Strategies for Learning

Key Ideas

- **Attention Strategies**
  - On-Task Attention
  - Selective Attention

- **Remembering Strategies**
  - Acronyms and Acrostics
  - Rhymes
  - Keywords
  - Pegword

- **Organizing Strategies**
  - Graphic Organizers
  - Advance Organizers
  - Study Guides

- **Test-Taking Strategies**
  - General Test-Taking Strategies
  - Specific Test-Taking Strategies

- **Note-Taking Strategies**
  - Note-Taking Skills
  - Teacher Instruction to Facilitate Note Taking

- **Creating Learning Strategies**

- **Self-Managed Learning**
Key Questions

While reading this chapter, think about the following:

1. What are strategies, and how can teachers best teach students specific strategies?
2. How can teachers embed strategies in their everyday instruction?
3. What can teachers do to help students take responsibility for their own learning?

The overall purpose of education is to prepare students to reach their potential for learning, both during and after formal schooling. In the previous two chapters, teacher-directed and student-mediated instruction were discussed. Both instructional approaches are essential for students to reach their potential for learning. The development of strategic learning processes, the topic discussed in this chapter, is also necessary for successful learning.

Strategies

Madison, a seventh-grade student with mild disabilities, attends the general education content courses and receives support from a special educator. Now that she's required to take all the standardized tests with her nondisabled peers, she's frightened that she will do poorly. Her parents and teachers assure her that she knows the content, but that doesn't seem to help Madison feel prepared for these tests.

Strategies are the plans, actions, steps, and processes that allow students to accomplish a learning or problem-solving task. “An individual’s approach to a task is called a strategy when it includes how a person thinks and acts when planning, executing, and evaluating performance on a task and its outcomes” (Lenz, Ellis, & Scanlon, 1996, p. 5). Strategies involve both cognition and behavior and may be thought of as the approach to the task rather than the actual skill or knowledge used to accomplish the task. Madison knows her facts. What she lacks are the test-taking strategies she needs to demonstrate her knowledge on the standardized tests.

Strategies—along with metacognition, knowledge base, motivational beliefs, and cognitive style—are important features of thinking (Pressley et al., 1995). Metacognition refers to our broad general awareness and knowledge of cognition (i.e., what we know) and cognitive processes (i.e., how we know). Metacognitive skills help students to select, monitor, and implement strategies. They also facilitate monitoring and controlling the effective use of strategies. Examples of metacognition include reflecting on a task or problem situation before acting, questioning prior to and during the performance of a task, and monitoring responses.

Strategies are not instructionally significant until they are associated with a specific problem or task (Lenz et al., 1996). Task-specific strategies are used in conjunction with cognitive strategies and may be designed to accomplish specific tasks such as skill
development in reading or mathematics. Specific task strategies, for example, may include various word attack skills applicable to teaching reading. Additional discussion regarding the development and use of task strategies in teaching academic skills may be found in Chapters 11 through 15.

Strategic learners, in general, possess and implement a large repertoire and variety of strategies. Many learners are capable of creating strategies on their own, often inducing optimal strategies through trial and error. That is, students without learning difficulties often create and implement strategies on their own. For example, a student may create a rhyme to remember information better (“Columbus sailed the ocean blue, in fourteen hundred and ninety-two”). If the rhyme helps, he will continue to use rhymes with new information. If the rhyme doesn’t help, he won’t use it again.

Generally speaking, students with mild/moderate disabilities do not create their own strategies to help them learn. Therefore, strategy instruction for students with disabilities is particularly needful and is most efficient when made explicit to the learner (Meyen, Vergason, & Whelan, 1996). Although students need explicit strategy instruction, the ultimate goal in teaching strategies is to help students to become more responsible for their learning and to learn how to learn.

The teaching of strategies may be categorized as direct or indirect. Direct teaching of strategies involves teacher selection of an efficient and effective strategy for accomplishing a task and teaching the student to apply that strategy. Indirect teaching involves prompting and guiding students in their strategy use (Lenz et al., 1996). Students with mild/moderate disabilities are less likely than their typical peers to be efficient and effective strategy users, yet the ultimate goal of strategy instruction is to develop lifelong, self-sustaining learners. Strategy instruction with this population, therefore, needs to incorporate a combination of both direct and indirect approaches.

