3

FOLLOWING THE AUTHOR'S TOP-LEVEL ORGANIZATION: AN IMPORTANT SKILL FOR READING COMPREHENSION

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An important reading skill identified by a number of educators involves following the author's organization of a text. For example, Davis (1944) identified eight reading comprehension skills through a factor analytic method. Two of these factors were following the structure of a passage and recognizing the author's purpose. In addition, the work of Niles (1965) states that children must learn to follow the author's pattern of thought. Spearritt (1972) identified four separate skills in reading comprehension and they also included following the structure of the passage and recognizing the author's purpose.

Little research has been conducted on these two skills (e.g., Carroll, 1971; Caterino, 1977; Horowitz, 1985). In addition, few long-standing programs have been developed to teach these skills. Programs (Gainsburg, 1967; Niles, 1965; Sack & Yourman, 1972) that do exist have not been formally evaluated for their success in teaching these skills nor for the relationship between improvement in these skills and overall improvement in comprehension.

Examining the strategies and skills involved to follow the author's structure and purpose appeared in 1976 to be a logical next step for my research effort. My earlier research (Meyer, 1971, 1975, 1977a, 1977b; Meyer & McConkie, 1973); examined the effects of structure in text on what people remember from it. One of the findings of this earlier research was that information located at the top levels of a hierarchical structure of the content of text (main ideas) is recalled and retained better than the information at lower levels in this content structure (details). This effect of structure has been found with various types of materials, recall tasks,

and subjects (Kintsch & Keenan, 1973; Mandler & Johnson, 1977; Meyer, 1977a; Thorndyke, 1977). A second finding (Meyer, 1975) of this earlier work relates more closely to the skill described by educators as following the author's structure. The pattern of relations at the top levels of the content structure was found to dramatically influence which ideas located at the top level in the structure would be remembered, while the pattern of relationships low in the structure had no influence on recall. A third finding (Meyer & Freedle, 1984) showed that manipulating the extreme top-level structure in text affected recall and retention of the text.

These findings point to the importance of the top-level structure in prose in influencing what and how much is learned from reading. The structure at the lower levels in the content structure or microstructure was not found to be important in predicting recall. These results have important practical implications. A detailed structural analysis (Meyer, 1975) of text is very time consuming and an impractical task for reading teachers. However, an analysis of the top levels of text is less involved and could be performed to assist educators in constructing equivalent forms of reading tests and preparing lessons to teach reading and writing skills.

Few studies have examined the skills involved in identifying the structure of text and the author's purpose due to a lack of tools to objectively identify the structure of text and the author's message. In recent years, a number of prose analysis systems have been developed by psychologists (Frederiksen, 1975; Kintsch, 1974; Meyer, 1975) based on developments in linguistics (van Dijk, 1976; Grimes, 1975; Halliday, 1967). The various prose analysis systems have similarities and differences; some are better suited to certain research questions than others (Meyer, 1985a; Meyer & Rice, 1984). My approach (Meyer, 1975, 1985a) appeared well-suited for examining the skills in question.

The top level in the content structure recovered by an analysis of a text depicts the major rhetorical relation used by the author to organize his or her text. Classroom text can be classified into different types of expository text on the basis of differences in this top-level structure. My colleagues and I have studied four types of text (Bartlett, 1978; Brandt, 1978; Elliott, 1980; Meyer, 1977a; Meyer & Freedle, 1984; Meyer, Freedle, & Walker, 1978). The top-level rhetorical structures examined include: *problem/solution* which relates a problem (or question) to a solution (or answer), *comparison* which relates what did happen to what did not, or a favored view to an opposing view, *causation* which relates an antecedent condition to its consequent, and *description* which relates a collection of attributes or more specific information to an event or idea. The research with college students (Meyer & Freedle, 1984) showed that comparison and causation structures yielded better recall and retention

than description structures. In addition, the purpose of the author can be identified by examining the content and relationships at the extreme top levels in the content structure; the idea units at this level of the structure embody the author's message. Thus, the top-level structure leads readers directly to the main idea of the text.

