Reading strategies to help high school students and middle school students understand their textbooks

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Students may be getting a good early start on reading in the elementary grades, but to meet the increasing demands of textbook reading in high school and middle school, students need continued reading coaching and support, according to recent articles in the *Journal of Adolescent & Adult Literacy* (JAAL) and *Preventing School Failure*.

Educators have become increasingly aware that many high school and middle school students just don’t have the skills to read their math, science and social studies textbooks. It doesn’t help that many textbooks don’t exactly use best practices when presenting unfamiliar vocabulary and information, and that content teachers in the upper grades are typically not trained to develop students’ reading skills.

Content teachers in middle school and high school need to give their students strategies so they can access their reading material. Below are some strategies.

Among the strategies that have been validated for textbook comprehension with upper elementary and middle school students, researchers say, are linking text to students’ prior knowledge, questioning, summarizing, using imagery and setting a purpose for reading.

“The value of student construction of concept maps has been well-documented for the science classroom,” the authors write.
PLAN Case Study

One strategy that has been developed for textbook reading is called PLAN (Predict- Locate-Add-Note).

PLAN (Predict, Locate, Add, Note) was tested in two 6th-grade classes (50 students) taught by the same teacher in a Texas middle school. One class used PLAN and the other did not.

In one class, the teacher taught students the PLAN strategy and illustrated how to create concept maps on the board. The four steps are as follows:

- **Predict** content and structure of text before reading based on titles, subtitles and graphics.
- **Locate** known and unknown information on concept map.
- **Add** words and phrases to map during reading.
- **Note** new understanding by making changes in concept map.

The students practiced creating concept maps in groups and then individually. They also implemented the PLAN steps with their science textbooks. The process of reading itself became a subject of discussion during science class. Students talked about what it takes to be a successful reader, created paper projects describing a successful reader and drew a concept map on the board of what a successful reader does.

To encourage students to discuss how they felt when they couldn’t understand reading material, the teacher assigned several brief, challenging reading exercises that included complex ideas and college-level grammar. Following these assignments, the students discussed what it felt like to not completely understand text and also talked about the importance of using reading strategies to understand new science material. They talked about feeling embarrassed, worried, anxious, scared and nervous.

Before the intervention, the teacher’s science classes silently read their
textbooks while listening to an audio recording of the chapter. In the treatment class, the students now worked together to create a concept map on the board. The teacher reported a positive response from students, noted that they enjoyed the map making and made comments such as “this makes sense.”

The teacher guided students in class as they individually previewed a textbook chapter by looking at the title and subtitles, size of letters, color of letters and how the text was organized. They predicted the chapter content and noted on the concept map what was known and unknown, revising the concept map as they proceeded to read the chapter.

**The Results for Reading Comprehension**

While there was no difference in the pre-test reading comprehension test scores between the teachers’ two classes, there was a statistically significant difference in the post-test reading comprehension scores of textbook chapters, with the treatment group scoring higher, the researchers write.

Treatment group students also scored higher on a reading strategy checklist which included 10 yes or no questions regarding which strategies students used for reading a textbook chapter and for monitoring comprehension.

The teacher reported that that while students with learning difficulties needed the most support in adopting PLAN, it was most helpful to them judging by their post-test comprehension scores. Average ability students also needed coaching to use PLAN while higher ability students quickly adopted the approach and used it successfully.

All students were eventually able to use the strategies more independently, the teacher said. She concluded that “PLAN opens the door to better understanding” and “teaches kids greater respect for books.” She added that students are “able to grasp and understand more and make more connections.”
Using Scaffolding to Improve Reading Experience

In scaffolded reading experience, teachers give students tools and techniques that help organize their reading experience in three stages:

- Pre-reading stage
- During-reading stage
- After-reading stage.

In the pre-reading stage, students and teachers establish the purpose for reading and activate the students’ prior knowledge of the topic. The teacher also tries to create a context for learning, a term that is becoming ever-more expansive and includes reader attitudes toward learning and reading, the support network as well as the environment where learning takes place.

A major pre-reading strategy is to develop a list of words associated with the topic. Students generate a list of vocabulary words associated with the instructional concept, then brainstorm about more words, group them into categories and then finally name the categories.

If the topic was WWII, for example, students might initially mention Pearl Harbor, Rosie the Riveter or the persecution of Jews, activating their background knowledge on the subject.

Students can then elaborate on these first words with parameters set by the teacher, e.g. no more than eight groups with a minimum of three words in each group.

“These parameters force students to think deeply about the concepts of each word and assess whether the word should be associated with a particular group,” the researchers write.

The primary purpose of the during-reading stage is to improve comprehension as students read and interact with the text.
During reading, students can make use of the following techniques:

- text structures noticing various text structures (e.g. narrative, expository) to become familiar with ways that information is presented;
- visualization – creating images by looking for descriptive words and using them as clues, and
- self-regulation – working independently of the teacher by adjusting the rate of reading, making predictions, asking questions, rereading and reading to discover answers to questions.

**Story Pyramids for Better Reading Comprehension**

Story pyramids were originally used for narrative text, but they have been modified to be used with expository text, the researchers write in Preventing School Failure. The story pyramid requires that the learner pay attention to the underlying structure of the text while reading. In an eight-step pyramid for expository text, students are told to:

1. identify the topic using one word
2. describe the topic using two words
3. describe the setting using three words, etc.

After students have read a passage, they may be asked to write a summary of the most important information in a text. It may be as concise as three sentences or as long as one page.

Students may use the pyramid to write the topic sentence in the summary and to provide more supporting details. The closing statement should synthesize information on the topic.

An important “don’t” for teachers of adolescents, the researchers say, is don’t assume that students have been taught the reading strategies in earlier grades. While students may have the skills necessary to read or at least recognize words, they often need assistance in comprehending what they are

“Reading Success in the Secondary Classroom,” by Charlotte Baling and William Evans, Preventing School Failure, Volume 52, Number 2, pp. 59-66.

Categories: Adolescent Literacy, Comprehension, Middle School