In this chapter, strategies for learning are presented—namely, strategies for attention, remembering, organizing, test taking, and note taking. In addition, how students can be taught to self-manage their own behavior or learning is discussed. As in previous chapters, implications for culturally diverse learners as they relate to strategies for learning are also presented.

**Attention Strategies**

Ten-year-old Brayden struggles in school. He was diagnosed as having attention deficit hyperactivity disorder at age 8 and started taking medication at that time. His behavior has improved, but he still has difficulty paying attention for the length of time his peers can attend. Once he is distracted by something, like a person entering the classroom or the teacher’s phone ringing, he doesn’t get back on task. This has become more problematic because he’s beginning to distract other students and get them off task.

Many students with mild/moderate disabilities have difficulty attending to tasks. In order to perform successfully, student attention must be gained, maintained, and refocused.
Saphier and Gower (1997) define five categories of teacher behaviors related to gaining, maintaining, and refocusing student attention: desisting, altering, enlisting, acknowledging, and winning. Desistive behaviors are corrective and direct. They inform students that they are engaged in inappropriate behavior and specify the appropriate behavior (e.g., “Joe, either give me your toy or put it away and finish your assignment”). Alerting behaviors are usually targeted toward groups of students and focus on keeping the group alert and in anticipation (e.g., eye-to-eye contact, looking at one student while talking to another student). There are no direct messages given. The third category, enlisting, involves attempts at soliciting the voluntary involvement of an individual or a group to participate in the activity (e.g., varying voice to add interest, using physical objects as part of a lesson). Acknowledging requires sensitivity on the teacher’s part to events outside the current activity that may affect the students’ inattentive behavior and to acknowledge those events (e.g., “I know you are excited about the game after school, but right now you need to help your partner”). The last category, winning, is similar to enlisting, except that the teacher behavior focuses student attention on the teacher rather than the activity (e.g., teacher demonstrates encouragement, enthusiasm, or praise).

All of the above are excellent examples of gaining, maintaining, and refocusing students’ attention within classroom activities. The types of attention students are required to perform may be divided into at least two categories, on-task attention and selective attention.

**On-Task Attention**

Students are considered on-task when they are engaged in relevant school-related tasks. As described in Chapter 4, teachers can increase the amount of time students spend on-task by improving teaching behaviors, instructional management, and/or behavior management. For example, teachers can increase the amount of time their students spend on-task by reducing transition time, giving short periods of time-off-task, prompting students throughout the lesson, and randomly calling on students to answer questions, among many other behaviors (Prater, 1992).

All of the above examples, including those provided by Saphier and Gower (1997), are teacher directed. They require that the teacher initiate the behavior to ensure that student attention is gained, maintained, and refocused. It is preferable, when possible, to teach students to gain, maintain, and refocus their own attention. Students can be taught, for example, to self-monitor their on-task behavior. Self-monitoring of on-task behavior has been identified as a powerful tool for improving rates of on-task behavior. This procedure is presented in detail at the end of this chapter in the section Self-Managed Learning.

**Selective Attention**

Selective attention refers to the ability to select the appropriate stimuli, focus on those stimuli, and ignore all other irrelevant stimuli. The relevant and irrelevant stimuli in this sense may be environmental and/or academic. Typical environmental stimuli in classrooms may be categorized as visual, auditory, or both. If the teacher is giving oral directions and other people are talking, the student needs to select the teacher’s voice, focus on what the teacher is saying, and ignore everyone else’s voice. Or, if a student is reading a poem she wrote while the lawn mower outside the classroom can be heard, the other students need to select the
student's voice, focus on her voice, and ignore the sound of the lawn mower. Both of these examples involve auditory stimuli. Environmental stimuli may also be visual. Suppose that the classroom is soundproof and it isn't the lawn mower noise distracting students but the movement of the lawn mower across the lawn. In this example, the visual observation of the lawn mower is the irrelevant stimulus. Students should ignore the movement while focusing on the appropriate stimulus (e.g., book being read, movie being shown, teacher talking).