Tools are now available to investigate further these reading comprehension skills identified by educators. This area of investigation is of potential value not only for its practical applications, but for clarification of aspects in the reading comprehension process.

THE RELATIONSHIP BETWEEN USE OF THE TOP-LEVEL STRUCTURE AND A MODEL OF READING COMPREHENSION

Schema-Theoretic Model

The model of reading comprehension based on schema theory as proposed by Rumelhart (1977) explains reading comprehension as the process of choosing and verifying conceptual schemata for the text. Rumelhart's model and the schema-theoretic model of Adams and Collins (1979) stress both bottom-up (from the text) and top-down (from the reader) processing of text. This view explains that schemata of various levels of generality and abstractness operate in coordination during reading comprehension. The skilled reader uses bottom-up and top-down processing simultaneously and at all levels of analysis as he or she proceeds through the text.

Top-down processing is the particular concern of this chapter. It is hypothesized that skilled readers have a finite number of abstract, superordinate schemata that are used in text comprehension. The story schema used to comprehend narratives has been discussed quite extensively (van Dijk & Kintsch, 1977; Rumelhart, 1975). Schemata used in classroom text of an expository nature have been studied less often. They would apply to the four text types described in research by Meyer and co-workers. This type of schema is more abstract and general than schemata for such things as a restaurant, a fact, or building a house that are more concrete and specific. In their outline of schema theory, Rumelhart and Ortony (1977) explained that schemata are stereotyped knowledge structures that vary in their level of abstraction, have variables, and can embed to form networks. The described top-level structures of text meet these requirements of schemata. Anderson (1977) appears to concur since he stated that "the structures by which an author gives a high level organization to a text . . . are schemata, as are the complementary ones by which readers

detect this organization and use it as ideational scaffolding for detailed information" (p. 416).

In this view, the skilled reader is one who approaches a text with knowledge of how texts are organized. The reader selects from her or his repertoire the schemata that best matches the text to be processed. Aspects of the text structure and signaling (Meyer, 1975) suggest which schema can be best employed; Figure 3.1 (taken from Meyer, 1984a) presents a model for this process. The schema employed to comprehend the text functions like an outline. For example, if the reader brings the problem/solution schema to the text he or she will be looking for content to fill in for the variables of a problem with its description, antecedents, and consequences and a solution with attributes that will block at least one of the causes of the problem. When recalling text, the skilled reader activates the same kind of superordinate schema that was used in encoding and retrieves the information stored in memory about the text through a top-down search.

