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Instructional Strategies for Content-Area Reading Instruction

DIANE PEDROTTY BRYANT, NICOLE UGEL, SYLVIA THOMPSON, AND ALLISON HAMFF

Students with reading disabilities in middle and high school grades need assistance in content-area reading to integrate new information with their prior knowledge, to obtain important information from the text, and to remember what they have read. Thus, content area reading instruction is an important component of all secondary curricula and includes strategy instruction in word identification, vocabulary, and comprehension skills. The purpose of this article is to present an overview of the components of content-area reading instruction and to describe instructional strategies that can be used to teach students with reading disabilities how to approach content area reading.

Mr. James, a seventh-grade general education social studies teacher, participated in a teacher discussion group by explaining that students in his class who were reading below grade level had difficulty with content presented in the social studies textbook. In particular, these students demonstrated problems decoding multisyllabic words, learning vocabulary words even if they were defined in the book, and putting the main idea into their own words. He was concerned by the apparent lack of interest and motivation demonstrated by the students to read the text and participate in small group discussions. Although Mr. James included some activity-based instruction, he frequently used the textbook as instructional material for in-class and homework assignments. He suggested to the

teacher discussion group that students needed to learn how to read the textbook so that they could learn the vocabulary and comprehend the content material. Mr. James, the special education teacher, and the English teacher decided to work collaboratively on strategies to help students tackle the text.

Mr. James' experience with struggling readers is not uncommon, because as students progress to middle school, academic instruction shifts from an emphasis on learning how to read and early reading skills (e.g., phonological awareness, letter-sound correspondence; see Chard & Osborn and Chard & Dickson, in this issue; oral reading fluency; see Mastropieri, Leinart, & Scruggs, in this issue) to using reading to learn (i.e., content-area reading) content-area subject matter.

Content-area reading means that students interact with text to interpret and construct meaning before, during, and after reading by using their prior knowledge and the skills and strategies developed during early reading instruction. Moreover, students must use word identification strategies (e.g., structural analysis, syllabication) to decode unfamiliar multisyllabic words and context clues to figure out the meaning of technical terms (Lenz & Hughes, 1990). Content-area reading in science, history, and social studies implies that students can read and comprehend expository (i.e., explanatory/factual) text—which includes multisyllabic technical words, various expository text structures (e.g., cause/

effect, compare/contrast), and concepts and facts—and can demonstrate their knowledge of subject matter content through various assessment activities.

The ability to understand text is critical because of the large amounts of text that students must read (Rivera & Smith, 1997), the specialized and technical vocabulary they need to learn (West, 1978), and the various text structures (i.e., cueing systems that refer to how ideas are interrelated to convey meaning) that are used to organize subject area material (Meyer & Rice, 1984). In particular, textbooks are the predominant material used by

teachers as the basis of instruction (Armbruster & Anderson, 1988; Ciborowski, 1992). Textbook-based instruction is based on the assumption that students can read and derive meaning from the text. Typical middle and high school academic instruction involves teachers providing lectures on textbook content and students reading their textbooks to identify important facts and concepts in preparation for weekly tests (Kinder & Bursuck, 1991). This is particularly daunting for students with reading disabilities, who have not mastered early reading skills and who must cope with academic activities that are literacy-based (Hudson, Lignugaris-Kraft, & Miller, 1993; Schumaker, Denton, & Deshler, 1984). Things teachers should take into consideration when selecting textbooks are presented in the sidebar.

For students with reading disabilities who receive science, history, and social studies instruction in general education classes and who continue to demonstrate difficulties with early reading skills, content-area reading is overwhelmingly difficult, because they lack the characteristic strategies and skills needed to succeed in textbook-based instruction compared to their typically achieving peers (see Table 1). In particular, as students with reading disabilities progress in school, “the gap between what they can read and what they should read continues to widen, [and] learning and reading problems become more generalized, compromising word attack skills, comprehension and thinking strategies, attention, and sadly, self-esteem” (Ciborowski, 1992, p. 7). Therefore, teachers (e.g., special education and general education teachers employing a coteaching or collaborative model and special education teachers providing services in resource settings) are faced with the task of teaching students how to tackle content-area reading by provid-

CONSIDERATIONS FOR SELECTING TEXTBOOKS

- Textbooks should be examined for coherence (logical flow of ideas) and appropriateness for the reader (match between content and reader’s knowledge and skills).
- Visuals should be informative and support important content information.
- Graphic organizers (charts, pictures, flowcharts, diagrams) help students comprehend the text structure.
- Sufficient practice activities provide students with opportunities to learn and apply concepts and ideas.
- Prereading activities help students link their prior knowledge with topics to be studied.
- Vocabulary activities help students develop deeper meaning of concepts.