Irrelevant stimuli may also be academic. For example, distracters are often included in mathematical story or word problems. Unnecessary information is provided to determine if the student is paying attention or focusing on what is necessary and relevant. Consider this word problem: “Larry had 3 cats, 2 birds, 4 toy trucks, and 1 dog. How many pets did he have altogether?” Students who do not attend to the relevant stimuli include the four toy trucks in their equation and answer that Larry had ten pets, rather than the correct answer of six pets.

Fluent readers who are reading for comprehension often underline or highlight material in the text. Underlining and highlighting are selective attention strategies. The reader identifies the most important information (selecting the appropriate stimuli), highlights or underlines it (focuses on those stimuli), and on rereading or studying for an exam reads only the highlighted or underlined portions while ignoring the rest of the text (ignoring other irrelevant stimuli).

There are several strategies that teachers can employ with students with mild/moderate disabilities who have selective attention difficulty. Most strategies involve (1) telling the student what is relevant, (2) using focusing strategies to emphasize the relevant information, and/or (3) teaching students how to identify the relevant stimuli. A list of examples under these three categories appears in Table 10.1.

<table>
<thead>
<tr>
<th>Table 10.1 Examples of Strategies for Improving Selective Attention Difficulties</th>
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<tr>
<td><strong>Category</strong></td>
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| Teacher Identifies Relevant Stimuli | • Tell students what information is important for them to recall or remember.  
• Emphasize relevant information through vocal intonation and/or volume.  
• Provide students with both an oral and written summary of relevant information (i.e., provide lecture notes, write important information on the board).  
• Identify relevant information (e.g., highlight with a marker, underline, color code, draw arrows). |
| Focusing Strategies | • Eliminate extraneous distracting environmental stimuli (e.g., use study carrels).  
• Eliminate distracting academic information (e.g., use window boxes over worksheets or other written material).  
• Periodically ask students about that to which they should be attending.  
• Keep students engaged actively through meaningful content and briskly paced presentations. |
| Teach Students to Identify Relevant Stimuli | • Teach students to use strategies provided within textbooks (e.g., bolding, italics).  
• Teach students to identify cues to verbally presented materials (e.g., lists, seriation).  
• Teach students to identify distracters in academic material. |
Many students have difficulty sitting still. To reduce distraction in the classroom, try these tips:

1. Some students like to tap their fingers or pencils on their desk. Give them a mouse pad or a piece of shelf paper to place on their desk against which to tap. This will reduce the noise level.
2. Provide students soft squeeze balls to keep their hands busy.
3. For students who like to stand by their desk and move around, use brightly colored tape to create a boundary around their desks. Allow enough room to get up and move a little, but not enough space to bother other students. (McConnell, Ryser, & Higgins, 2000)

**Teacher Tip 10.1**

Remembering Strategies

Twelve-year-old Makayla has mental retardation. Although she is behind her nondisabled peers in academic skills, she has learned to read and write and is currently enrolled in a middle school history class. Her teacher makes adjustments in Makayla’s assignments so they are more on her level. The biggest difficulty Makayla has in this class is recalling specific historical information.

Many tasks in school require that students recall information. Yet, one of the characteristics of students with mild disabilities, particularly those with mild mental retardation and learning disabilities, is the failure to recall important information. Strategies that help students remember information are called mnemonic strategies. A mnemonic is a technique or device for improving or strengthening memory. Commonly used mnemonic strategies include acronyms, acrostics, rhymes, keywords, and pegwords.

**Acronyms and Acrostics**

Acronyms and acrostics can be used to recall lists or sets of information. Acronyms are created by taking the first letter of each piece of information to create another word or words. An acronym used to recall the five Great Lakes, for example, is HOMES (Huron, Ontario, Michigan, Erie, and Superior). Acrostics are similar to acronyms except that the first letters of words in the list are used to create new words to represent a phrase or sentence. For example, to recall the planets of our solar system, students may learn this acrostic: My Very Eager Mouse Jumped Straight Under Nellie’s Pillow (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto).

