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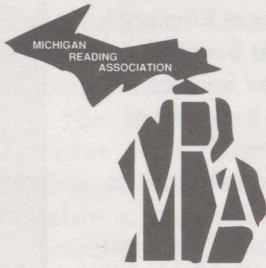
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Prior Knowledge and Schema Theory --What and Why?

by Hazel Cox

"Recent research has suggested that background knowledge is a major, if not the major, determinant of text comprehension." (Pearson, 1982). Since 1982 researchers have continued to develop, try and improve reading process instruction. The above statement about background knowledge still remains highly respected.

"Schema theory" and "prior knowledge" help to explain and understand the significance of background knowledge. They may be defined and thought about separately, but are also closely related.

"Schema theory" refers to the way people learn. New information is assimilated with information already stored in a person's memory. "Schemata" are mental structures in which a person's experiences are organized and stored. New information is added to schemata already present or new schemata are formed. One example of a mental structure dealing with reading is story schema or a reader's story organization such as knowing that most stories contain characters, a setting, a problem, episodes and a solution. Another example is a schema for studying about animals animal type, habitat, food, habits, and reproduction. Schemata are frameworks of expectations.

"Prior knowledge" is background information the reader already knows about the topic and knowledge

structures the reader brings to the learning situation. A reader's topic familiarity may range from much information, well organized into a schema to a few unorganized details. A possible knowledge structure is a knowledge about reading in general, knowing that reading offers meaning. Therefore, the student automatically uses various strategies to construct meaning from text.

There seems to be some overlap in definitions dealing with "schema theory" and "prior knowledge". However, the most important thought is that a student's knowledge will affect the reading process.

Throughout the remainder of this article the term "prior knowledge" shall be used most of the time.

Research Evidence

Research studies have considered the prior knowledge of students of all ages from beginning readers to college students. Results indicate an important relationship between prior knowledge and comprehension for all ages. Also, the quantity and quality of the prior knowledge were significant factors.

Over and over Langer's research (1980, 1981, 1982) indicated that prior knowledge is a critical factor in comprehension. Since learning comes from within a person, students must connect the known with the unknown.

College students who had more

knowledge read quicker and understood more according to Kintsch et al. (1975).

Lipson (1984) noticed that young readers do apply prior knowledge, but their prior knowledge inaccuracies interfere with accepting new material. They are reluctant to replace incorrect information. On a posttest poor and average students were more likely to answer questions correctly that were first marked "unknown" than to answer questions correctly that were first marked with an incorrect answer. Therefore, it was better to know "nothing" than to know an incorrect answer. During retelling some students manipulated text to fit their own inaccurate knowledge.

Holmes (1983) offers information about good and poor readers. Good readers assimilated old and new information better. Poor readers, even when they possessed adequate prior knowledge, failed to apply the knowledge when they were reading. They were reluctant to correct misinformation.

In another study by Hansen and Hubbard (1984) poor readers performed in a similar manner, indicating poor readers need help in connecting old and new information.

Young and less able readers don't spontaneously monitor reading for inaccuracies, inconsistencies or errors (Markham, 1979; Paris and Myers, 1981).

Dominant Role of Prior Knowledge

Because much accurate prior knowledge enhances comprehension and because there are weaknesses in some systems taught to students, prior knowledge seems to be one of the most reliable avenues to use to improve students' reading comprehension.

Often students are taught and encouraged to find the main idea in a paragraph. However Baumann (1983) examined one hundred social studies passages and discovered that less than half (44%) contained explicit main ideas.

At times students are advised to look at headings in textbooks to help determine the topic of a portion of text. However, the headings often do not correspond to important information, frequently fail to follow logical order and many times have nothing to do with the following text according to Armbruster, Anderson and Kantor (1980).

Learning about text structures is thought to be helpful. Niles (1965) found that most authors use description which is the least organized of the various expository text structures and provides fewer text signals.

Although the above strategies do prove helpful in some situations, many times the students would have to have adequate prior knowledge anyway in order to survive the weaknesses. So, again the importance of prior knowledge rises to the top.

New Decisions About Background Information

Classroom teachers have been offering varied opportunities to build background information for a long time. Some examples are developing concepts, learning new vocabulary, and using audio visual materials dealing with the topic of study. So, why the big concern?

Schema theory (connecting the old with the new) plays a big part comprehension and retention are improved when strategies are used to relate text to personal knowledge and experiences. Research studies indicate

that poor readers do not activate prior knowledge on their own and that inaccurate prior knowledge hinders comprehension. Many studies and articles are available that suggest successful techniques to merge old and new information.

Time and time again these techniques emphasized the importance of having students activate their prior knowledge **BEFORE** the topic of study is covered at all. There are many ways to accomplish activating prior knowledge from simply asking students what they know to more structured methods.

At any rate, students need to know what they know, what they don't know, if their information is inaccurate, compare their knowledge with the new knowledge and finally assimilate the old and new information. Many students seem to need help with all these stages.

Conclusion

Research indicates over and over that the student with a lot of accurate, activated prior knowledge is able to overcome difficult obstacles, even poorly written texts. Therefore, time spent assessing and building prior knowledge on a subject prior to reading is time extremely well spent and may make a profound difference in students' learning.

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