Table 1. *Characteristics of Good and Poor Readers*

Good Readers	Poor Readers
	Before Reading
<ul style="list-style-type: none"> • Consider what they already know about the topic • Use text features (e.g., boldface, headings, illustrations) to get a sense of what they will read. 	<ul style="list-style-type: none"> • Begin reading without a purpose for reading • Do not consider their background knowledge about the topic • Lack motivation or interest
	During Reading
<ul style="list-style-type: none"> • Monitor their reading by recognizing comprehension programs and using fix-up strategies • Use context clues to figure out the meaning of vocabulary and concepts • Identify the main idea and important details • Read fluently • Use word identification strategies to decode unfamiliar words • Recognize and use text structures to gain meaning from reading 	<ul style="list-style-type: none"> • Move through the text, even if they do not understand what they have read • Do not read fluently • Do not recognize text structures • Lack strategies to figure out new words • Lack strategies to repair comprehension problems
	After Reading
<ul style="list-style-type: none"> • Summarize reading • Reflect on content • Draw inferences 	<ul style="list-style-type: none"> • Cannot summarize important points • Do not use strategies to reflect on reading

ing them with strategies for reading and comprehending text successfully.

Most students with reading disabilities need assistance in area content-area reading to integrate the new information with their prior knowledge, remember what they have read, and obtain important information from the text. Thus, content-area reading instruction is an important component of all secondary school curricula. The purpose of this article is to present an overview of the components of content-area reading instruction and to describe instructional strategies that can be used to teach students with reading disabilities how to approach content-area reading.

COMPONENTS

We have chosen to focus only on the following three components of content-area reading instruction: word identification, vocabulary, and comprehension. We provide an overview of research findings for each component, including a description of the skills involved, the difficulties exhibited by students with reading disabilities, and their implications for instruction.

Word Identification

The ability to identify or decode unknown words rapidly and accurately is an important prerequisite for reading fluency and comprehension (Adams, Treiman, & Pressley, 1997; Moats, 1998). In the early grades, good readers learn the correspondence between phonemes and graphemes and the orthographic patterns in words; this knowledge is applied to deciphering words rapidly (Stahl, 1998). Automatic word recognition, coupled with decoding skills, frees students to focus on reading for meaning (Snider, 1989).

At the secondary level, reading content-area text requires an ability to identify (i.e., decode) unfamiliar, multisyllabic words (Lenz & Hughes, 1990). As good readers progress through the grades, they develop skills and strategies (e.g., syllabication, identification of affixes to help break words into parts) that are needed to identify multisyllabic words. Many secondary students have become adept with these word identification skills and apply this knowledge to decoding long, unfamiliar words.

However, many secondary-age students with reading disabilities continue to struggle with word identification skills, which adversely affects their ability to read fluently and comprehend text (Moats, 1998). Students who expend a great deal of energy on decoding typically do not read extensively and consequently do not acquire the background knowledge that is essential for comprehending secondary-level content-area subject material (Snider, 1989). Secondary students with reading disabili-

ties who have mastered basic word identification skills taught as part of beginning reading still may be unable to generalize the use of these strategies to decoding multisyllabic words; these students can benefit from systematic problem-solving strategies for identifying difficult words (Lenz & Hughes, 1990). Thus, the goal of word identification instruction is to help students develop and apply strategies for decoding difficult, content-specific, multisyllabic words.

Word identification strategies include contextual, phonetic, and structural analysis skills (Lenz & Hughes, 1990). *Contextual analysis* is used to determine the meaning and pronunciation of unfamiliar words according to how they are used in a sentence or paragraph. Contextual clues include graphic illustrations (e.g., charts, diagrams) and syntactic and semantic clues (i.e., figuring out the meaning of the unknown word based on the sentence structure and the meaning of surrounding words; Johnson & Baumann, 1984). Using contextual analysis as a word identification strategy is beneficial for reading expository text when the reading material is not too difficult for students.

