INTRODUCTION

Currently, many millions of students receive remedial services for academic deficits. The academic difficulties experienced by these students could be ameliorated with a variety of approaches, including (a) teaching these students basic skills, such as reading, writing, and mathematics; (b) modifying instructional delivery to make it easier for those students to learn, thus lessening the instructional demands; and (c) teaching students how to learn better. Many suggestions are presented elsewhere in this monograph for ways that the general education teacher could teach basic skills effectively and/or modify the instructional demands presented to students with disabilities. Both are critical interventions for students faced with academic challenges. However, as students with disabilities progress and become more proficient with basic skills, they need more help in meeting academic demands. In order to be successful in general education classes, these students need to learn specific learning strategies that will assist them to meet the demands of the complex tasks required in content area classes. Derry and Murphy (1986) defined strategies as “the collection of mental tactics employed by an individual in a particular learning situation to facilitate acquisition of knowledge or skill” (p. 2). Most work in the area of learning strategies has been conducted at junior high school, high school, or college level, most notably by Schumaker, Deshler, and their colleagues at the University of Kansas (this volume).
SPECIFIC LEARNING STRATEGIES

For 9 years, Archer and Gleason field-tested and revised strategies for the elementary level (grades 3–6) so that study behaviors might be firmly established by the time students reach the challenges of junior high or high school. These strategies have been used nationally for the past 12 years and revised yet again (Archer & Gleason, 2002), and are the basis for this chapter. These specific learning strategies include skimming through textbook material to find information needed for answering a particular question, reading textbook material and deciding which information is important and which is not, using the identified relevant information to take notes and study the material, and many more.

Many students with problems learning and/or with learning disabilities are passive in their approach to the use of strategies to accomplish classroom tasks (Newman & Hagen, 1981; Torgesen, 1982). Teachers face the challenge of transforming these passive learners into learners who are involved more actively and who are more successful in meeting classroom expectations. We will accomplish this task by teaching students effective specific learning strategies for gaining information, responding to information, and organizing information.

Gaining Information From Content-Area Textbooks

A major goal in content-area classes is that of gaining information from content-area textbooks. Using study skills to gain information from textbooks can be difficult if students are left to devise their own strategies. Archer and Gleason (1993, 2002) determined that for students to gain information from textbooks they must be taught directly the following five strategies: (a) decoding of longer words, (b) surveying the chapter and forming a general impression of the important information to be emphasized in the chapter, (c) reading the text and attending to the main ideas and important details, (d) attending to the content of maps and graphics that accompany the text, and (e) verbally rehearsing the main ideas and details and/or completing written notes on the main ideas and details. Archer and Gleason (2002) use teacher-directed instruction to teach all five component strategies. In addition, other researchers have studied one or more of these strategies in isolation. Each strategy will be described with enough detail that a school psychologist could implement the strategy or facilitate implementation with a classroom teacher. Further information on content area reading strategies can be found in reviews by Boyle and Yeager (1997); Bryant, Ugel, Thompson, & Hamff (1999); De La Paz (1999); Deshler, Schumaker, Harris, & Graham (1999); Gersten (1998); Mastropieri and Scruggs (1997); Munk, Bruckert, Call, Stoehrmann, and Radandt (1998); Swanson and De La Paz (1998); Vaughn, Gersten, and Chard (1999); and Vaughn, Klingner, and Bryant (2001).

Decoding longer words. One of the major challenges that students face when reading content area textbooks is the number of long words. Poor readers tend to skip or guess at these words. Nagy and Andersen (1984) determined that from fifth grade on...
average students encounter approximately 10,000 words each year that they have never encountered in print before. Most of these new words are longer words having two or more syllables (Cunningham, 1998). In content-area passages, multisyllabic words such as evaporation, precipitation, and transpiration generally carry most of the passage’s meaning. Unfortunately, poor decoders, even those who can read single syllable words, have a difficult time with multisyllabic words (Just & Carpenter, 1987; Samuels, LaBerge, & Bremer, 1978). Perfetti (1986) concluded that the ability to decode long words increases the qualitative differences between good and poor readers.

A number of studies have shown that teaching students strategies for decoding longer words improves their decoding ability. Shefelbine (1990) taught fourth and sixth graders having difficulty decoding multisyllabic words to use affixes (e.g., dis and tion) and vowels (e.g., ea and ow) to pronounce longer words. When compared to a control group, significant gains were made in ability to pronounce long words. Similarly, Lenz and Hughes (1990) were able to reduce the oral reading errors and increase students’ comprehension at reading level by teaching seventh, eighth, and ninth graders a decoding strategy.

Students taught a research-validated decoding strategy that was later incorporated into the REWARDS program (Archer, Gleason, & Vachon, 2000) made significant gains in decoding longer words presented in isolation and within passages (Archer, Gleason, Vachon, & Hollenbeck, 2002). The REWARDS strategy reflects two important patterns in multisyllabic words: (a) the presence of affixes in about 80% of multisyllabic words and (b) the presence of vowel grapheme (i.e., letter or letters that map a vowel sound) in all decodable “chunks.” By using this strategy, the student does not need to segment the word into perfect dictionary syllables, but rather into manageable chunks that can be decoded. For example, once students have learned to recognize the affix ism at the end of words, the word astigmatism can be divided into the chunks a stigmat ism rather than a stig ma tism as it would be found in the dictionary. Similarly, the student also does not need to emerge with the exact pronunciation of the word on the first attempt. Instead, the student gets a close approximation of the word’s pronunciation and corrects it using his or her knowledge of language and the context in which the word appears. Thus, a flexible strategy rather than a rule-bound strategy is taught to students. As seen in Figure 1, on page 654, students are first taught an overt strategy in which they physically circle word parts at the beginning and end of words and underline vowel sounds in the rest of the word. Eventually, students transition to a covert strategy where they look for word parts and vowel sounds and note them mentally before saying the word parts and then the whole word.