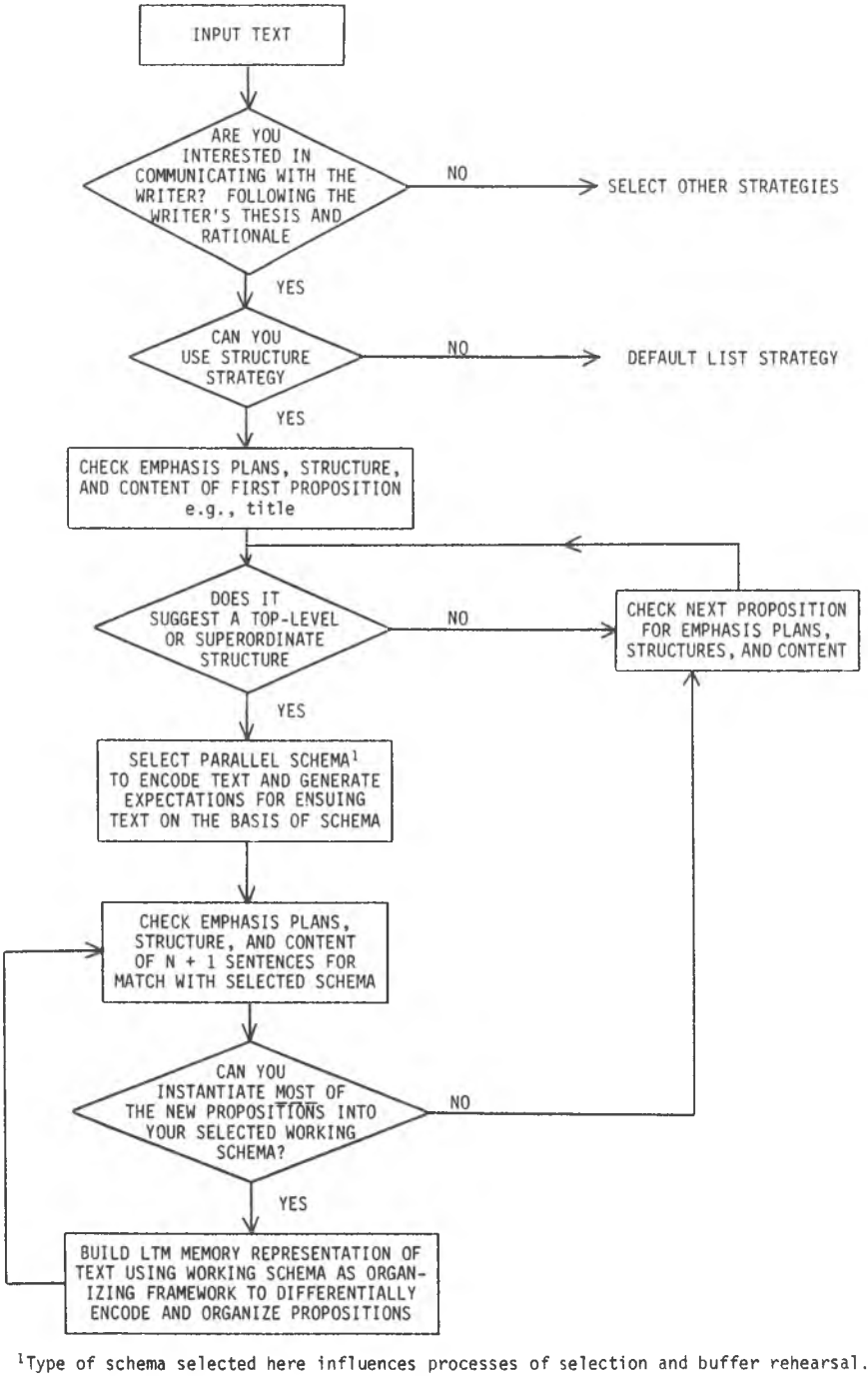
Reading as a Conversation Between Author and Reader

The schema-theoretic model of reading comprehension is compatible with the view of reading as a conversation between an author and a reader (Grice, 1967). In order for the interaction between the author and the reader to be productive, it should follow the pragmatic constraints of conversational behavior (Grice, 1967). That is, there must be cooperation between the author and the reader. There are a number of considerations dealing with audience that an author must make (e.g., Flower & Hayes, 1977). However, this discussion focuses on the reader, and he or she must be a good listener. The conversation will be more successful if the reader has a general idea of the author's purpose (Bruce, 1980). Thus, if the reader recognizes the author's organization or top-level structure of a passage, the conversation will be more successful and the reader will get the author's message.

Once the author's message is comprehended, the reader may disagree and argue back at the author. In fact, in a study (Meyer, 1984a) with 50 proficient adult readers, 49% reported arguing back at the author when reading; most of these readers (84%) recognized and utilized the author's top-level structure when they recalled text.

Extent of the Applicability of the Proposed Reading Strategy

An assumption underlying my research, and recommendations of reading specialists, is that an important strategy for reading comprehension is the ability to identify and use the top level structure of text for both encoding and retrieval. That is, the skilled reader will be capable of using the same



[1]Type of schema selected here influences processes of selection and buffer rehearsal.

Fig. 3.1. Model for getting text into organized schemata in memory.

type of superordinate schema as that used by the author in writing the text. In reading exposition, readers will search for the superordinate logical relationships that underlie it; they will look for the use of comparative, descriptive, causative, and problem solving type schemata used by authors to organize their ideas.