Sometimes it is important for students to recall a list of items in a specific order. Other times the order is not relevant. For example, if one needs to remember the five Great Lakes in no particular order, the acronym HOMES is convenient because it spells a word. On the other hand, the previously stated acrostic for recalling the planet names lists them in their order from the sun. Keeping the words in this sequence assists recall of both the planet name and their order from the sun. Acronym strategies may also facilitate recall of order. The name ROY G. BIV (Red, Orange, Yellow, Green, Blue, Indigo, Violet) represents the...
The keyword strategy facilitates the associative recall of at least two pieces of seemingly unrelated information. Examples include state names and capitals, English and Spanish words, composer and composition title, among others. A long line of research conducted with students with disabilities indicates that the keyword method is a powerful tool for facilitating recall (Scruggs & Mastropieri, 2000).

The keyword procedure requires three steps: (1) recoding, (2) relating, and (3) retrieving. Recoding involves associating an unfamiliar word into an acoustically similar and familiar word. For example, the keyword for Pennsylvania could be *pen*; and the keyword for Pennsylvania’s capital, Harrisburg, *hairy*. The second step, relating, involves associating the keywords in an interactive, memorable visual image—for example, a hairy pen (Mastropieri & Scruggs, 1991). Retrieving, the last step, involves recalling the capital’s name when given the state’s name, or vice versa.

Figure 10.1 provides another example of the keyword method. To help students remember that Hernando de Soto came from Spain, students first need to associate bulls with Spain. Once they understand this association, they learn the keyword for de Soto (soda) and the visual image of the bull drinking a soda (Carney, Levin, & Levin, 1993). After introducing how keywords work, why you are using them, and the content you want students to remember (associating famous people with their country of origin), implement a teaching sequence similar to this: “Remember that bull fighting is a major sport in Spain. The keyword for de Soto is soda. When I say Spain, remember the picture of the bull (for Spain) drinking a soda at the counter. Where was Hernando de Soto from?” You may need to prompt some students through these steps. For example, if they don’t answer correctly, ask, “What was the keyword for de Soto?” “That’s right, it was soda.” “What do you remember about the picture with a soda?” “Yes, a bull was drinking the soda.” “What did the bull stand for?” “Spain is correct.” “So where was de Soto from?”

Rhymes

Rhymes can also be used to facilitate recall. Commonly learned rhymes such as “Thirty days hath September, April, June, and November” and “I before E except after C” continue to be used by adults although learned in their childhood. Related to rhyming is the use of rhythm or music. The “Alphabet Song,” for example, is taught to young children to facilitate recall of the letters of the alphabet. The use of rap has also been used to facilitate recall of information.
The pegword method is similar to the keyword method but includes numbers as part of the factual information being taught. Examples include the 10 reasons dinosaurs became extinct in order of probability, the presidents of the United States and their presidency number, or Moh’s hardness levels for minerals (Mastropieri & Scruggs, 1991). The numbers 1 through 10 are recoded to well-known and acoustically similar words:

- one = bun or sun
- two = shoe
- three = tree
- four = door or floor
- five = hive
- six = sticks
- seven = heaven
- eight = gate
- nine = vine or line
- ten = hen

The procedure for teaching pegwords is similar to that used in the keyword method. The student is taught the rhyming pegwords. The unfamiliar information is then associated with the number through the pegword.

Figure 10.1  Example of a Keyword Mnemonic Strategy
A form of the pegword method may also be used to facilitate recall of information that goes beyond number 10. Presidents of the United States, for example, may be taught following the pegword method above, but adding a season in which the interaction is occurring. The first decade of Presidents would be placed in a spring garden, the second decade on a beach (representing summer), the third at a Thanksgiving dinner (fall), and the fourth decade would include a snowman (winter). For example, the sixteenth president of the United States was Abraham Lincoln. The keyword for Lincoln could be links. The keyword for six is sticks. Since Lincoln served in the second decade of presidents, the easily visualized interaction may be toasting sausage links (for Lincoln) on sticks (representing six) on a beach (summer or second decade) (Mastropieri & Scruggs, 1991). (See Figure 10.2.) In addition, pegwords can be combined with keywords. For example, to help students recall that Monroe was the fifth president, they can be shown a picture of money, the keyword for Monroe, being carried by bees to a hive (pegword for five) (Scruggs & Mastropieri, 2000).

Figure 10.2 Example of a Pegword Mnemonic Strategy
Source: Illustration created by Dena Plant, 2005.
Students can learn these mnemonic strategies using keywords that hold personal meaning. For example, Carney et al. (1993) relate the story of a basketball player who was performing poorly in U.S. history and needed to learn dates associated with important 20th-century events.