Surveying the chapter. Many students, especially those with achievement problems, read a textbook chapter without a framework for sorting the important from the less important information. This lack of discrimination frequently leads to poor comprehension of the chapter. To facilitate more successful comprehension of content area chapters, students benefit from surveying or previewing the chapter before reading. During the survey or preview, they examine chapter headings and subheadings, key graphics, chapter summaries, questions at the end of the chapter, and any other features that might help them focus their attention on certain aspects of the chapter. The pur-
FIGURE 1

Strategies for Reading Long Words

**Overt Strategy**

1. Circle the word parts (prefixes) at the beginning of the word.
2. Circle the word parts (suffixes) at the end of the word.
3. Underline the letters representing vowel sounds in the rest of the word.
4. Say the parts of the word.
5. Say the parts fast.
6. Make it a real word.

**EXAMPLE**

reconstruction

**Covert Strategy**

1. Look for word parts at the beginning and end of the word, and vowel sounds in the rest of the word.
2. Say the parts of the word.
3. Say the parts fast.
4. Make it a real word.

**Note**

poses of the preview are to (a) learn as much as possible in a brief amount of time, (b) to activate their background knowledge concerning the subjects covered, (c) and to make predictions about the content (Klingner & Vaughn, 1998). Additionally, students learn how the chapter is organized, which will facilitate their reading of the chapter and selecting an appropriate strategy for reading the chapter.

In a strategy called Warm-up, Archer and Gleason (2002) taught students previewing skills for content area chapters to determine the important information to be emphasized and to develop an organizational framework for the information. Before showing students the strategy, they discussed the rationale for the strategy, telling students that “warming up” for reading is just like warming up for an athletic event. They warm up for reading by accomplishing two goals: (a) finding out what the chapter is about and (b) making predictions about what is to be learned from the chapter.

To teach the warm-up strategy, the teacher asks students to examine the beginning of the chapter (the title of the chapter and the introduction), the middle (the headings and subheadings), and the end (the summary and the questions at the end of the chapter). As students examine different parts of the chapter they practice making predictions about what is to be learned from the chapter. The steps for warming up are written out on a poster for all students to see, and the teacher covers the poster and provides students an opportunity for verbal rehearsal of the steps in the Warm-up strategy. Students then practice the Warm-up strategy with several textbook chapters, verbally reporting their predictions to the teacher or to a peer. Students then complete a written worksheet that demonstrates their predictions about the chapter content and share the content with the teacher.

There are a number of similar research-validated preview strategies. As part of Collaborative Strategic Reading (Klingner & Vaughn, 1998; Vaughn & Klingner, 1999; Vaughn, Klingner, & Bryant, 2001) students quickly preview passages by looking at the chapter headings, words that are bolded or underlined, and pictures, tables, graphs, and other key information to help them brainstorm what they already know about the topic and to predict what they will learn. The students are then given about 6 minutes to discuss among themselves what they have learned, predictions they have formulated, and any connections they can make between what they already know and what they will read.

The KWL strategy is also used to activate students’ background knowledge (Ogle, 1986, 1992). Using the KWL strategy, students record what they Know, and what they Want to learn before reading a selection. After reading of the selection, the students record what they have Learned.

**Reading the text.** After students have previewed the chapter sufficiently, they must read the chapter and attend to the main ideas and important details that are worth remembering and that will assist students in answering questions at the end of the chapter. The strategy that will work best for a particular group of students depends on their reading level and their experience with reading content area material. Many study strategies for reading expository materials have been developed and tested with elementary and secondary students (e.g., Archer & Gleason, 2002; Bakken, Mastroiopier, & Scruggs, 1997; Chan & Cole, 1986; Englert & Mariage, 1991; Englert, Tarrant, Mariage, & Oxer, 1994; Graves, 1986; Jenkins, Heliotis, Stein, & Haynes, 1987;
Scanlon, Duran, Reyes, & Gallego, 1992; Schumaker, Denton, & Deshler, 1984; Wong, Wong, Perry, & Sawatsky, 1986). These strategies have several similarities (Archer & Gleason, 1997). First, they all attempt to engage students more actively in the reading process. Students are asked to formulate questions, take notes on content, or verbally paraphrase the critical information. Second, all strategies attempt to direct students’ attention to the most important ideas and details. Third, the strategies engage the students in rehearsal by asking them to recite or write down critical information. Four strategies that appear to exemplify these key steps are outlined here.

The first strategy, a self-questioning summarization strategy developed by Wong et al. (1986), teaches students to ask themselves a series of six questions as they proceed paragraph by paragraph and section by section to read and summarize a chapter.

1. In this paragraph, is there anything I don’t understand?

2. In this paragraph, what’s the most important sentence (main idea sentence)? Let me underline it.

3. Let me summarize the paragraph. To summarize, I rewrite the main idea sentence and add important details.

4. Now, does my summary sentence link up with the subheading?

5. When I have written summary statements for the whole subsection:
   a. Let me review my summary statements for the whole subsection. (A subsection is one with several paragraphs under the same subheading).
   b. Do my summary statements link up with one another?
   c. Do they all link up with the subheading?

6. At the end of the assigned reading section: Can I see all the themes here? If yes, let me predict the teacher’s test question on this section. If no, let me go back to Step 4. (Wong et al., 1986, pp. 24–26.)

The second strategy, a verbal rehearsal strategy developed by Archer and Gleason (2002), is called Active Reading. The Active Reading strategy is based on a strategy for memorizing material called RCRC (Archer & Gleason, 2002) that was learned earlier in the curriculum material. RCRC assists students in memorizing by having them Read, Cover, Recite, and Check material such as spelling words, math facts, or vocabulary meanings. Active Reading uses the same read, cover, recite, and check steps but with connected text, one paragraph at a time.

First, the teacher discusses the rationale for the strategy. Students are told that using this strategy will help them remember more information from a chapter. Then, the
steps of the Active Reading strategy are modeled, guided practice is provided, and then independent practice is expected. First the teacher and then the students read (R) a paragraph and tell themselves the topic and details. They cover (C) the paragraph and recite (R) the important information in their own words. Then they uncover the paragraph and check (C) their recitation by examining the paragraph again.

