ED376427 1994-00-00 Metacognition and Reading To Learn. ERIC Digest.

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Table of Contents

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ERIC Identifier: ED376427
Publication Date: 1994-00-00
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Source: ERIC Clearinghouse on Reading English and Communication Bloomington IN.

Metacognition and Reading To Learn. ERIC Digest.

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Researchers consistently posit that metacognition plays an important role in reading. Metacognition has been defined as "having knowledge (cognition) and having understanding, control over, and appropriate use of that knowledge" (Tei & Stewart, 1985). Thus, it involves both the conscious awareness and the conscious control of one's learning. In this digest, the implications of metacognition will be discussed as it relates to an important type of learning--reading to learn.

In a summary of research on metacognition from the Center for the Study of Reading at the University of Illinois, Armbruster et al (1983) present reading to learn from a metacognitive perspective as it relates to four variables: texts, tasks, strategies, and

learner characteristics.

The first variable, text, refers to the textual features of learning materials which influence comprehension and memory. Factors such as arrangement of ideas in texts, vocabulary, syntax, clarity of author's intentions, and reader's interest and familiarity with a text all have an effect on students' learning. Salient findings from the research include three basic points: (1) text structures influence learning even if the learner is unaware of their effect; (2) knowledge of the effect of text structures on learning is dependent on age and ability; and (3) a reader can optimize learning by becoming aware of text structures and the resultant effect they have on learning.

Knowledge of text structure is critical for reading to learn; it is requisite for efficient use of study time. By detecting the organizational patterns or structures of texts, students can observe how authors arrange ideas and determine which kinds of structures are used to interrelate ideas. In her research, Muth (1987) addresses text structures used most frequently in informational or expository materials found in content area textbooks. She presents three strategies designed to help students read and comprehend informational texts. These include hierarchical summaries, conceptual maps, and thematic organizers designed to raise students' awareness of structures of text. (See also Harris, 1990; DiGisi, 1992.)

Armbruster's (1983) research suggests that younger and less mature readers do not concentrate on textual features because they are not aware of the impact text structures have on learning. Researchers contend that knowledge of the effect of text structures on learning is prerequisite to conscious control of strategies. Teachers need to instruct students to use text structure to enhance learning.

Another area of research in the development of metacognition of text features is related to the recognition of inadequacies in prose. (For a treatment of this problem, see the 1989 ERIC Digest "Content Area Textbooks: Friends or Foes.")

Ambiguous words or confusions within the text affect cognitive processing. Experienced readers will adjust their reading rate for anomalous texts and may return to an inconsistent sentence or passage several times, comparing what they know with what is written in the text. Older and more fluent readers are more aware of text inconsistencies and can judge whether or not their comprehension is altered because of such inconsistencies. Strategies suggested by Tei and Stewart (1985) will help students identify internal inconsistencies and deal with them appropriately.

Another variable of metacognition in reading to learn pertains to the task that the reader is required to perform. For example, locating a specific detail in a text requires a different process than that needed to write a critical analysis of the text. As with other facets of metacognition, mature and immature learners differ with respect to their knowledge of, and ability to control, task variables.

Fundamental to any task in reading is the derivation of meaning from the text. In order for learning to occur, students must be aware that the purpose of reading is to construct meaning. The reader must learn how to adapt reading behavior to specific tasks.

A related index of metacognitive development with regard to the task is the reader's ability to accurately predict his or her performance on the task. For young readers, this may be quite difficult, but with age and reading experience, readers begin to pick up cues which give them information about how well they have performed; these are important variables in metacognition of reading.

An additional category of metacognitive knowledge and control involves knowing how to remedy comprehension failures. It is not enough to be aware of one's understanding or failure to understand--a learner must be able to self-regulate his or her reading process in order to read for comprehension. The reader needs knowledge about metacognition strategies.

Researchers cite two different categories of strategies: "fix-up" strategies to resolve comprehension failures and studying strategies to enhance storage and retrieval when comprehension failure is not necessarily an issue (Armbruster, 1983). Tei and Stewart (1985) discuss several strategies for improving comprehension. These include forming a mental image, rereading, adjusting the rate of reading, searching the text to identify unknown words, and predicting meaning that lies ahead.

Research indicates that readers use many strategies, but that a distinction exists between good readers and poor readers. Good readers tend to use the most effective strategy that leads to a thorough processing of the text. The research also supports that readers can be taught to develop self-awareness and control of learning.

Study strategies are important in reading to learn and can be applied to enhance text processing. Common studying strategies include underlining, outlining, notetaking, summarizing, and self-questioning. Many of these strategies are complex and best handled by older and more experienced readers. Various studies have reported improved performance by middle school, junior high, and high school students who were trained to use specific studying strategies (see for example, Gertz, 1994; Langer & Neal, 1987).

The decision a teacher makes about teaching metacognitive skills will be based on what serves his or her students best. Applying some of the strategies suggested by Schmitt and Hopkins (1993) may be appropriate when working with younger, inexperienced readers. The two researchers describe how to incorporate comprehension strategies into basal reading instruction to promote metacognition before, during, and after reading.

A final category of metacognition in reading to learn is the awareness of the learner of

his or her own characteristics--such as background knowledge, degree of interest, skills, and deficiencies--and of how these affect learning. Again, the reader must be able to take that awareness and translate it into a change in reading behavior. Research suggests that successful students tend to relate information in texts to previous knowledge; less successful students showed little tendency to use their knowledge to clarify the text at hand.

Thus, learner characteristics, like texts, tasks, and strategies, are age and experience dependent. The development of metacognition appears to be linked to proficiency in learning. A related conclusion about metacognitive development is that knowledge precedes control. The researchers suggest that learners must first become aware of structures of text, as well as knowledge of the task and their own characteristics as learners, before they can strategically control the learning process to optimize the influence of these factors (Armbruster, 1983).

Awareness of metacognitive skills can be gleaned through instruction. Teachers can help their students learn from reading: they can encourage students to take an active role in reading. The goal is to develop active, independent learners. Integrating metacognitive skills into classroom instruction can make that goal attainable.

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Title: Metacognition and Reading To Learn. ERIC Digest.
Document Type: Information Analyses---ERIC Information Analysis Products (IAPs) (071); Information Analyses---ERIC Digests (Selected) in Full Text (073);
Available From: ERIC Clearinghouse on Reading, English, and Communication, Indiana University, 2805 E. 10th St., Suite 150, Bloomington, IN 47408-2698.
Descriptors: Elementary Secondary Education, Higher Education, Metacognition, Reading Processes, Reading Strategies, Student Characteristics, Study Skills, Text Structure
Identifiers: ERIC Digests, Reading to Learn
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