Phonetic analysis refers to students applying their knowledge of the orthographic code of the language and phoneme-grapheme correspondences to decipher words (Adams, 1990; Stahl, 1998). By analyzing letter-sound relationships and blending them together, parts or all of multisyllabic words can be deciphered. According to Stahl (1998), "effective decoders see words not in terms of phonics rules, but in terms of patterns of letters that are used to aid in identification" (p. 212).

Structural analysis focuses on students recognizing word units or affixes (e.g., prefixes, suffixes, inflections) and applying this knowledge by breaking words apart to facilitate the systematic decoding of multisyllabic words (Lenz & Hughes, 1990).

Vocabulary

Secondary students acquire about 3,000 new words per year as they read numerous materials as part of content-area and independent reading. By the time most students graduate from high school, they will have encountered more than 88,500 word families (i.e., base word and its derivatives), with many of these words learned in the course of wide reading (Nagy & Anderson, 1984; Nagy & Herman, 1987). Clearly, vocabulary knowledge is acquired rapidly during the school years; however, research has shown that the rate at which students acquire vocabulary varies tremendously, that students with reading disabilities tend to have poor vocabularies because of their limited involvement with reading activities, and that the vocabulary gap between good readers and poor readers increasingly widens over time (Simmons & Kameenui, 1990). The ramifications

of limited vocabulary knowledge include difficulties with reading and comprehending content area text.

Vocabulary knowledge is fundamental to comprehending text (Nagy, 1998). However, knowledge of vocabulary words "is not an all-or-nothing proposition; it is not the case that one either knows or does not know a word" (Beck & McKeown, 1991, p. 791). There are differential levels of word knowledge, including "I never saw that word before," "I've heard that word before but I don't know what it means," "I can read that word and I think it has something to do with . . .," and "I know that word really well" (Beck & McKeown, 1991; Nagy, 1998).

Stahl (1986) identified three increasingly deep levels of processing vocabulary knowledge. The first level is called *association processing* in which students link their understanding of the new word to a synonym or a specific context. The second level is known as *comprehension processing* in which students apply associative knowledge of the word—for example, filling in a blank to complete a sentence or grouping the word with other words according to specific criteria. The third level is called *generation processing* and involves students using their knowledge of the word by "creating a novel synthesis of the new word and known information" (Stahl, 1986, p. 665). For example, students can define the word in their own words or recognize the semantic features of the word. Thus, students who interact with words and make words their own in the comprehension and generation processing levels improve their understanding of text containing those words (Stahl, 1986).

In addition to word processing levels, each discipline has its own language or technical vocabulary that students must learn to comprehend specific content-area information (West, 1978). Technical vocabulary includes words that relate specifically to each content-area subject or topic. Students must learn the definitions of these words to understand content-area reading text and to learn the language of the discipline. Also, students must be able to distinguish specialized vocabulary, which consists of words that have specific meanings for content-area subjects and have different meanings when used in other contexts. For example, the words "brush" and "ruler" mean one thing to art and geography teachers and another to social studies and math teachers, respectively (West, 1978).

To promote comprehension, students need to develop an understanding of how words can be used across different contexts and be able to understand the meaning of words quickly while reading. Students benefit from knowing the meanings of words, the relationships (e.g., synonyms, antonyms) of words, and the contextual interpretations of words (Baumann & Kameenui, 1991). Thus, the goal of vocabulary instruction is to help students develop and apply vocabulary knowledge across a variety of contexts and to increase their repertoire of strategies for figuring out new vocabulary indepen-

dently. However, not all vocabulary strategies increase students' reading comprehension (Nagy, 1998). Students with poor vocabularies do not acquire the meaning of new words as quickly as students with richer vocabularies (Boucher, 1986). Students with reading disabilities benefit from an integrated approach to vocabulary development that includes explicit approaches to teaching word meanings and the development of strategies for learning vocabulary as it appears in context (Carlisle, 1993).

Comprehension

Reading comprehension refers to the act of thinking and constructing meaning before, during, and after reading by integrating information from the author with the reader's background knowledge (Snider, 1989). The ability to activate one's prior knowledge about a topic, self-question, identify main ideas and supporting details, paraphrase, and summarize are critical skills of effective comprehension development. Thus, the development and use of effective strategies before, during, and after the reading process to foster reading comprehension skills is one of the most significant goals of educators (Mastropieri & Scruggs, 1997; Pressley, Brown, El-Dinary, & Afflerbach, 1995).

