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Using Technology to Teach Reading in the Content Areas
Students can use technology to develop skills to excel at reading across the curriculum.

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by Gail Lovely

Reading across the curriculum is a call for all teachers to make a deliberate effort to teach reading within the context of the subject areas. It should focus on teaching students strategies that help them read, understand, think about, and use materials and information within nonfiction or informative text.

When you think about it, reading a novel is a distinctly different experience than reading this e-newsletter or a scholarly journal. Reading nonfiction requires different goals, different skills and strategies, and a different style of reading. Students need to learn these strategies and skills.

Schools do a pretty good job of teaching students to read fictional narratives. Students are taught to look for setting and characters, and the beginning, middle, and end of the narrative. In the elementary grades, fiction comprises a majority of the content in reading textbooks. In fact, second-grade basal readers are about 80 percent fiction and poetry, while these genres comprise perhaps 60 percent of the grade 6 content, according to Neuman (2006). When students are asked to read a science article, few of those elements of fiction and poetry are helpful to them in their retention, comprehension, or application of what they have read.

The skill of reading nonfiction requires comprehension of words within the context that they are used instead of the decoding that is usually the concern. Unfortunately, each kind of content area can bring slightly different strategies to reading. The keys to reading comprehension in the subject areas are the activation of background or foundational knowledge, active engagement in the content area, attention to the structure of the writing, and thoughtful interaction, or metacognition, about the content.

Structure of writing varies with the content. For example, when reading in the social sciences, students will find content organized by:

- Cause and effect;
- Definition and explanation; and
- Question and answer.

In math, students are more likely to encounter content organized by:

- Keywords and patterns;
- Evidence and reasoning; or
- Symbolic relationships.

It is important to help students learn to look for the structure of what they are reading to help guide them in the comprehension of what they have read.

Prereading Strategies in Content Areas
Before students even start to read in a subject area, it is important to develop their background knowledge and understanding. Studying the written structure of a passage is not useful if the reader has no understanding of the concepts or words in the passage. A quick online search can provide wonderful, interactive, media-rich resources to begin to build background knowledge to encourage the growth of vocabulary and concepts.

Brainstorming can help to develop more discussion and provide teachers with the information they need about the level of understanding of the content prior to reading. Software tools like **Inspiration and Kidspiration** can provide ongoing opportunities for

brainstorming. Wikis can be used to provide an ongoing platform for sharing learned information as well as any remaining questions on a topic.

Evaluating the structure of a passage prior to reading it offers further assistance to students. Teaching students to look for specific words and to preview headings, illustrations, charts, and graphs to help determine the structure of the passage can also be helpful. Many subject-area textbooks are available on CD or DVD and can be shared on a large screen as a way of teaching these specific skills. Modeling specific prereading strategies—such as scanning for headings and subheadings, examining pictures and their captions, and looking for italicized words and phrases—using a projector or a document camera can help students learn from the teacher's "thinking out loud." In some cases, I have even used erasable highlighters to help students actively participate in this scanning and previewing if they are not allowed to mark in their books.

During Content-Area Reading

While students are actually reading a passage, chapter, or book, I help them collect interesting words and phrases as a way of strengthening vocabulary. If students have open access to a computer, this exercise can be completed in a word processing program or it can be completed on word cards. On word cards, students simply write the word, where they found it, and what makes it interesting. Many educators are using "clicks and clunks" as terms for words that students know and understand and words they don't. There are tools for collecting these and also for helping students through the steps of handling clunks, which are words they do not understand. The Web site, **www.readwritethink.org**, has lesson plans and materials designed to help students comprehend what they read. For example, the Alphabet Organizer helps younger students and their teachers collect important or interesting words they come across at the prereading stage and the Fact Finding Frenzy tool provides an interactive tutorial and practice on finding facts within nonfiction passages.

During content-area reading is also a great time to begin to use visual organizers to help students see relationships between the different parts of what they are reading. The content and style of the visual organizer will vary with the content, structure, and level of materials, but some excellent sources for these can be found at **www.eduscapes.com/tap/topic73.htm**. Having so many excellent visual organizers at a teacher's fingertips makes this step easier to implement and more likely to be an ongoing process in reading in all areas.

After Content-Area Reading

Rereading passages and reflecting on what has been read are important steps in the process of content-area reading. Teachers typically ask students to summarize, but reflection infers time spent pondering the content in addition to summarizing it. It is often helpful if students are asked to sketch the content or to make cartoon strips of the content. Students can also use a word processor to write a summary with a limited number of words. I sometimes ask students to summarize with some kind of constraint to encourage selectivity rather than spewing factoids or trivia. For example, a teacher might instruct students to rewrite a particular passage from their history text using no words longer than five letters. Using the ability to color the text in a word-processed document means you can also ask students to highlight the most important words in one color and the main ideas in another.

Verbal reflections or summaries can be recorded into minipodcasts and listened to and discussed. Short audio summaries can be placed into a variety of tools, including Microsoft Word, and then students can be challenged to match written content with the student-made audio summaries. Using free Internet telephone and conferencing tools such as **Skype** to bring experts into a reading discussion can also provide opportunities for students to ask questions and challenge what they have read. Imagine the impact of third graders who have been reading about earthquakes learning more about the subject by speaking with a seismologist using Skype.

Short video productions, public service announcements, and digital documentaries using free tools such as **Photo Story** and **iMovie** are effective end-of-unit tools for giving students opportunities to apply what they have read.

Content-area reading is different from reading in a basal reading text and needs to be taught overtly during other subject areas. The strategies shared in this article can be easily incorporated into the teaching of content, and the technological tools and resources can help

all teachers integrate reading skills and strategies into their curriculum content without adding large amounts of preparation and training. If we all work to help students comprehend and apply what they read, regardless of the format and the content, by age 12 students will be well positioned for their future as lifelong learners in an ever-changing world.

Reference
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On the Same Page

Here are suggested questions that principals and teachers can use to spark discussion about how to apply the points made in this article to their particular schools.

1. What approach does our school take in teaching reading?
2. What do we want our students to already know about reading before they come to our classrooms?
3. What are some best practices at our school for incorporating technology into the teaching of reading?
4. What kind of professional development would we need to use technology to teach reading in the content areas?
5. What kind of professional development would we need to use technology to teach reading in the content areas?