He succeeded in remembering these events and dates by combining the keyword method with a mnemonic number system in which the last two digits of each date were recorded as a familiar professional basketball player's jersey number. For example, to remember that Harding died of a heart attack in 1923, the student pictured Michael Jordan (Jersey 23) slam-dunking a basketball so hard (Harding) that one of the fans died of a heart attack. (p. 29)

Using keywords, Makayla’s teacher and her paraeducator create mnemonic pictures to help Makayla associate important names and dates. Although it takes some time for Makayla to learn these associations, she appears delighted when she recalls the correct information after being quizzed.

Teachers’ inability to draw should not stop them from using mnemonic strategies. Here are some tips to remember:

1. Research indicates that mnemonic pictures do not have to be artistic to be effective. The pictures only need to be recognizable.
2. Mnemonic pictures can be created from magazine cutouts or stick figures.
3. Enlist the help of artistic students to draw mnemonic pictures.
4. Promote visual imagery by describing the picture and asking students to form a mental picture. Ensure that students have created details of the picture for a stronger visual image. (Mastropieri & Scruggs, 1991)

A substantial amount of research has demonstrated the effectiveness of mnemonic strategies for students with disabilities. In fact, mnemonic instruction was found to be the most effective method reported in the special education literature (Forness, Kavale, Blum, & Lloyd, 1997). Extensive research has demonstrated the effectiveness of the keyword method, in particular, in facilitating recall of factual information in the academic content areas such as vocabulary development (e.g., Uberti, Scruggs, & Mastropieri, 2003), science (e.g., Mastropieri, Scruggs, Whittaker, & Bakken, 1994), and social studies (e.g., Mastropieri, Sweda, & Scruggs, 2000). Keyword strategy training has been successfully used with students who often demonstrate difficulty with memory tasks, students with learning disabilities (e.g., Fulk, 1994), mild mental retardation (e.g., Mastropieri et al., 1994), and behavior disorders (e.g., Mastropieri, Emerick, & Scruggs, 1988).

Organizing Strategies

In addition to applying appropriate remembering or mnemonic strategies, effective teachers and learners use strategies for organizing content information. Three strategies, in particular, are used for organizing information: graphic organizers, advance organizers, and study guides.
Graphic Organizers

Graphic organizers visually represent knowledge by arranging information in an associative organization. Other terms that have been used for graphic organizers include “structured overviews, tree diagrams, semantic maps, semantic networks, episodic maps, concept maps, thematic illustrations, and flow charts” (Horton & Lovitt, 1989, p. 66).

When using graphic organizers in the classroom, four concepts are important to remember: First, isolating important information and omitting extraneous information helps to simplify the learning process. Second, calling on prior knowledge assists students in “filing away” new information into existing frameworks of categories called schemata. Third, visual graphic displays are easier to remember than textual material. Finally, using both visual and oral language in developing graphic organizers helps students remain active throughout the learning process (Bromley, Irwin-DeVitis, & Modlo, 1995).

Graphic organizers must be consistent, coherent, and creative. Students with mild/moderate disabilities benefit from consistent routines and structure. Therefore, establish a routine for using graphic organizers. Also, create a standard and consistent set of graphic organizers to use in your classroom. To be coherent, graphic organizers must (1) clearly label the relationships between concepts, (2) limit the number of ideas covered, and (3) avoid unnecessary distractions. Find ways to implement graphic organizers in creative ways, such as during cooperative learning groups or as part of homework (Baxendell, 2003).

There are at least six types of graphic organizers:

- **Hierarchical**, sometimes called top-down, in which the information is arranged by major and minor categories similar to an outline
- **Conceptual maps**, where a central idea or category is tied together with details or subcategories
- **Sequential diagrams**, which represent the chronological order or a sequence of events
- **Cyclical organizers**, which are used to represent a continuous sequence of events with no beginning or ending
- **Venn diagrams**, which depict different and similar attributes or characteristics of a concept
- **Matrices**, which are appropriate for classifying categories of information across topics (Bromley et al., 1995; Horton & Lovitt, 1989; Saunders, Wise, & Golden, 1995)

Different types of information warrant different types of graphic organizers. An example of each appears in Figure 10.3.