Students verbally rehearse the RCRC steps used in the Active Reading strategy and practice the Active Reading strategy with several paragraphs, verbally reporting their topics and details to a teacher or peer. Finally, they complete a written worksheet in which the peer checks on a checklist whether the recital included topic and details and was in the student’s own words.

Before learning the Active Reading strategy, students first are taught some component preparatory skills. With several short paragraphs the teacher demonstrates naming the topic of the paragraph, then asks students to practice naming the topics of several more paragraphs. Once students can say a word or phrase to name the topic of a paragraph, students are taught to identify critical details in the paragraph and to retell the topic and details in their own words. During additional practice, with either the teacher or peers, students practice saying and checking off on a checklist that they have (a) said the topic, (b) noted the important details, and (c) used their own words. When students can retell paragraph content fluently, the teacher shows how to put all the steps of the Active Reading strategy together (see Figure 2, on page 658, for the steps).

The third way to engage students actively in reading content area textbooks is to enlist them in taking notes on the important information. A critical error made in many classrooms is to allow students to take notes haphazardly. Many students do not differentiate important information from unimportant nor show relationships between levels of information. Once students learn to take notes in a more systemic way, the notes can be used in studying for tests, writing summaries of what was read, answering chapter questions, or writing a report.

Archer and Gleason (2002) developed a system of note taking, Indentation Notes, appropriate for upper elementary students and lower-performing junior high or high school students. As with the Active Reading strategy, the note taking depends on the single paragraph as the unit for reading and writing notes and requires students to attend to the topic and important details. Students should demonstrate mastery of the Active Reading strategy before attempting the note-taking strategy. As with all teacher-directed strategies, the teacher provides a rationale, demonstrates use of the strategy, and guides students through the steps. Students are told that taking notes will help them concentrate better on what the author is saying and that their notes can be used for other purposes, such as studying for tests. The teacher tells students why notes should be written briefly and in their own words. Students record headings or subheadings in the center of the paper followed by the corresponding page numbers. Then they take notes on each paragraph, using an indenting style (see Figure 3, on page 659, for an example).

To produce notes such as those in Figure 3 students read each paragraph and record the topic for the paragraph. Then they indent and record the important details, using abbreviations and symbols when possible and indenting again when recording subordinate details. When notes have been completed, the students check them for
A Verbal Rehearsal Strategy Referred to as ACTIVE READING

ACTIVE READING

R = READ
Read a paragraph.
Think about the topic and the important details.

C = COVER
Cover the paragraph with your hand.

R = RECITE
Tell yourself what you have read.
• Say the topic.
• Say the important details.
• Say it in your own words.

C = CHECK
Lift your hand and check.
If you forget something important, begin again.

Note

clarity. Next to each paragraph section of notes the students write a question in the left-hand margin that could be asked about those notes.

Any note-taking strategy will benefit students only if they are provided with opportunities to use the notes. If students take notes but do not look at them again, then they
### Hints for Taking Good Notes

1. Write your notes in your own words.
2. Make your notes brief.
3. Use abbreviations and symbols.
4. Be sure you understood your notes.

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**Note**


will likely remember less information than if they review the notes to remember the information for class discussions or for written tests. To remember the information contained in the notes, students can use a verbal rehearsal strategy such as RCRC (read the question, cover, recite the answer, check the answer). They can participate in a class study session, in which the teacher asks questions about the content and the students answer the questions, then quickly show where the information can be located in their notes. Students also can conduct similar sessions with their peers, thus giving them practice in the use of their notes, feedback on the adequacy of their notes, and participation in study teams.
As an alternative to indentation notes, students can map the topics and important details. When teaching students the process of designing self-generated organizers, Archer and Gleason (2002) taught students to first prepare a preliminary map by drawing circles and recording the title headings and subheadings. Next, they read a paragraph, drawing another circle for each new topic and recording important details on lines extending from the topic circle. As they worked, students linked headings, subheadings, topics, and details to show the semantic relationships between the ideas (see Figure 4 for an example of mapping).

To assist students in creating maps, which they called cognitive maps, Boyle and Yeager (1997, p. 30) taught students the following steps using the acronym TRAVEL:

1. **Topic**: Students write down the topic and circle it.
2. **Read**: Students carefully read the first paragraph.
3. **Ask**: Students covertly ask themselves what the main idea and three details are and then write them down in as few words as possible.
4. **Verify**: Students verify the written main idea by placing a circle around it and then draw a line from the main idea to each detail.
5. **Examine**: Students repeat the Read, Ask, and Verify steps on each successive paragraph.
6. **Link**: Students link together all of the main ideas that are related to one another.

**Attending to content of maps and graphics that accompany text.** The strategies described so far have concentrated on reading the text portion of content-area textbooks. But most content-area textbooks also provide students with a lot of information by using graphics, pictures, and maps that accompany the text. The information contained in these visual aids is not necessarily described or repeated in the text itself. Frequently, the questions at the end of a social studies chapter or the questions on tests require answers that can be found only in the aids. However, explicit instruction in the interpretation of these aids typically is lacking. Again, the presumption of most classroom teachers is that students would know how to read and use the graphics.

When a student is experiencing difficulty in a content area class, the school psychologist should examine the student’s textbooks and determine the types of visual aids that student is failing to use and interpret correctly. Archer and Gleason (2002) found direct teaching of interpretation of tables and graphics, such as pie graphs, pictographs, bar graphs, and line graphs, to be particularly efficient. In a few short days a student could answer questions above a 90% level. They taught their strategy by demonstrating and guiding students through a series of steps. First, the teacher and students determined the topic
FIGURE 4

Example of a Chapter Map

MAPPING WRITTEN MATERIAL

1. Draw circles for the heading and subheadings.

2. Take notes on each paragraph.
   a. Write the topic in the circle.
   b. Write an important detail on each line.

Note
of the graphic material by interpreting the title or caption. Then they looked at the numbers or words across the bottom or top and up and down the left side to understand the organization of the graphic. The students located information in the graphic and answered literal questions about the information. Comparisons were made by using the non-numerical information in the graph (e.g., size of the pie pieces, height of the bars) as well as the numerical information. The teacher guided the students in calculating answers to questions by adding, subtracting, or multiplying information in the graphs. Finally, students made inferences based on the information. The teacher guided the students in calculating answers to questions by adding, subtracting, or multiplying information in the graphs. Finally, students made inferences based on the information.