Classroom Situations. In most school situations and many learning situations outside of school, a person wants to know exactly what an author said. The reader needs to pick up as much of the information presented as possible as well as to retain the author's message or main ideas. For reading situations of this type, it seems reasonable that the most efficient strategy for a reader is to utilize the organization of the writer and store in memory the text's information in the same type of schema as that used by the writer. Using the top-level structure of text provides the learner with a way to organize the text. In addition, the reader does not have to search his or her memory for an alternative and appropriate schema nor does he or she have to reorganize the ideas in the passage to fit this different schema while reading; instead, the reader saves processing time by utilizing the same schema as that of the author and organizing the information in the same way as the author (for some empirical support see Meyer, Rice, and Vincent, 1986).

Of course, there are times when using schema of the same type as the author is not efficient. One such time would be when the reader's purpose is simply scanning an article for a specific detail. Another time would be when the reader strongly disagrees with the schema of the author. Data relating to this alternative strategy have been collected by Meyer and Freedle (1984) from school teachers reading a passage with a problem/solution schema. The solution in this passage was "immediate dismissal of athletic coaches by school boards"; the teachers tended not to report this solution in their recall protocols and did not organize their recall in terms of the author's problem/solution format, but instead organized their recall protocols with comparative or descriptive schemata. In addition, often a reader must integrate information by a number of authors on one topic. The first reading of the articles would probably be most efficient with the proposed strategy of utilizing the same type of schema as that of the author, but later integration and comparison would require restructuring with different schemata provided by the reader.

Thus, it is not being proposed that readers become recorders only looking at things in the same way as authors. Instead, it is posited that before readers start arguing with or restructing an author's content, they should first learn how the author views the situation and pick up as much of the information as possible. In summary, the ability to utilize the author's top-level structure to process text is seen as a basic prerequisite skill for the competent reader.

Texts Varying in Quality of Organization. This position holds for well-organized texts. With prose that has been scrambled or lacks organization, skilled readers would certainly improve their comprehension by providing a schema to organize the input; Kintsch, Mandel, and Kozminsky (1977) found that this is, in fact, what college students do with scrambled stories.

The research of Meyer and co-workers shows that even seemingly well-organized text materials differ in quality of organization which, in turn, affects quantity recalled. When diagrammed, the comparison, causation, and problem/solution structures have an extra link of relationship over the description structure. According to an application of the Anderson (1976) model, recall of the information related together by the three structures providing extra linkage should be superior to that of the descriptive structure.

The same predictions for recall would be made from a schema theory orientation. All four of the text types are used in expository text and convey to a learner that some ideas will be presented about a topic. However, the comparison, causation and problem/solution patterns provide the learner with additional schemata. For example, a comparison passage tells the learner that in addition to the passage presenting ideas about a topic these ideas presented will be opposing on one or more dimensions (see Meyer & Freedle, 1984, for specification of the differences in the organizational components of the different text types). A reasonable expectation is that recall from the texts with more organized structures will be significantly greater than that from the less organized descriptive structure.

Data from two studies with adults relate to these predictions. In the first study (Meyer & Freedle, 1984) the predictions were confirmed in part in that the comparative and causative top-level structures facilitated greater recall and retention than the descriptive structure. The second study (Meyer, 1983, 1984b; Meyer, Freedle, & Walker, 1978) showed that although graduate students perform better with the contrastive structure, retired adults with low vocabulary performance (average age = 80 years) do not effectively utilize this superior top-level structure in text and recalled more after reading a text with the list-like descriptive top-level structure. A more recent listening study (Meyer, Rice, & Vincent, 1986) was conducted with young, middle-aged, and old adults with three levels of performance on the vocabulary subtest of the WAIS (high, high-average, and average). Adults from all age groups with high-average and above vocabulary scores recalled more from comparative than descriptive structures. However, no differences in recall from the two structures were found for average scoring adults.

The Poor Reader. Poor readers may not come to text with knowl-

edge that authors organize text with such structures as comparative or causative top-level structures. The primary expectation of some poor readers when approaching expository text may be that the text lists some things to remember. These readers may not be able to utilize a superior structure like the comparative structure, and may perform better on the descriptive structure that better fits the list-like schema they bring to the text.