Graphic organizers can be used to facilitate a wide range of learning, from representing students’ background knowledge, which provides the framework for what is to be learned, to a postteaching tool to organize and reflect on newly learned information. In particular, graphic organizers help focus attention on relevant information, assist students in integrating prior knowledge with new knowledge, facilitate concept development, enrich literacy and thinking skills, promote focused discussion, help teachers plan for instruction, and serve as an assessment tool (Bromley et al., 1995).

Graphic organizers can be developed by the students, the teacher, or both. Ask students, for example, to create a graphic organizer individually or in groups to represent their conceptual understanding of a topic prior to instruction. This can serve as a pretest of prerequisite and/or lesson content knowledge. Students could also develop their own graphic organizer while reading a text chapter. Table 10.2 lists examples of graphic organizers.
Teach students to use “affinity diagrams” to organize large amounts of information using these steps:

1. Students brainstorm individually or in groups on a specific topic (e.g., animals).
2. For each idea, students write one to three words on a note card.
3. Place all notes on a desk or wall where they may be viewed.
4. Students arrange ideas into columns by groups that reflect similarities.
5. Students discuss why these ideas are similar and create a label for the column. (Haselden, 2003)
Before teaching a lesson on tsunamis, Ms. Sato shares an experience she’d had while living in Hawai’i. An earthquake had occurred in the Pacific Ocean, and a tsunami alert was sounded in the morning throughout the islands. The tsunami was expected later that afternoon. All schools and most businesses closed. Signs were posted across all affected beaches warning people to stay away until a certain time period had passed. Ms. Sato comments that although tsunamis can be very dangerous and that alerts should be taken very seriously, this was one time when the tsunami never came. She was not unhappy because she got out of a day of school! Ms. Sato summarizes that we have much to learn about predicting tsunamis.
Chapter Organizer: Learning Strategies

**Purpose:** This chapter introduces strategies for learning. Students with disabilities often fail to independently develop effective learning strategies. Teachers of students with disabilities can incorporate strategy instruction into almost any lesson.

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<thead>
<tr>
<th>Key Topics</th>
<th>New Vocabulary</th>
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<tr>
<td>Attention Strategies</td>
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<td>Organizing Strategies</td>
<td>mnemonic—</td>
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<td>Test-Taking Strategies</td>
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<td>Note-Taking Strategies</td>
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<td>Creating Learning Strategies</td>
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<td>Self-Management Strategies</td>
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### Attention Strategies

- On-Task—
- Selective—

### Remembering Strategies

<table>
<thead>
<tr>
<th>Type of Mnemonic</th>
<th>Definition</th>
<th>Example</th>
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<tr>
<td>Keyword</td>
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<td>Pegword</td>
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### Type of Graphic Organizers

![Diagram of a sample graphic organizer for the chapter]

**Figure 10.4** A Sample Graphic Organizer for This Chapter

(continued)
<table>
<thead>
<tr>
<th>Test-Taking Strategies</th>
<th>Note-Taking Strategies</th>
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<tr>
<td>FORCE</td>
<td>ORDER</td>
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<tr>
<td>PIRATES</td>
<td>CALL-UP</td>
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<tr>
<td>SCORER</td>
<td>“A” NOTES</td>
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<tr>
<td>SNOW</td>
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**Self-Management Strategies**

Types: __________________________

_______________________________

Steps: _________________________

_______________________________

*Figure 10.4* (continued)
Prior to attending a field trip, Mr. Ruddy asks students to review a map of the pioneer village they will visit. He asks the students to become familiar with the route they will walk and the buildings they will visit. Mr. Ruddy also shows pictures of pioneers working in the fields, the houses, and the shops in the village. The class discusses briefly what each person is doing. Mr. Ruddy presents this information in advance of the field trip so the students will have some idea of what they will be experiencing.

As originally conceived by Ausubel in the 1960s, advance organizers were reading passages written at higher levels than the new textual information to be learned. Now the term advance organizer is used in a more universal way to represent “a verbal or written technique used to provide students with an overview or preview of material to be presented” (Keel, Dangle, & Owens, 1999, p. 5). Advance organizers are intended to activate prior knowledge about a topic and provide a general description of the entire lesson. The introductory section of teacher-directed instruction, as described in Chapter 7, serves as a form of an advance organizer. Both Ms. Sato and Mr. Ruddy used simple forms of advance organizers.