In some lessons, students learned to compare information from two graphs. The teacher provided relevant information, demonstrated how the comparison of two graphs works, and asked a set of structured questions about a particular set of graphs. The series of questions might sound like this:

- What are the titles of the two graphs we’re going to compare?
- Notice how the numbers of miners in Virginia and Utah have declined over the years.
- Why might the number of miners have declined?
- What do the numbers across the bottom of each graph refer to?
- What do the numbers on the left side of each graph refer to?
- In which year were the most miners employed in Virginia?
- In which year were the fewest number of miners employed in Virginia?
- How many more miners worked in Utah than in Virginia in 1925?
- Figure out the difference between the number of miners in the two states in 1945.
- What was the total number of people employed in the mines for the two highest employment years in Virginia?

In addition to learning how to interpret visual aids, students also must be taught when to refer to the visual aids and how to move from reading the text to the aid and back again. Typically, various cues are embedded in text to let the reader know when to refer to a visual aid. Some cues may take the form of explicit directions (such as “see diagram”), but text often has cues that are only implicit, such as a general discussion of
a subject that is supplemented with a visual aid but includes no explicit reference to the visual. Students should be taught to read in the text up to the point where a proximate visual aid is referred to (e.g., “See Table 12”), place a finger at that place in the text, refer to the visual aid, examine the information, then resume reading where the finger was keeping the place. Teachers must emphasize to students that they must not neglect the visual aids while reading a content area textbook.

Responding to Information Learned From Content-Area Textbooks

The previous section presented strategies that students could use to gain information from content-area textbooks. A second major goal in content-area classes is to lead students to respond to information learned from their content-area textbooks. Using study skills to respond to information learned is difficult for students who must “create” their own strategies without direct help from the teacher. It is possible for students to design their own strategies, but they are at best time consuming or, worse, ineffective. For example, a student might decide that to do well on content area tests he or she must memorize every sentence of an assigned chapter. Clearly, the student must be introduced to a more efficient strategy. In many classrooms, students are asked to respond to information by using a variety of strategies: (a) answering questions at the end of a chapter or on worksheets, (b) performing well on tests and quizzes, and (c) writing summaries of what they read.

Answering questions about assigned chapters. To respond to information learned from their reading, students typically must answer questions at the end of chapters in texts or on worksheets prepared by teachers. To be able to accomplish these activities successfully, students must be taught directly to turn the question into part of the answer, find the answer in the text material, and write the complete answer to the question. Archer and Gleason (2002) embed these in a strategy for Answering Chapter Questions.

Before learning the Answering Chapter Questions strategy, students must be taught to read the question carefully, turn the question into part of the answer, and then write that part down. This initial step is beneficial to students because it gives them a way to focus on the content of the question and a written referent while they are looking back in the chapter for the answer. It also helps the students write a complete sentence for the answer and ensures that they will answer the question that was asked. For example, when students are answering the question What are three ways to recycle natural resources?, if they first write down “Three ways to recycle natural resources are” then they are much more likely to look back in the chapter and find three ways to recycle and write a complete answer to the question.

Working on the preparatory skill of turning the question into part of the answer may take many practice sessions before students are ready to learn the Answering Chapter Questions strategy. When they have mastered this skill, the teacher demonstrates and guides the students through the whole strategy. The teacher begins by having students preview, then read a chapter or part of a chapter. Then, on their own, students read a
question carefully, and change the question into part of the answer and write that part down. After writing down part of the answer, students locate headings or subheadings in the section of the chapter that treats the topic indicated by the question. They read that section until they find the answer, then write the rest of the answer in a complete sentence that answers the question. After repeated practice with the teacher, students use this strategy independently, by following the steps contained in Figure 5.

Another strategy for answering questions on expository and narrative material is referred to as the QAR (Question-Answer-Relationship) strategy (Raphael, 1986; Raphael & Pearson, 1985). This strategy stresses the relationships among the question, the text to which it refers, and the background knowledge of the reader. When using this strategy, the student reads the question and determines if the source of the answer is the text material (“In the Text”) or the students’ own background knowledge (“In My Head”).

Writing summaries of materials read. Writing a summary of what has been read can help students remember and comprehend text material (Gajria & Salvia, 1992; Murrell & Surber, 1987) as well as provide the type of writing practice that will be needed for writing reports or research papers. Despite its benefits, summarizing is a difficult skill to develop to proficiency (Brown & Day, 1983; Hare & Borchardt, 1984). Students must determine what information should be included and excluded and how the information should be reorganized and reworded into a concise summary.

Although there are numerous summarization strategies (Rinehart, Stahl, & Erickson, 1986; Taylor & Beach, 1984), one of the most explicit strategies found in the literature was developed by Sheinker and Sheinker (1989). Their strategy guided students in summarizing content-area material by teaching students to first skim a passage and list key points, then to combine related points into single statements, cross out the least important points, reread the list, and combine and cross out some statements to condense the points. Finally, the remaining points are numbered in a logical order and written into a paragraph in numbered order (p. 135).

Taking tests. When studying for and taking tests, students must be taught a strategy for anticipating what will be on the test, a strategy for studying and memorizing the necessary information, and a strategy for responding to specific test formats (e.g., multiple-choice, true-false). The first strategy can be taught through the self-questioning summarization strategy developed by Wong et al. (1986) and in the note-taking strategy designed by Archer and Gleason (2002), which have been described previously in this chapter.