Advantages for Skilled Readers With Well-Organized Text. Readers utilizing the top-level structure of well-organized text will have advantages over readers not using this strategy at both the encoding and retrieval stages. For example, readers using a comparative schema in their top-down processing of text will look for the two opposing views presented, contrast them on their points and counterpoints, and try to evaluate why one is favored over the other by the author. Readers using this scheme should be processing the information more deeply than readers trying to recall a list of ideas stated by the author or some other schema which fits the input less adequately. In addition, at retrieval poor readers who use a list-like strategy will search memory for descriptions of the topic of the passage. Recalling one attribute will not necessarily cue another. In contrast, the readers that use a comparative schema will have a more systematic retrieval plan. Using the comparative schema insures the reader of recalling both views presented in the text, as well as many stored subordinate propositions located in a top-down search at retrieval. In addition, if they recall one point for one view, it will often facilitate the retrieval of the corresponding point for the other view or prompt the reconstruction of the point if the exact details have been forgotten.

Utilizing the same top-level structure as that used in the text should be of even more assistance as time passes after reading a text. Immediately after reading a passage, vivid content from propositions low in the hierarchical structure will be more readily available for recall than after a delay of a week (Meyer, 1975). Readers using this systematic retrieval plan should show an increased advantage over readers not using this approach on delayed recall tasks when these low-level details have been subsumed in memory.

EMPIRICAL STUDIES WITH NINTH GRADERS EXAMINING THE USE OF THIS STRATEGY

Several studies conducted with ninth graders have empirically examined these notions concerning the value of following the author's top-level structure in text. Each of these studies is discussed in the remaining section of this chapter.

First Exploratory Study. The first study (Meyer, Brandt, & Bluth, 1980) examined the use of the top level structure in text by ninth graders gauged as high, average, and low comprehenders on standardized reading comprehension tests. The texts selected were two well-organized passages; one with a comparative top-level structure and one taken from a junior high magazine with a problem/solution top-level structure.

A with-signaling and without-signaling (Meyer, 1975) version of each passage was written. In the with-signaling version, the top-level rhetorical structure was explicitly stated and in the without-signaling version, it was not. For example, the with-signaling version of the problem/solution passage on the topic of supertankers began with "A problem of vital concern is the prevention of oil spills from supertankers," whereas the without-signaling version did not include the words problem and solution and began with "Prevention is needed of oil spills from supertankers." In addition, in the with-signaling version, the three-fold solution was explicitly pointed out to the reader whereas it was not in the without-signaling version.

Use of the same top-level structure or schema as the author used in the text was measured by assessing the top-level structure of the free recall protocols written by the students immediately and one week after reading the passages. (The reliability coefficients for this technique for three independent raters ranged from .95 to .98.) A recognition test also was given at the delayed testing.

The data revealed four important findings related to ninth graders' use of the author's top-level structure. First, slightly less than 50% of the ninth graders sampled utilize this strategy in their reading. Second, most ninth graders rated by their teacher and standardized tests as high in reading comprehension use the same top-level structure for organizing their recall protocols as the author of the passage, whereas most students with low reading comprehension do not. Third, students who employ this structure strategy recall much more information from passages than those who do not; use of the author's top-level structure accounted for an average of 44% of the variance in recall immediately after reading passages and 68% of the variance in recall one week later. Use of this strategy was a better predictor of recall than vocabulary test scores or comprehension test scores. Fourth, the recognition task indicated that students who use this strategy can discriminate better between information consistent with the semantics of the passage and intruded information on the same topic than students who do not employ this strategy.

There was no overall effect of signaling. It did not assist high comprehenders who could apparently identify and utilize the top-level structure of the text regardless of whether or not it was explicitly stated by the author. Signaling did not influence low comprehenders who were unable to use the top-level structure of text in either signaling condition. How

ever, it facilitated use of the top-level structure and amount of information remembered after reading by the ninth graders identified as underachievers; these students had comprehension subtest scores on the Stanford Achievement Test at least one stanine below their vocabulary subtest scores.