Students bring to the task of reading a range of experiences and prior knowledge about content-area topics. Each reader interacts with text in different ways because of different degrees of expertise, attitude, experience, and knowledge (Snider, 1989). Students' ability to activate prior knowledge regarding content-area topics depends on word knowledge and experience with a wide variety of reading materials. Limited experience affects reading comprehension because prior knowledge plays an important role in helping students understand higher-level concepts discussed in most secondary-level texts (Snider, 1989).

Skilled readers monitor their understanding of reading as they read text and use strategies to promote comprehension and retention (Ward & Traweek, 1993). Comprehension monitoring involves (a) understanding the purpose for reading, (b) distinguishing important information from less important information, (c) engaging in self-questioning about what is being read, and (d) recognizing and correcting problems when comprehension is inadequate (Baker & Brown, 1984). It is not surprising that students with reading disabilities have difficulty monitoring their comprehension, because most of their attention is spent on decoding rather than on gaining meaning (Snider, 1989). Thus, these students can benefit from instruction on when and how to use strategies to monitor their comprehension of text so that they can fix comprehension problems.

Text comprehension involves the reader's ability to understand how the reading material is structured (Meyer & Rice, 1984) and to organize and remember

important information. Text structure refers to a cueing system about the way ideas are interrelated and about the subordination of some ideas to others to convey meaning to readers (Weaver & Kintsch, 1991). For example, expository text includes enumerative, sequential, compare-and-contrast, cause-and-effect, and problem-solution structures (Deshler, Ellis, & Lenz, 1996). Organization and retention of expository text can be aided by graphic organizers and visuospatial arrangements of information to show the interrelationships among ideas (Brigham, Scruggs, & Mastropieri, 1995; Clark, Deshler, Schumaker, Alley, & Warner, 1984; Darch & Carnine, 1986; Horton, Lovitt, & Bergerud, 1990).

INSTRUCTIONAL STRATEGIES

In this section, we present instructional strategies for teaching the three components of content-area reading (word identification, vocabulary, comprehension) according to the three phases of reading—before, during, and after. We begin by providing a summary of effective instructional practices for teaching students strategies for content-area reading. Effective strategy instruction (Ciborowski, 1992; Deshler et al., 1996; Pressley et al., 1995) involves teachers who

- provide explicit instruction to promote the acquisition and mastery of reading strategies;
- provide advance organizers in outline form, so students can examine the structure of the lesson's content;
- model how to comprehend text and figure out the meaning of new words;
- prompt students to use reading strategies;
- provide daily and sustained instruction;
- require strategy mastery;
- help students learn when, where, and how to apply reading strategies to content-area text;
- have students practice strategies with a variety of materials (e.g., trade books, specialized content area supplements, textbooks); and
- recognize that strategy instruction is part of the total school curriculum and is applicable across content-area classes.

Word Identification

Word identification instruction involves teaching students strategies to read text that contains difficult, multisyllabic words found in secondary textbooks (Lenz & Hughes, 1990). Thus, the goal of word identification instruction is to help students develop and apply strategies for decoding multisyllabic words. Several instructional tips can be used by teachers to help students with

reading disabilities decode unfamiliar words. First, teachers should model how to use decoding strategies (e.g., syllabication, affixes) to break words apart for easier pronunciation. Second, teachers should provide steps for decoding multisyllabic words (e.g., look for a prefix and suffix, divide the word into syllables; Lenz, Schumaker, Deshler, & Beals, 1984). Third, word identification strategies should focus on words that students encounter in text. Finally, word identification strategies should be paired with vocabulary-building activities. Students need strategies to “unlock” multisyllabic words; the meaning of these words must be emphasized as well. Two strategies, *Making Words* (Cunningham & Cunningham, 1992) and the *Word Identification Strategy* (Lenz et al., 1984), are described; both strategies integrate contextual, phonetic, and structural analysis skills.