The second part of test taking, studying and memorizing the necessary information, can be accomplished with the RCRC strategy also described earlier (Archer & Gleason, 2002) or with any number of mnemonic strategies reported in the literature (e.g., Mastropieri, Sweda, & Scruggs, 2000; Bulgren, Schumaker, & Deshler, 1994).

The third part of the test-taking strategy, responding to specific formats (e.g., multiple-choice, true-false), should be taught in several forms. Students should be taught one form for each testing format that they will be faced with. What follows is an example of a teaching procedure for teaching students how to take a multiple-choice test (Archer & Gleason, 2002).
The teacher guides the students in applying the test-taking steps to several multiple-choice items, some with all of the above and some with none of the above as one of the choices. Students complete some items independently, then check answers with the teacher. The teacher provides several opportunities for practice, and students use the strategy each time they complete a multiple-choice test.

Scruggs, Mastropieri, and Tolfà-Veit (1986) found that fourth-, fifth-, and sixth-grade students with mild disabilities who received training on test-taking skills like those required for the Stanford Achievement Test (SAT) scored significantly higher on tests of reading decoding and math concepts. They concluded that results of this and previous investigations suggest that students with mild handicaps know more than they are able to demonstrate on published tests. Furthermore, training in test-taking skills should be undertaken not only to add to the strategy repertoire of these students but also to promote generalization and transfer of learned information.

**FIGURE 5**

**Answering Written Questions**

(Note: Read the textbook material before attempting to answer the questions.)

Step 1: Read the question carefully.

Step 2: Change the question into part of the answer and write it down.

Step 3: Locate the section of the chapter that talks about the topic.

   Use the headings and subheadings.

Step 4: Read the section until you find the answer.

Step 5: Complete your answer.

*Note*

Organizing Information

Managing the use of time for school tasks and managing materials used in completion of school tasks are important parts of being successful students. These management skills become more critical to students’ success around grade 3 and continue to increase in importance as students move from one grade level to the next. Students with learning problems and disabilities, in particular, have difficulty (a) locating homework, (b) coming to class with materials, and (c) tracking when assignments are due.

To help resolve these major problems, three general organizational skills must be modeled directly by teachers, practiced by the students, and reinforced on a daily basis. The first skill is the organization of materials in a notebook or set of folders for easy retrieval and for study. The second skill is the organization of time through the use of an assignment calendar that helps students record assignments, determine nightly homework activities, and remember important events. The third skill is the completion of neat, well-organized papers so that the appearance meets the standards usually expected of successful students.

**Notebook organization.** Students must be taught very early in their academic careers to build an organizational system that allows them to store papers, retrieve necessary materials, and transport materials between classroom and home (Archer & Gleason, 2002). When working with students with learning disabilities, Lobay (1993) found a strong relation between their use of notebooks and grade point averages. Intermediate and secondary students can use a three-ring notebook that contains a pen and pencil pouch, pocket dividers for each subject area, and notebook paper. Younger students might be taught to use two folders: one for in-class use and one for taking things home. The pockets of the in-class folder might be labeled “Paper” and “Work,” and the take-home folder labeled “Leave at Home” and “Bring Back to School.” Students with notebooks should label each divider with the name of a subject area, then label one divider “Extra Paper” for blank notebook paper and one divider with the word “Take Home” for finished work or notices to parents to take home. The pen and pencil pouch is placed at the front of the notebook.

Regardless of the system used, notebook or folders, the teacher must demonstrate how to use the system, then provide daily opportunities for students to practice storing and retrieving materials and keeping materials organized, or reorganizing materials if they have become unorganized. Teachers can encourage maintenance of organization systems through a variety of activities. They can tell students how organized materials will help them be better students, just as remembering their work materials would help them be a good employee. They might assist students in placing papers behind the correct pocket divider in the notebook each time a paper is handed back. Frequent feedback regarding notebook organization can be given, and students can learn to use a checklist to give themselves feedback about their organization. Teachers can praise students who remember to take notebooks home, bring them back, and take them to other classes, and they can invite students to show their organized notebooks to significant school personnel (e.g., the principal). The teacher can use any activity that promotes the notebook as integral to the daily successes of students.
**Assignment calendars.** As students begin to assume responsibility for longer assignments and for bringing various materials home, typically in grades 3 and above, they must be taught basic time management skills. One of these skills involves keeping a monthly assignment calendar on which students record when assignments are due or when special events will occur (Archer & Gleason, 2002). Students also can learn to use their calendars to determine nightly study activities, such as reading several pages in their content-area textbook, studying notes for a test on Friday, or beginning to collect samples of objects that demonstrate earth science principles.

Teaching the assignment calendar skills requires teaching a number of component skills first. Students must learn to locate today’s date on a monthly calendar, locate a due date given a variety of directions, write abbreviations for subject areas and for assignments, and record appropriate calendar entries. Although many of these component skills seem obvious, the fact that they are seen as such leaves many teachers with the idea that they do not need to be taught. Failing to teach these component skills has serious consequences for many students. However, once they have learned these component skills for assignment calendars, they will the foundation for using calendars to plan for nightly homework activities (i.e., breaking homework assignments into small parts and using calendar entries to determine homework assignments that should be completed). The teacher should teach each of the component skills separately and provide many opportunities for practice.

After the preskills have been demonstrated and practiced, the teacher can give assignments and ask students to record them on their calendars, then follow through by asking students to turn in their assignments on the date due. Teaching students to maintain the use of the assignment calendars throughout the school year is a challenging task. A large class calendar located in front of the room can be made each month, on which are recorded the assignments that should have been included in individual calendars. The teacher can assist students in daily use of the calendars by providing time each day for them to consult their calendars and prepare materials to take home that will help them with their homework. In addition, students can be encouraged to show their assignment calendars to their parents and tell them about homework assignments and special events.

**Neat papers.** A third organizational skill is that of organizing and creating a neat appearance for written papers. Students frequently hear teachers ask them to make their papers neater but most students do not know the attributes of a neat, well-organized paper. In a strategy called **HOW**, Archer & Gleason (2002) define these features as Heading, Organized, and Written neatly. Each feature is broken down into specific attributes and introduced to students. The specific attributes are presented in Figure 6, on page 669.

