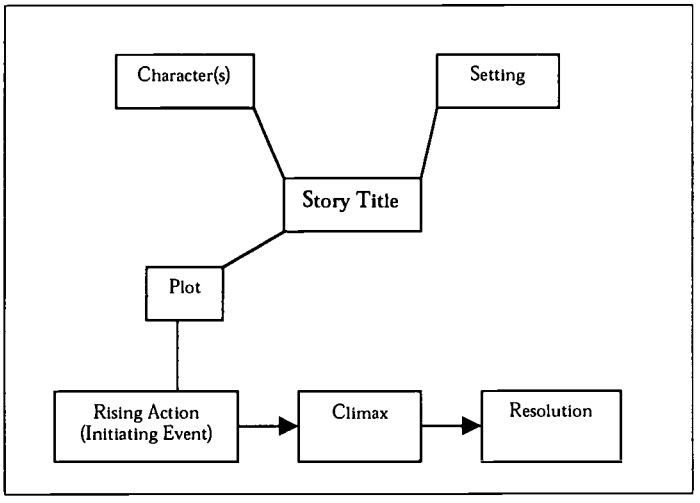

Table 1: Story Map

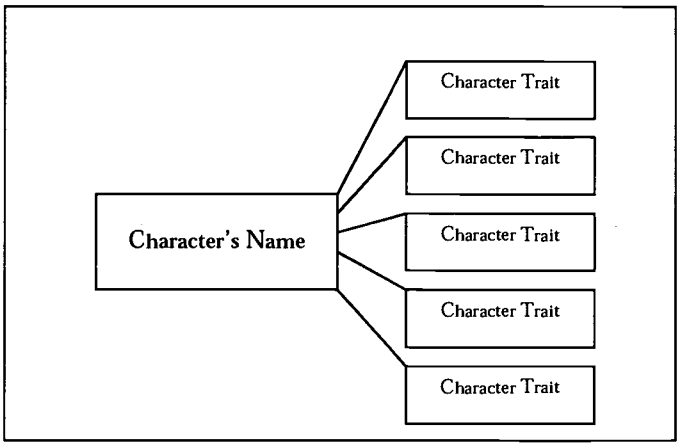

Table 2: Character Map

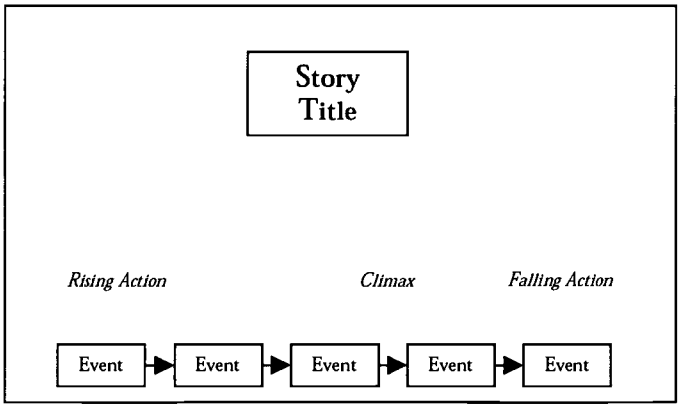

Table 3: Timeline

Story maps, character maps and other types of concept maps may be created through the use of technology. Two programs written to produce concept maps are Inspiration®, which is for middle school and older readers, and Kidspiration ®, which is for younger readers. Information is entered into frames that appear on the computer screen prompted by a mouse click. Links from one frame to the next are easily created or may be automatically inserted through the use of a function known as "rapid fire". Frames may be formatted into a variety of shapes through the use of the program's library of shapes. The frame shapes add emphasis and/or visual meaning to key ideas. Both programs work well in a small group or whole class setting when the visual display is presented through a large screen monitor or projected on a screen. Concept maps may be printed out for readers to work independently. Another feature of these two programs is that not only can the information be viewed as a concept map, but it can also be viewed as an outline. This feature helps readers make a connection between the graphic representation and its outline format. These two programs feature blank formats so the teacher can create a customized concept map and templates so the teacher may utilize a preset model for organizing story information. The templates may be customized, but they provide a good basis for beginning the creation of a new map. Timeliner® is a program that was created to facilitate the development of timelines. Information is entered in a table format and may be viewed as a table, an outline, or as a timeline. Additional frames may be added for titles and other information. Pictures and graphics may be inserted to customize timelines.

Expository Text

Readers encounter expository text when they are reading content area information. Exposition should be written so that concepts are stated clearly in a well-organized manner. Readence, Bean, and Baldwin (1998) state that "knowledge of text structure helps to guide students' comprehension of text." (148) Expository text structures can be represented visually in a variety of ways. Concept maps support comparison/contrast, cause/effect, and collection. Timelines help readers visualize sequenced information. Through the hierarchical outlining of information, such as graphic organizers, students identify key concepts as well as supporting detail and by grouping information according to common concepts, through concept maps, students learn about classification. Technology can facilitate creating these visual aids.

Time ordered and sequenced information can be represented through a timeline. Timeliner®, a previously described program, works as well for informational text as it does for narrative text. Presentation software such as KidPix® and Power Point® are also useful aids to help students visualize sequenced information. Presentation software allows information to be presented one screen at a time for viewing the information in order. A screen or slide can be moved if the information is re-ordered. Power Point® will show information either in slide view or in an outline view.

Building on the concept of sequenced events, readers learn that some events can cause other events to occur. Because the concept of cause and effect relation builds on the concept of events occurring in a sequence, Timeliner® provides a venue for creating a visual aid to support cause/effect text structure as well as simple sequence. Concepts in text that are related through cause and effect can be visualized through a concept map. Inspiration® and Kidspiration® both provide a format to represent this relation between concepts. Each program has a template to facilitate the creation of a cause and effect concept map. Frames in a concept map created through Inspiration® and Kidspiration® can be connected with an arrow instead of a simple line to indicate a cause related to its effect.

Classification and compare/contrast are text structures that may be represented through concept maps created with Inspiration® and Kidspiration®. There are templates to assist development of appropriate concept maps for each. For classification, ideas are linked with lines to indicate related concepts. A data base program such as Access® is another excellent tool to assist students' learning about classification. Information is listed in a table format and then may be sorted by attribute to assist a reader in classifying the information. Analysis of attributes not only helps students classify information, but compare and contrast it as well. Another visual aid to assist in comparing and contrasting information is the Venn diagram, which can be easily constructed using draw tools. Through the use of visual aids, related concepts become evident and readers can better comprehend and recall information. Whether the text structure is story grammar, cause/effect, compare/contrast, sequence, or classification, representing text structure visually provides a blueprint to help readers build meaning from text.

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