Making Words

Making Words is an activity of about 15 minutes' duration where students combine individual letters to make 2-, 3-, 4-, and 5-letter words (and longer words for older students). The “word for the day,” which can be a content-specific word, is the final “big” word that students strive to figure out. In this activity, students apply their knowledge of sound-letter correspondences, orthographic patterns, structural analysis, and content-specific vocabulary to form words. The steps for *Making Words* for secondary instruction include

PREPARING

1. Select the final “big” word from a list of vocabulary words.
2. Make a list of shorter words that can be made from the letters of the “big” word.
3. From this list of words, select 12 to 15 words that emphasize an orthographic pattern you wish to teach or reinforce; include big and little words for differing ability levels of students, and words that can be made using the same letters in different positions (e.g., words, sword).
4. Order the words according to the patterns and skills that will be emphasized; record this order of words.

TEACHING

1. Place individual letter cards for the “big” word in a pocket chart visible for all students to see.
2. Distribute corresponding individual letter tiles to students.
3. Designate, by writing a numeral (e.g., 2, 3, 5) on the chalkboard, the number of letters that the words should contain and tell students which pattern to make (e.g., words with short vowels, change the position of the same letters).

4. Have students take turns sharing their words and making the words using the letters in the pocket chart.
5. Ask if anyone has figured out the “big” word, which uses all of the letters.

Word Identification Strategy

The Word Identification Strategy is a learning strategy for helping students to identify unfamiliar words in content-area text. Instructional procedures for teaching the strategy include (a) pretesting and obtaining a commitment from students to learn the strategy, (b) describing and modeling the strategy, (c) having students rehearse the steps to mastery, (d) having students practice using the strategy with various materials, and (e) focusing on student generalization of the strategy. Teaching the strategy takes about a week, and focusing on the application of the strategy to content material is an ongoing process until students generalize the use of the strategy across situations (e.g., reading text, taking a test, doing homework). Prerequisite skills for using this strategy include knowledge of prefixes and suffixes and basic phonic rules (e.g., digraphs, blends). The strategy is presented using a mnemonic, DISSECT, to help students remember the steps of the strategy. The mnemonic consists of the following steps:

Discover the word’s context by examining syntactic and semantic clues in the text.

Isolate the prefix by dividing the prefix from the root word. Students proceed to the next step if there is no prefix or if they still need help deciphering the word.

Separate the suffix by dividing the suffix from the root word. Again, students proceed to the next step if they require additional help to figure out the word.

Say the stem by reading what is left of the word once the prefix and the suffix are separated. Students proceed to the next step if they are having difficulty decoding the stem.

Examine the stem by separating the letters of the stem to make decoding easier or by applying knowledge of phonic rules.

Check with someone, used when students are still stuck.

Try the dictionary, the last step if students cannot decode the word and cannot find someone to help them out.

Contact the Center for Research on Learning, University of Kansas, 3061 Dole Center, Lawrence, KS 66045 or phone 913/864-4780 for more information and professional development on the Word Identification Strategy.

Vocabulary

Vocabulary instruction has the greatest effect on comprehension when students are engaged in different activ-

ities including, but not limited to, defining the words and using the words in context (Stahl, 1986). Effective vocabulary instruction consists of providing numerous encounters with words and concepts and discussions and opportunities to use these words and concepts across a variety of contexts (Beck & McKeown, 1991). Moreover, vocabulary instruction focuses on teaching specific words and concepts and teaching students strategies to learn words independently in context (Baumann & Kameenui, 1991). Suggestions for instruction are provided, followed by a description of two vocabulary instruction techniques: semantic mapping (Johnson & Pearson, 1984) and semantic feature analysis (Anders & Bos, 1986; Johnson & Pearson, 1984).

Instructional tips for teaching specific words and concepts include the following:

- Teaching specialized and technical vocabulary prior to the lesson.
- Presenting new vocabulary in semantically related groups (e.g., semantic maps, semantic feature analysis; Nagy, 1998).
- Providing multiple exposures to words across contexts (Stahl, 1986).
- Providing instruction on a limited number of new words in each lesson and relating the words to the content area text.
- Having students link new vocabulary with their background knowledge by describing what they already know about the topic (Beck & McKeown, 1991).
- Having students make up sentences using new vocabulary (Stahl, 1986).
- Having students identify word relations (e.g., synonyms, antonyms) and dictionary definitions in combination with using words in context (Stahl, 1986).
- Having students develop word lists or banks.
- Providing activities (e.g., cloze procedure, reading sentences before and after the sentence with the new word) that require students to use semantic and syntactic features to determine the context meaning of new vocabulary (see Vaughn & Klingner, in this issue).