The attributes for neat, well-organized papers with a heading are again best taught through demonstration and guided practice. The teacher should present positive examples that show **what is wanted** in a neat paper and negative examples that illustrate what is **not** desired in a student paper. The purpose for showing both positive and negative examples is to demonstrate the difference to the students, so that they can determine for themselves when their papers have achieved a neat appearance and when they do not look accept-
able. Students should practice evaluating other people’s papers until they understand what makes a paper attractive, and then they should begin evaluating their own papers.

Teachers can assist students in maintaining use of this skill by following up with a number of activities. For example, teachers might make a large poster that displays the attributes and one that shows an example of an attractive paper, posting them in the front of the room. They might provide a checklist to students so they can evaluate their papers’ appearance. Papers that are well done can be displayed publicly on a bulletin board or in the hallway. Alternately, excellent papers can be shared with parents at conference time. To encourage constant attention to producing neat papers, teachers can ask students to redo papers if they do not meet the teacher’s standards.

**GENERAL PROCEDURES FOR TEACHING STRATEGIES**

To ensure that students attain independent use of study strategies, teachers must systematically engage in an effective instructional cycle (e.g. Ellis, Deshler, Lenz, Schumaker, & Clark, 1991; Gleason, 1988; Hudson, Lignugaris-Kraft, & Miller, 1993). When teaching a new strategy teachers should first discuss the rationale for the strategy. In part, this rationale should center on how the new strategy will contribute to success in school and how it will make learning easier for the students (Dye & Elksnin, 1994). Next, the teacher should use all the design principles that would be used to teach any new cognitive skill, for example, long division (Engelmann & Carnine, 1982), as well as those shown to enhance strategy instruction (Swanson, 1999). Swanson’s meta-analysis determined that combining direct instruction and strategy instruction was more effective than either type of instruction alone.

In general, the teacher overtly and explicitly demonstrates or models the strategy, prompts or guides students in use of the strategy, and, finally, checks the students’ use of the strategy without the teacher’s assistance. Across these three steps the teacher provides many examples. The examples should be varied and cognitively complex (Vaughn, Gersten, & Chard, 2000). In addition, the practice opportunities should require self-questioning (e.g. Harris & Graham, 1996; Graham & Wong, 1993; Wong & Jones, 1982) or other types of thinking aloud (Kukan & Beck, 1997).

For some study strategies, the teacher must break the strategy down into its component parts and provide model, prompt, and check on separate components of the strategy before incorporating them into an entire strategy. For example, for writing answers to questions at the end of a textbook chapter, students must be taught separate strategies for turning the question into part of the answer, for finding the answer in the text material, for writing the complete answer to the question, and for proofreading their answers. Likewise, when studying for and taking tests, students must be taught a strategy for anticipating what will be on the test, a strategy for studying and memorizing the necessary information, and a strategy for responding to specific formats (e.g., multiple-choice, true-false). Learning to perform each step in the strategy before attempting to use the entire strategy will provide students with more immediate success and will result in more efficient learning of the strategy. The model, prompt, and check series of steps will be explained below as they apply to instruction in study strategies.
Chapter 24
Interventions for Improving Study Skills

Modeling the Strategy

Teaching any strategy requires teachers to present an initial demonstration of it. While they are demonstrating, teachers should exaggerate the critical steps in the strategy and, at the same time, describe exactly what they are doing. Stating explicitly what they are thinking (i.e., “thinking aloud”) is an instructional component associated with positive achievement outcomes (Swanson, Hoskyn, & Lee, 1999). For example, when teaching students how to use an index, the instructors should open a book to the index and demonstrate how to run a finger down the page until the correct letter of the alphabet is located and then until the desired topic is located. At the same time, they should talk about what they are doing and what they are looking for. Then they should

FIGURE 6
Checklist Indicating the Standards to be Applied in the HOW Strategy

HOW Should Your Papers Look?

H = Heading
1. First and last name
2. Today’s date
3. Subject/Period
4. Page number if needed

O = Organized
1. On the front side of the paper
2. Left margin
3. Right margin
4. At least one blank line at the top
5. At least one blank line at the bottom
6. Uniform spacing

W = Written neatly
1. Words and numbers on the lines
2. Words and numbers written neatly
3. Neat erasing or crossing out

Note
demonstrate and talk about how to determine the pages to look at within the textbook to find the desired information.

**Guiding Students Through the Strategy**

Using a new example, the teacher then guides students through the strategy, at the same time continuing to think aloud and model the questions students should be asking themselves. This time, however, the teacher has the students answer the questions and listens to see if they are learning to use the strategy. If errors are made or misunderstandings become apparent, then the teacher provides feedback to students. Ongoing and systematic feedback is a critical component of effective interventions (Vaughn, Gersten, & Chard, 2000; Wong, 1999). Several practice opportunities (at least three) should be provided. For each practice opportunity a new example is used. By providing a range of examples, the teacher is showing the students that the steps in the strategy remain the same across a wide range of examples. For example, when teaching students to use an index for locating particular information, the teacher provides several different textbooks, each with an index that looks different and is organized a little differently from the others. Students are shown that the purpose for an index, and the way an index is used, remains the same. By the third guided-practice opportunity, the teacher lessens the cueing or prompting, allowing students to employ more of the strategy on their own. If students continue to be successful even when receiving less prompting, then the teacher moves on to testing whether they can use the strategy independently.

**Checking Student Performance of the Strategy**

After three or four sessions of guided practice, the teacher should monitor whether students can use the strategy independently. Only when students are independent users of the strategy in a particular context or content area with a range of examples will they be ready to transfer (using what has been learned in a new setting or with a new set of materials) and/or generalize (using what has been learned in a new way but could be in the same setting). The importance of teaching students to transfer and generalize cannot be overstated. In a meta-analysis of intervention studies involving adolescents with learning disabilities, Swanson (1999) found that extended practice with feedback was the only instructional component that contributed independently to the variance of the effect sizes when teaching complex material and skills.