The major findings of this study are supportive of the facilitative properties hypothesized for the systematic, top-down process of retrieval used by readers utilizing the top-level structure in text. The top-down search should provide superior recall of information at all levels of the content structure and particularly that information at the top-levels of the structure where the retrieval process begins. The content structure of the passages used in the Meyer, Brandt, and Bluth (1980) was divided into three levels to examine any differences in processing different types of information between students who did and did not utilize the top-level structure of text.

A Closer Look at the Type of Information Recalled by Students Who Differ on the Use of This Strategy. Levels one and two in the content structures of the passages were most crucial to the overall meaning of the text and labeled the message. For example, the message from the problem/solution passage on the topic of supertankers can be paraphrased as "A problem of vital concern is the prevention of oil spills from supertankers. Because . . . The solution to the problem is not to immediately halt the use of supertankers. Instead the solution lies in the training of officers, the building of better tankers, and installing ground control stations." The major details were found from levels three and four in the content structure and the minor details were located in levels five and lower.

The following depicts the message, major details, and minor details from the passage with the comparative top-level structure on the topic of loss of water from the body. The capitalized words are the message (levels one and two in the content structure). The underlined words are the major details (levels three and four); the words in italics are the minor details (levels lower than four). The top levels of the content structure of this passage are shown in Fig. 3.2.

VIEWS CLASH ON LOSS OF BODY WATER

THE LOSS OF WATER FROM THE BODY IS <u>frequently</u> REQUIRED by coaches of wrestlers, boxers, judo contestants, karate contestants, and 150-pound football team members SO THAT they will REACH specified body weights for a sports event. These

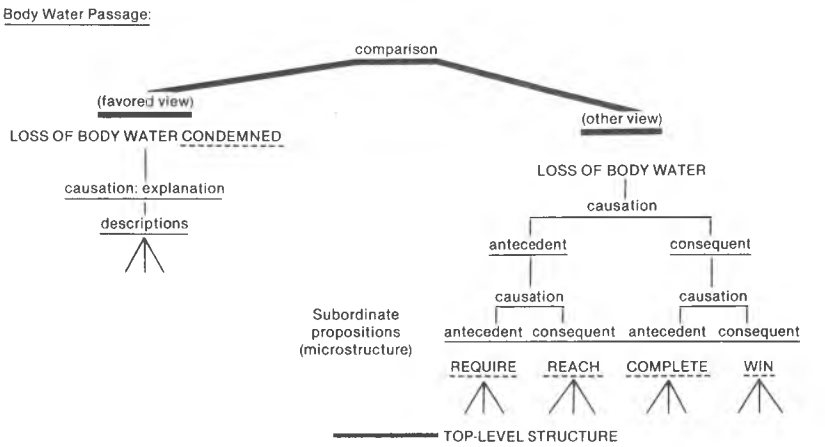


Fig. 3.2. Top levels of the Body Water Passage with a comparative top-level structure

specified weights *are much below the athletes' normal weights.* THIS REQUIREMENT ALLOWS athletes to COMPETE in lower "weight classes" AND WIN. *Coaches take this position due to the fact that winning teams bring recognition and money to the schools and the individual athletes who may become rich and famous.*

IN CONTRAST TO THE ACTION TAKEN BY COACHES, THE LOSS OF BODY WATER IS strongly CONDEMNED BY THE AMERICAN MEDICAL ASSOCIATION. THEY CONDEMN LOSS OF BODY WATER DUE TO THE FACT THAT it HARMS the body. MORE SPECIFICALLY, *a loss of three percent of body water* hurts *physical performance, and a loss of five percent* results *in heat exhaustion. Moreover, a loss of seven percent of body water* causes *hallucinations. Losses of ten percent or more of body water* result *in heat stroke, deep coma and convulsions; if not treated death will result.*