More complex advance organizers are also possible. According to Darch and Gersten (1986), effective advance organizers should:

- Inform students of the purpose of the organizer
- Clarify teacher and student behavior
- Identify and explain topics
- Identify subtopics and concepts to be addressed
- Provide background information
- Provide a rationale for the lesson
- Introduce unfamiliar vocabulary
- Provide an organizational structure
- State the desired outcome or results of the lesson

When planning your advance organizers, keep the following in mind:

1. Focus the advance organizer on what is important, not what is unusual.
2. “Higher-level” advance organizers may be more effective than “lower-level” ones.
3. Advance organizers are most helpful with information that is not well organized.
4. Different kinds of advance organizers produce different results. (Marzano, Pickering, & Pollock, 2001)

Study Guides

Study guides enhance instruction by leading students through academic information using questions or keywords. They help students learn and retain information from textbooks or lectures by providing an organized framework of the content (Boyle & Yeager, 1997). Although they have traditionally been used to assist students with independent practice prior to taking an exam, study guides can be effective at varying points in a lesson. For example, study guides can be used to introduce new vocabulary, review newly introduced
concepts, integrate previous information with new content, and practice specific skills (Hudson, Ormsbee, & Myles, 1994). Study guides can be created in various formats, depending on the purpose.

Teachers may create study guides to facilitate reading comprehension of text (see Figure 10.5). Horton and Lovitt (1989) provide a four-step process for constructing organizers based on textual information, such as chapters in a textbook. First, select and divide the chapters to be modified and reduce the reading passages to about 1,500 words each. This length allows students to read the passage, complete the graphic organizer, and take a test within one class period. Then construct an outline of the main ideas in the reading passage and choose the appropriate graphic organizer format that fits the structure of the information. Last, prepare both a teacher and a student version of the graphic organizers. The teacher version should be developed first and should include all the information. Reducing the original text may be considered a disadvantage of this approach in that it requires teacher time and does not promote generalization to actual classroom materials.

**Figure 10.5 Example of a Study Guide**

**Study Guide: The Chemistry of Life**

**Name ________________________**

**Section 1: Vocabulary**

- nucleus—
- electron—
- isotope—
- compound—
- ionic bond—
- covalent bond—
- molecule—

**Section 2: Questions**

1. Describe the structure of the atom.

2. What is a covalent bond? An ionic bond?

3. How are compounds related to molecules?
To ensure that study guides are comprehensive, they should include the following:

- A description of the reading materials
- Objectives
- A rationale
- Salient vocabulary
- Activity descriptions tied directly to the objectives
- Comprehension questions across varying levels
- A self-correcting procedure (Boyle & Yeager, 1997; Hudson et al., 1994)

Students can be aided in using a study guide by being taught a self-talk procedure (see Figure 10.6).

Students with mild/moderate disabilities often need assistance organizing their school materials. Here are some organizational ideas:

1. Tell students to organize their subjects by color. For example, if English is yellow, then the notebook, highlighter, and folder for English class are all yellow.
2. Teach students to use Post-it flags in each subject color. When homework is assigned, students can flag the page in their book by the colored flag. This will help students remember they have homework, which they can locate easily.
3. Teach students to use a calendar, planner, or some other organizer. Help them learn to use the same system in all classes.
4. Identify one folder as the “take-home folder.” (McConnell, Ryser, & Higgins, 2000)

Organizational strategies have been documented to be effective for students with disabilities. The research with this population, however, is limited as compared with

