Making the case for content area literacy

Why should teachers give more attention to instruction involving expository text? What is the value of focusing on such instruction in the elementary grades? This newsletter will identify critical reasons that elementary-grade content area literacy instruction is crucial to students' later success in school.

Content teachers do not have to be Reading teachers. However, in order to maximize learning of specialized subject matter, content teachers can address literacy needs to assist struggling readers master of the curriculum.

Providing students an understanding of the structure of the text for the given content and multiple ways to gain meaning from it will assist struggling readers to access the content to be learned.
Why is Reading in Math So Difficult?

Students must be able to:
- read from left to right
- read from right to left (number lines)
- read from top to bottom or vice versa (tables)
- read diagonally (graphs)

Many math textbooks are written above the grade-level for which they are used. The vocabulary and sentence structure are often very difficult for the students using them.

Math concepts are often abstract, which makes it difficult for students to visualize their meaning.

Students must be proficient at decoding numeric and nonnumeric symbols as well as words.

Great Math Read Alouds
If You Made a Million by David M. Schwartz

Anno's Mysterious Multiplying Jar by Masaichiro Anno

One Grain Of Rice: A Mathematical Folktale

Grapes Of Math by Greg Tang

WHAT IS MATHEMATICAL LITERACY?

David Whitin, Heidi Mills and Timothy O'Keefe present an argument for such a concept in "Living and Learning Mathematics, Stories and Strategies for Supporting Mathematical Literacy." The authors maintain that students become mathematically literate the same way they become literate in reading.

Mathematics is more than numbers just as reading is more that letters. Literacy involves placing numbers into meaningful context in daily living. It is demonstrated by students putting numbers to good use within the structure of their lives, their stories and their literature. Students work together, observing and investigating uses of numbers, asking questions, and planning strategies, to find the answers. These are the kinds activities that motivate and support the environment for mathematical literacy.
Ideas to improve content area reading…

Text Structure Analysis

Helping students understand how particular content area texts are constructed helps them unlock the information inside them. Teachers should spend time demonstrating how texts are physically structured on the page and how the layout can aid students in understanding the piece.

Text features such as illustrations, captions, bold print, footnotes and text boxes should be explored and discussed. In addition, students should become familiar and comfortable with the rhetorical modes used in content area texts. Generally most expository texts are written in the cause-effect, compare-contrast or sequencing formats.

Before, During & After Reading

Because content area studies rely so heavily on connecting prior knowledge to new information, a good deal of time should be spent preparing students to read specific content area texts. During the “before reading” portion of a lesson students should be given opportunities to active prior knowledge, develop or understand the questions they will be expected to answer through their reading, make predictions about the text and/or set a purpose for reading.

While reading a content area text, students should be encouraged to ask and answer questions and to monitor their reading comprehension. After reading they should make connections and extend their understanding of the topic that they read about.

Questioning

Often students get so used to teachers asking questions about content after they have finished reading a text that they forget that asking one’s own questions during a reading task is one of the best strategies for ensuring comprehension. Students should be given opportunities to ask and answer their own questions about content area texts. They can generate inquiry questions before reading which they will answer while reading or can ask and answer clarifying questions as they move through a text. The goal of this activity is for students to integrate spontaneous “silent” questioning into their independent reading experiences.

“All words are pegs to hang ideas on.” — Henry Ward Beecher
Vocabulary Strategies

Vocabulary is essential for understanding content area texts. Think about all of the subject specific vocabulary words that are necessary to understand a content area textbook. For example, you could not possibly comprehend a social studies chapter on the geography of Africa if you do not know the meanings of the words “desert”, “savannah” and “rainforest”. Each content area requires students to not only have strong general vocabularies, but also an understanding of subject specific words.

Students should be encouraged and assisted in learning content area vocabulary words. Strategies such as word maps, collaborative glossaries (content specific dictionaries created by the class) and classification and categorization activities help students develop strong content area vocabularies.

Teaching Academic Language and Vocabulary across the Curriculum

Consensus Concepts: Critical Concepts to Improve Literacy
There are many concepts or “big idea” words that are implied within the standards and framework in all content areas that are essential building blocks of literacy. Exposing students to concepts will help build students’ academic vocabulary and foster a deeper understanding.

Academic Vocabulary Journal
This practice is the development of a vocabulary journal, an ongoing collection of the academic vocabulary (mortar) words that students learn in class. This journal can be used as a reference in any content area.

Interactive Reading Log
The interactive reading log helps students expand note-taking skills, build understanding of core content, and make the transition to using academic vocabulary in their own writing.

List-Group-Label
List-Group-Label allows students to brainstorm and categorize related vocabulary as a way to understand key terms and develop concept understanding.

Making Meaning with Word Sorts
Sorting words is a strategy used to reinforce new vocabulary or concepts within or across a subject area by sorting the words into categories.
Improving Reading Skills in the Social Studies Classroom

For many social studies teachers, helping students develop reading skills is a low priority—nice to do if there's time, but not necessary. After all, there's scarcely time to meet the multitude of subject-area learning objectives. Why add reading instruction to the list? The answer is that reading skills are essential to the learning of subjects. In social studies, students must read to learn.

Struggling readers stand to learn a lot less than those who are proficient in reading. Fortunately, you do not need to be a reading specialist to help ensure that no student is left behind. You can make a difference by recognizing social studies-specific reading difficulties and by teaching strategies designed to overcome them.

Reading Strategies That Work

*Demonstrate How to Use Helpful Features of Expository Text

*Provide Advance Organizers

*Use Word Webs and Word Walls to Teach Vocabulary

*Use Role Plays and K-W-L Charts to Activate Prior Knowledge
### SCIENCE AND COMMUNICATION SKILLS

<table>
<thead>
<tr>
<th>Science</th>
<th>Reading</th>
<th>Writing</th>
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<tbody>
<tr>
<td>Classifying</td>
<td>Identifying main idea/details</td>
<td>Outline science information</td>
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<tr>
<td>Experimenting</td>
<td>Sequencing</td>
<td>Write up a procedure to use</td>
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<tr>
<td>Drawing conclusions</td>
<td>Drawing conclusions</td>
<td>Study experiment results and write up what you think happened based on the facts</td>
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<tr>
<td>Writing up experiment results</td>
<td>Expository writing</td>
<td>After conducting an experiment, write up the results</td>
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<tr>
<td>Observing/inferring</td>
<td>Distinguishing cause and effect</td>
<td>List causes and effects in a given experiment</td>
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<tr>
<td>Determining cause and effect</td>
<td>Determining cause and effect</td>
<td>List causes and effects in a given experiment</td>
</tr>
<tr>
<td>Comparing and contrasting</td>
<td>Comparing and contrasting</td>
<td>Prepare a chart that gives similarities and differences between two similar organisms</td>
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Students must be exposed to a variety of reading materials that are focused around units of study in science. Text books, lab directions, and teacher prepared handouts are probably the most common types of materials students will read. In addition a well organized classroom will have the following reading materials available to students: books at a variety of reading levels; various science magazines (National Geographic, Scientific American, Smithsonian, Sierra, etc); and, several different science reference books. As a science teacher you are responsible to see that such reading materials are available in your classroom. It is also recommended to request your school library keep science reading materials.
References