Semantic Mapping

Semantic maps are procedures that help students to make connections between new vocabulary and prior knowledge and to see the relationships among conceptual ideas (Nagy, 1998; Scanlon, Duran, Reyes, & Gallego, 1992). Semantic maps also can be used following instruction to determine student learning and understanding about topics, vocabulary, and concepts (Vaughn, Bos, & Schumm, 1997). An example of a semantic map for the seabirds is shown in Figure 1. The steps for creating semantic maps include the following:

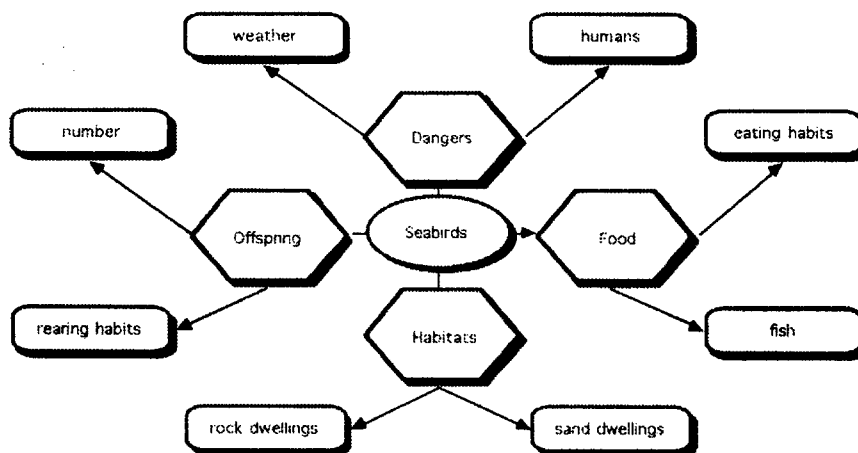


Figure 1. *Semantic map example for seabirds.*

1. Identify the main topic and place it at the center of the graphic organizer.
2. Have students brainstorm words that are associated with the main topic.
3. Discuss how to group these words into broad categories and discuss the meanings of the words.
4. Ask students to provide labels for the categories.
5. Have students generate words or subcategories for each category.
6. Discuss the vocabulary and the interrelationships of categories and subcategories.

Semantic Feature Analysis

Semantic feature analysis (SFA) is a procedure that helps students integrate new information with prior knowledge and deals explicitly with relationships among word meanings (Nagy, 1998). New vocabulary is presented in a column and *semantic features* (i.e., words or phrases that refer to aspects of meaning that are shared by the words or that discriminate the words from one another) are presented in a row (Nagy, 1998). An example of an SFA on the U.S. Civil War is provided in Figure 2. The following list describes the steps for developing an SFA grid:

1. Develop a grid with a set of vocabulary words in one column and a list of features in a row.
2. Through class discussion, have students explain the meaning associated with each word and the relationships of the words to the features. Describe attributes of the words compared to the listed features.
3. Place a + or - indicating whether or not the word has that feature.
4. Show students a completed grid, then gradually present partially completed grids until students can work independently or in a group to complete a grid.

Comprehension

Comprehension instruction focuses on providing students with strategies they can use before, during, and after reading to activate prior knowledge, engage self-monitoring abilities, interpret text structures, and review and reflect on text. Instructional recommendations for helping students to better understand text include (a) introducing one strategy at a time by modeling and thinking aloud (Pressley et al., 1995), (b) making available a wide range of texts (e.g., trade books, specialized content-area supplements, high-interest/controlled vocabulary books; see Table 2 for examples) for classroom instruction and independent reading, and (c) monitoring the use of strategies across content-area instruction. Specific strategies are suggested for the before, during, and after reading phases.

STRATEGIES TO USE BEFORE READING. Activating prior knowledge before students read is a critical component of effective reading instruction (Snider, 1989). To activate prior knowledge, students can verbalize what they know and what they want to learn about the topic (Ogle, 1986). Teachers may need to provide prereading experiences (such as field trips or videos) to develop the prerequisite knowledge for a topic of study (Snider, 1989). Also, teachers can ask students to examine the physical features of text (boldface, headings, illustrations) to make predictions about what they will study (Englert & Mariage, 1990). Finally, teachers can help students to develop self-monitoring skills by setting a purpose for reading (e.g., providing students with questions to consider as they read; see the sidebar).