**TRANSFER AND GENERALIZATION**

One of the major assumptions underlying special education services for students with disabilities at all grade levels is that eventually students will be able to transfer the skills and behaviors as learned in one setting into another setting. The transfer setting might be a regular classroom, a social situation, or an employment situation. However, transfer is not at all easy to accomplish. In many cases, students with disabilities do not automati-
cally transfer the skills they learn from one setting to another (e.g., Borkowski & Muthukrishna, 1992; Ellis, Lenz, & Sabornie, 1987; Garner, 1990; Wong, 1994). Teachers must tell students to use their newly learned skills in another setting, make sure the way the strategy was taught matches how it will be used in the new setting, and make sure students have mastered and maintained the strategy in the original setting.

Generalization is even more difficult to achieve than transfer of what was learned from one setting to another. In order to use a strategy in a new way, students must have had the opportunity to use the strategy on a range of examples. To understand why this is true, consider a situation in which students were taught in a special education resource center to identify the main idea in a paragraph. The examples used in the original teaching set were from worksheets, were composed of three or four sentences, and the main idea statement matched several key words presented in the first sentence of the paragraph. Students did not have to glean the overall gist of the paragraph in order to state the main idea. These students then are presented in the general education classroom with a textbook chapter and asked to identify the main idea in the third paragraph, which happens to be seven sentences long. In addition, the students must pull out the main idea by considering all seven sentences at once and determining the main thing the paragraph was about. The main idea was not stated in the first sentence. It would not be surprising to find that most students were not able to complete the task, for the very particular reason that they were not taught to work from a range of examples that included the type they are now encountering (Engelmann & Carnine, 1982; Horner, Bellamy, & Colvin, 1984).

Although generalization is difficult to accomplish, it is not impossible. Unfortunately, teachers frequently do not prioritize generalization techniques until after instruction has been completed. This is not surprising in that the research literature provides far less assistance on how to achieve generalization than it does on how to teach strategies initially (Vaughn, Gersten, & Chard, 2000). However, in order for the possibility of generalization and transfer of study strategies to other settings and untrained examples, teachers must systematically plan to do so before instruction occurs. Ellis and his colleagues found that students of various abilities learned to generalize Strategies Intervention Model (SIM) strategies when generalization was included as a phase of strategy teaching (e.g., Lenz, Ellis, & Scanlon, 1996).

Teachers can organize generalization planning around three time frames: before, during, and after strategy instruction. Not all suggestions in the following section need to be utilized for each strategy taught, but the listing can serve as an outline for teacher’s planning.

**Generalization Planning Before Instruction**

Two major procedures used before instruction will increase the probability that students will generalize skills to other settings and environment. Teachers must carefully select relevant study skills to teach to their students and then must follow at least two basic rules in choosing the examples to be used for instruction.
Carefully select relevant study skills. Because the major purpose for teaching study skills is to empower students for success and promote independent learning, the strategies taught must be of particular relevance to the students (e.g., Harris & Graham, 1996; Pressley et al., 1995). For example, if students attend three classes in which the teacher lectures, learning a strategy for taking notes from lectures would meet an immediate need. In addition, teachers must select skills that can be applied in a variety of settings, have proven effectiveness, and have a specific outcome that can be observed by the teacher. If the study skills taught are relevant to the students’ success in school, students are more likely to use the skills (Lenz, Ellis, & Scanlon, 1996).

Follow two basic rules. To promote generalization, teachers should apply the following two rules in choosing examples for instruction.

1. First rule. Select teaching examples that sample the range of examples likely to be encountered. When a particular skill is targeted for instruction, the teachers should examine the contexts in which that particular skill is likely to be needed or applied. For example, suppose the teacher decides to teach comprehension strategies, and specifically, to teach the rule that a paragraph has one main idea. The first step would be to identify the various contexts in which the students are likely to be required to read paragraphs at school. These contexts could include worksheets, overheads, workbooks, textbooks, novels, periodicals, newspapers, letters, and magazines of various lengths and various levels of explicitness in stating the main idea. Teaching examples should then be selected to adequately represent the range of examples included in these contexts (Horner, Bellamy, & Colvin, 1984).

Instruction is more likely to be effective if the teaching examples are sequenced so that successive examples are maximally different and cover a range of examples that communicate a breadth of application to students (Engelmann & Carnine, 1982). The assumption is that by teaching the paragraph using these representative examples the student would be able to apply the skill to all examples. For example, the first example used in teaching the paragraph rule could be an overhead transparency. The successive examples could be paragraphs from a textbook, a worksheet, and a newspaper. Similarly, examples could be sequenced on the basis of length of the paragraph (e.g., overhead, three sentences; textbook, seven sentences; worksheet, two sentences; newspaper, five sentences). In addition, the explicitness of the main idea could be varied, from paragraphs in which the main idea is matched by key words in the first sentence to paragraphs where the main idea is gleaned from the gist of all sentences in the paragraph taken together. In effect these successive examples are sequenced to show maximum variation across the possible variables.

2. Second rule. Because students may apply skills only to the specific examples used in initial instruction, the teacher should produce a second set of examples, which were not part of the initial teaching set, in order to test for the possibility of generalization (Engelmann & Carnine, 1982). For example, let us suppose that a student has met criteria on the skill of identifying the main idea in a paragraph. It is assumed that the teaching examples were representative of the contexts likely to be encountered by the student and the examples were sequenced so that successive examples were maximal-
ly different. Test examples (e.g., text on an Internet site or paragraphs of 10 or more sentences) should now be introduced that were not used in the initial teaching. Other variations that were not used in initial training also could be used, such as a paragraph in a periodical that utilizes three columns of print.

**Generalization Planning During Instruction**

While the teacher is demonstrating and guiding students through a new study strategy, several steps can be taken to promote generalization and transfer.