Use of the top-level structure yielded significantly superior recall fo message units, major details, and minor details for both passages immed ately and one week after reading. Numbers in the passage were analyze as part of the previous groupings and separately; numbers appear to b unusually well recalled regardless of position in the content structu (Meyer, 1971) due to the von Restorff effect. Use of the top-level structu as a production strategy had no effect on numbers recalled. However, u of this strategy was particularly crucial for recall of the message. For bo passages there was a highly significant information type x use of structu interaction ($p < .0001$). Those who used the author's top-level structu experienced little forgetting of the author's message over the we

retention interval; this was not the case for those who did not use this strategy. Thus, those who used this strategy had a much better criterion on the delayed recognition test for judging whether or not an item on the same topic as the text had actually been stated in the text. It is plausible that those who use the top-level structure of the text on the immediate recall task but not on the delayed task would surpass the performance of those who use it consistently due to the former group integrating the information with different prior knowledge structures. However, the data from both passages revealed that those who used the top-level structure immediately but not a week later performed very similarly on the immediate free recall test to the group that consistently used the top-level structure and on the delayed test performed like the group that never used the strategy. This finding argues that use of the top-level structure is particularly important for facilitating a systematic top-down retrieval strategy.

LATER STUDIES EXAMINING THE RELATIONSHIP BETWEEN USE OF THE TOP-LEVEL STRUCTURE AND RECALL

Across Various Ages. The strong relationship between amount of information remembered from a text and use of the text's top-level structure has been found in a number of studies with elementary school children (Bartlett, Turner, & Mathams, 1981; Taylor, 1980), junior high students, junior college students, and older adults (Meyer, 1983). A study with graduate students reading the passages used by Meyer, Brandt, and Bluth showed that all of the students utilized the author's top-level structure; 50% of a group of junior college students tested used the strategy on more difficult materials (Meyer, Rice, Bartlett, & Woods, 1978).

Across Various Topics. With over 300 ninth graders tested on seven different passages (Bartlett, 1978; Brandt, 1978; Meyer, Brandt, & Bluth, 1980; Swanson, 1979), the variance accounted for in recall by use of the author's top-level structure ranges from 36% to 52% immediately after reading passages to 68% to 80% one week after reading. The content of these seven passages taken from junior high school magazines and textbooks involved topics such as supertankers, loss of water from the body, and the history of railroads. However, on a highly familiar topic (Brandt, 1978) the amount of variance accounted for immediately was 22% and 30% one week later. On this delayed recall test there were no recall differences among students with high, average, and low scores on

the comprehension subtest of the Stanford Achievement Test. The topic was killer whales and the students had just finished a science unit on oceanography and were planning a field trip to Sea World during the week of the delayed testing. It seems plausible that use of the top-level structure would be a less crucial strategy for this highly familiar content. With high prior knowledge of a topic, the content from the passage is integrated with existing propositions. The rich network on the topic provide many cues and links (Anderson, 1976) that facilitate recall independent of the use of the author's top-level structure. Although the magnitude of the effect of this strategy was reduced for this highly familiar topic, students who used the strategy still performed better than their peers who did not use the strategy.

INVESTIGATING A CAUSAL RELATIONSHIP BETWEEN USE OF THE TOP-LEVEL STRUCTURE AND INCREASED RECALL

The correlational data from the previous studies strongly suggested the possibility of a causal relationship between following and utilizing the author's top-level structure in text and how much and what can be remembered from it. Dissertations by two of my students were designed to investigate this causal relationship, and are described below:

Increasing Use of the Strategy With Advance Organizers. One of the dissertations (Brandt, 1978) examined whether or not an advance organizer focusing on the top-level structure of text would facilitate recall of comparative and descriptive passages. Ninth graders with high, average, and low reading comprehension skills were placed in three groups. One group received text explaining the structure of the passage to be read as well as a diagram of the passage's top-level structure in an outline format. A second group was instructed to use a structure different from that of the passage (comparison for the descriptive passage and description for the comparative passage). This different structure also was presented in text and outline; the passage content could be reorganized by the reader to fit this different organizational structure. The third group worked on mathematics prior to reading the passage and served as the control group. All groups read two passages and recalled them immediately after reading them and 1 week later.