STRATEGIES TO USE DURING READING. Teachers can engage students in several activities to enhance comprehension during the reading process. For instance,

Features →	Causes	Union	Confederacy	Battles
Vocabulary Words ↓				
cannonade	-	+	+	+
slavery	+	+	+	-
cavalry	-	+	+	+
abolitionist	+	+	-	-

Figure 2. Semantic feature analysis for the U.S. Civil War (+ has feature, - does not have feature).

Table 2. Examples of High-Interest/Controlled Vocabulary Books

Publisher	Material	Grade/Interest level	Reading level
Steck Vaughn	<i>Winners</i>	6-12	2-4
	<i>Spotlight</i>	4-8	2-4
	<i>Headlines</i>	5-8	2-4
	<i>The Great Series</i>	6-12	2-4
	Mystery, adventure, & science fiction collections	5-12	2-4
	<i>Wonders of Science</i>	7-12	2-3
	<i>America's Story</i>	5-10	2-4
Capstone Press	<i>Animals and the Environment</i>	5 and above	3-4
	<i>Endangered Animals</i>	5 and above	3-4
	<i>Getting Ready for Careers</i>	5 and above	3-4

through the use of self-questioning activities, students can be asked to reflect on and monitor their understanding of text as they read (Schmidt, 1989); examples of questions that help students interact with text are shown in the sidebar. During the process of reading, teachers can have students complete organizational frameworks to facilitate their understanding of the text and improve their ability to deal with information presented in various expository text structures (Lovitt & Horton, 1987). Organizational frameworks enable students to arrange information from the text in order to facilitate comprehension and retention. For example, frameworks can be developed for comparing and contrasting information or for displaying a cause-effect relationship. Finally, students can engage in activities that focus on summarizing portions of the text that they read by identifying main ideas and paraphrasing key information pertinent to sections of the text (Schumaker et al., 1984; see Vaughn & Klingner, in this issue).

STRATEGIES TO USE AFTER READING. After students complete their reading assignment, they can implement a variety of strategies that facilitate reading comprehension. For example, students can reflect on what they have learned by answering questions after they have read the text (Ogle, 1986; see the sidebar). Students can discuss their responses, which are recorded in study guide organizational frameworks. Finally, students can depict important information through presentations, visual representations, media, and book reviews.

SUMMARY

Students with reading disabilities in middle and high school grades need assistance in content-area reading to integrate new information with their prior knowledge, to remember what they have read, and to obtain impor-

QUESTIONS TO ASK BEFORE, DURING, AND AFTER READING

Before:

1. What is my purpose for reading?
2. What do I already know about this topic?
3. What do I think I will learn about this topic?
4. What are my predictions?

During:

1. Does what I am reading make sense?
2. Is this what I expected? Should I revise my predictions or suspect judgment until later?
3. How are the important points related to one another? What parts are similar or different?
4. What can I do to increase my understanding? Should I read on, reread, or stop and use a fix-up strategy?

After:

1. What were the most important points?
2. Which sections supported these points?
3. What is my opinion? How do I feel? Do I agree or disagree?
4. What new information did I learn?
5. Should I reread for better understanding? Are there other strategies that I should use?

tant information from the text. Thus, content-area reading instruction is an important element of all secondary school curricula and includes strategy instruction in word identification, vocabulary, and comprehension. In particular, students benefit from strategy instruction that includes teachers' modeling the use of strategies and students' having opportunities to apply strategies to content-area text on a regular basis. Moreover, content-area reading instruction is most effective when it is integrated into the total school curriculum and is applicable across content-area classes.

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versity of Texas, Department of Special Education, College of Education, Austin, TX 78712.

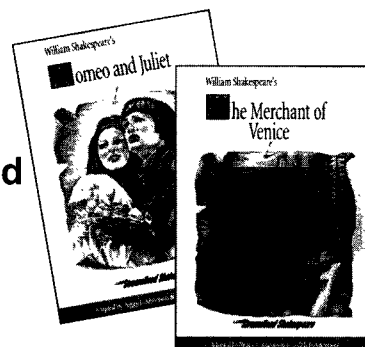
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