*Provide rationale for use of the strategy.* As was discussed earlier in the chapter, the teacher can assist students in understanding the relevance of learning a particular strategy by explaining what is to be gained by its use. In particular, the teacher should emphasize the increased success that students will experience after learning a new study skill. Presenting the benefits of strategy use has been found to be one of the instructional components that predicts greater treatment outcomes (Swanson, 1999).

*Discuss when and where the strategy can be used.* In addition to discussing why students should learn the strategy, teachers should discuss when and where students might use the strategy (Swanson & De La Paz, 1998). Teachers also might ask students to name other settings and other sets of materials in which they could use their new study strategy.

*Ensure that students achieve mastery of the new strategy.* In all cases, systematic instruction must be provided that ensures that students become proficient in the use of a particular study skill. If students cannot perform the skill at a high level of success in the training setting, then they probably will not generalize use of the skill to another setting.

*Teach students effective self-monitoring or self-evaluation procedures.* While receiving instruction on using a strategy independently, students will benefit from learning self-management skills such as self-questioning, self-monitoring, self-evaluation, or self-recording skills (e.g., Chan, 1991; Harris & Graham, 1996; Swanson, 1999; Wong & Jones, 1982). A meta-analysis of the effects of teaching students to use self-questioning strategies found such interventions to be successful (Huang, 1992). Later, students can use these skills to monitor their progress in other settings.

**Generalization Planning After Instruction**

Although it is important to address generalization before and during instruction, teachers also must attend to it after instruction. Typically, students in the initial stages of learning, students at risk for failure, and students with disabilities forget what they have learned if it is no longer reviewed or maintained.

*Inform others of new strategies.* Although it would be ideal if all teachers encountered by a group of students would teach and require use of learning strategies, occasionally they are taught in one setting (e.g., resource room) with the expectation of generalization to another setting (e.g., general education classroom). In this case, general education classroom teachers should be encouraged to review a new strategy in
their classes, display a poster listing the steps in the strategy, and reinforce use of the strategy on a consistent basis. Teachers might teach the steps in the strategy to everyone in the general education class and then pair more successful students with less successful students until they are independently using the new strategy in the transfer setting. Review of strategies and reminders to use strategies have been found to be important instructional components for achieving high strategy use (Swanson, 1999).

Tell students to use the strategy in other settings. While this procedure may seem obvious, many teachers do not routinely tell students to use new skills in other settings. At the end of a lesson or at the end of the day, teachers should remind students that new strategies are to be used in other classes throughout the school day.

Ask students to verbalize their success with strategies in other settings. Many students with learning disabilities experience difficulty in associating their skills and knowledge with their success in school. To strengthen this association, teachers should encourage students to report their use of new strategies in other settings. Teachers should show particular interest in students’ reports of increased success in other settings that can be attributed directly to the use of study strategies. If students do not make this association, then teachers should tell students that increased success is connected to their use of their new study strategies. In a series of experiments, Schunk and Rice (1992) found that students who received strategy-value feedback demonstrated higher skill and higher self-efficacy than students in strategy-only or control conditions. Subsequently, students in the strategy-value feedback condition also maintained strategy use.

Discuss cues in other settings that signal use of the strategy. Generalization of study skills is particularly difficult when they are content-free and not associated with certain subjects or classroom tasks. For this reason, it is important to discuss the similarities and differences between the response demands and cues of the training setting and those of the transfer setting (e.g., Deshler & Schumaker, 1986; Gelzheiser, Sheperd, & Wozniak, 1986). For example, the cue for taking notes in the training setting may be the teachers’ announcing that students should take out notebook paper and begin taking notes. In the transfer setting, the cue might be the teacher’s announcement that students are going to have a test on Friday or the teacher’s writing an outline on the blackboard while talking about a particular topic.

Use role-playing to practice transfer to other settings. Assisting students in role-playing transfer of skills to other settings is especially beneficial if the response demands and cues of the other settings are considerably different from those used during the training. For example, students could practice responding to various cues that indicate “it is time to listen to the teacher and take notes.” The teacher who is presenting study strategies to the students might mix up a variety of cues to see if the students can choose which study strategy to use. Students need many opportunities to practice and review all the strategies they have learned.

ROLE OF THE SCHOOL PSYCHOLOGIST WITH REGARD TO STUDY SKILLS

Although direct teaching of study skills would not be practical, school psychologists could serve as an advocate for all students to learn study skills as early as possible
and sustain their use throughout their school years. The literature continues to document the struggles of students with learning problems and identified disabilities to learn in whole-class settings (e.g., Baker & Zigmond, 1990; McIntosh, Vaughn, Schumm, Haager, & Lee, 1994; Scanlon, Deshler, & Schumaker, 1996; Vaughn, Klingner, & Bryant, 2001).

1. School psychologists could create an awareness of the need for study skills interventions as part of school improvement and better preparation of students for school success.

2. If classroom observations and/or assessments reveal weaknesses in the area of study skills, then the school psychologist should advocate that the Individual Education Plan reflect study skills among the necessary interventions.

3. School psychologists also could advocate the need to teach study skills across settings and across grade levels as a preventative measure to reduce the need for individualized services. If these skills were taught to all students, then the support structure would exist for teaching individual students.

4. School psychologists could help provide resources for instruction in study skills.

Finally, school psychologists could advocate for presentations on study skills to be offered at national and state conferences for school psychologists, and assist in soliciting articles on study skill interventions for the school psychology journals such as School Psychology Review.

SUMMARY

Many students struggle in content area classes because they lack the specific learning strategies that would help them be more successful. In particular, students need to learn strategies for gaining information, responding to information, and organizing information. To ensure that students attain independent use of study skill strategies, teachers must systematically engage in an effective instructional cycle that includes modeling the strategy, guiding students in its use, and providing opportunities for independent practice and use of the strategy. In addition, care must be taken to design instruction so that students will transfer and generalize their newly learned strategies to other settings, other sets of materials, and novel situations. Attention must be paid to generalization before, during, and after instruction. School psychologists can play an important role in advocating for interventions that improve study skills, and simultaneously, students’ school success.
REFERENCES