The data showed that prior knowledge of the author's structure or any other structure had no effect on the ninth grader's learning and retention of the passages. Use of the author's structure was the best predictor of recall, supporting the findings of the original study. Although the main

effects were not significant, three important findings emerged from this dissertation. First, there was a significant interaction between text type and comprehension level of the readers; high and average comprehenders remembered more from the comparative version of the passage than the descriptive version, whereas the effects were reversed for low comprehenders. The second finding relates to the group asked to reorganize the passage with a top-level structure different from the author's. Although most students ignored these inconsistent instructions, high comprehenders were more likely to follow the instructions when the better comparative structure was to be employed with the poorer descriptive passage than when instructed to use the descriptive schema on the comparative passage. Third, the magnitude of the correlation between use of the author's top-level structure and recall was somewhat less for the descriptive versions (50% of variance accounted for) than the comparative versions (65% of the variance).

A possible explanation for the lack of main effects in this dissertation is that this type of advance organizer given to facilitate use of the top-level structur did not provide enough information to bridge the gap between the top-level structure of the passage and the ninth graders' cognitive structure related to strategies for learning text. Perhaps an advance organizer of this type would be helpful for more sophisticated readers on more difficult passages, but for these students it was not effective. Thus, for ninth graders, an extensive training program on identifying different types of top-level structures found in classroom text appeared to be the next step since the advance organizer, by definition a brief treatment, was not effective.

Increasing Use of the Strategy With a Week-Long Training Program. The second dissertation (Bartlett, 1978) examined the effects of teaching ninth graders to recognize commonly found top-level structures on their ability to identify and use these structures in their own recall protocols and the amount of information they could remember. The duration of the instruction was one class period a day for five consecutive days. The instruction focused on how to identify and use four commonly found top-level structures in classroom text; these structures were comparison, causation, problem/solution and description. Special aids for identifying the top-level structure were faded out over the week of instruction and the passages studied increased in complexity; most of the instruction passages were taken from textbooks written for junior high school students.

Students in the training group and control group read and recalled passages prior to the training, one day after the training program, and

three weeks after the completion of the program. The instruction resulted in significantly increased use and identification of the top-level structure of passages and in the amount of information recalled. The amount of information remembered from passages by the instructed group on each of the posttest sessions was nearly double that of both their pre-instruction scores and the scores for the control group for all testing sessions. The instruction benefited students with high, average, and low vocabulary scores on the Stanford Achievement Test (SAT). The effects of instruction were maintained three weeks after the training program by nearly all of the students except those with SAT vocabulary scores below the 12th percentile on national norms (2% of the students given the training); these students showed an initial benefit from instruction but it was not maintained three weeks later. Thus, the study shows that use of the top-level structure in prose is an important reading strategy and can be taught to most ninth graders.

An adaptation of this training program (Meyer & Bartlett, 1985) is currently being evaluated with old and young adults (Meyer, 1985b; Meyer, Young, & Bartlett, 1986). The strategy group is compared with a group who received practice on the same texts without direct instruction to use the top-level structure and a group who received no treatment. The first two instructional sessions defined five top-level structures: description, sequence, causation, problem/solution, and comparison, gave examples, and presented signaling words for the structures. The last three involved modeling and practicing a reading and recalling strategy for using the top-level structure to facilitate encoding and retrieval. It appears that the last three sessions were critical. Just teaching the structures (an extensive version of Brandt's advanced organizers) is not sufficient; readers must be shown how to use the structure when reading and remembering information from text.

Summary

The research studies discussed have shown empirically the importance of following and utilizing the top-level structure in text for reading comprehension. The data provide insight into the cognitive processes involved in reading comprehension. In addition, the findings and text analysis procedures have important practical implications for educators teaching reading comprehension. Further research could be profitably employed by examining the use of this strategy with different prose forms of various difficulty levels as well as looking at the use of this strategy with readers of different ages.

ACKNOWLEDGMENT

This research was supported in part by a Faculty Grant-in-Aid provided by Arizona State University.

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