Figure 10.6 Self-Talk for Students When Using a Study Guide

<table>
<thead>
<tr>
<th>Steps for Using the Study Guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When I receive my study guide, I put my name on the paper.</td>
</tr>
<tr>
<td>2. Then, I complete each section of the study guide. Completing each section of the study guide will help me identify material that I need to know for the section test.</td>
</tr>
<tr>
<td>3. For section 1 of the study guide, I write the definition of the terms listed. To do this I:</td>
</tr>
<tr>
<td>a. Look for the <strong>bolded</strong> word in the subsections of this chapter section.</td>
</tr>
<tr>
<td>b. Read the definition that surrounds the word and then write it on my paper.</td>
</tr>
<tr>
<td>4. For section 2, I write answers to the questions. To do this I:</td>
</tr>
<tr>
<td>a. Read the question or statement and identify a keyword that the question is about.</td>
</tr>
<tr>
<td>b. Find the keyword in the text.</td>
</tr>
<tr>
<td>c. Reread the question or statement.</td>
</tr>
<tr>
<td>d. Read the section with the keyword to find the answer.</td>
</tr>
<tr>
<td>e. Write the answer.</td>
</tr>
</tbody>
</table>
mnemonic strategy research. A review of studies examining instructional strategies for students with learning disabilities in secondary classrooms (Hudson, Lignugaris-Kraft, & Miller, 1993) found that visually displayed organizers were generally effective across a variety of academic content, yet inconsistent results were obtained with advance organizers. Study guides have been found to improve scores over self-study for typical secondary students and those with learning disabilities, whether provided as a teacher-generated guide with written text (Horton & Lovitt, 1989) or on the computer (Horton, Lovitt, Givens, & Nelson, 1989).

**Test-Taking Strategies**

Students with disabilities need effective test-taking strategies, particularly to facilitate success in general education classrooms. Madison, the seventh-grade student introduced at the beginning of the chapter who is afraid of taking tests, could benefit from learning test-taking strategies. Learning test-taking strategies is important, because students with mild/moderate disabilities must participate with their nondisabled peers in taking standardized schoolwide tests. One study discovered that nearly half of a student's grade in secondary general education classrooms is based on test scores (Putnam, 1992). The average number of tests given in these secondary classrooms was 11, so on average, a student with disabilities enrolled in four content-area general education classes would take an average of 44 tests over a nine-week grading period.

Students who demonstrate effective test-taking strategies are considered “testwise.” Students who enter the testing situation with equal knowledge of the content may score differently. One student may be more testwise than another student. One student may use time more wisely, eliminate obviously incorrect choices on multiple-choice tests, and mark uncertain answers to review before submitting the test.

**General Test-Taking Strategies**

All-purpose or general test-taking strategies include (1) academic preparation, (2) physical preparation, (3) attitude-improvement, (4) anxiety reduction, and (5) motivation improvement (Scruggs and Mastropieri, 1992). Each is described below.

The first strategy, academic preparation, specifies what and when students should study. In particular, students must know which content to study. Teachers should be explicit about the knowledge and skills for which students will be held accountable. Students should also know the type of test questions that will be used—for example, essay, true/false, matching, or multiple-choice.

Physical preparation implies that students must be in good health, have eaten properly, and gotten a good night’s rest, particularly prior to a test. Third, students also need a healthy, positive, and confident attitude about taking tests. Teachers should evaluate students’ test-taking attitudes, and based on these results, they should intervene. For example, if students set standards too high for themselves, they need assistance in setting reasonable improvement goals. If students are afraid of receiving
negative test results, then an environment that supports and reinforces effort should be established.

Anxiety can often inhibit students’ test performance; thus the fourth category is test anxiety reduction. Scruggs and Mastropieri (1992) suggest the following strategies for anxiety reduction:

- Provide experience with test formats
- Teach test-taking skills
- Reduce the number of evaluative comments made while the test is being administered
- Teach self-monitoring of on-task behavior to get students working and using their time wisely
- Use self-monitoring procedures to develop relaxation

The fifth category, improving motivation, may be accomplished by (1) providing external reinforcement for effort; (2) teaching and encouraging appropriate attributions or attributing success/failure to personal effort and not to forces outside the students’ control; and (3) encouraging students to engage in strategies they are in control of that lead to success in the test-taking situation.

Provide students reminder notes several days before tests and projects are due. Print them on bright paper so they are not lost. Include the due date and the material the test will cover or the type of project. If helpful, ask parents to sign the note and assign students bonus points for returning the note signed. (McConnell et al., 2000)

Specific Test-Taking Strategies

Specific test-taking strategies are usually acronyms created to teach students strategy steps to complete toward successful test taking. For example, FORCE was designed to help students prepare for test taking (Wehrung-Schaffner & Sapona, 1990). DETER, PIRATES, and SCORER were designed for implementation while taking a test (Hughes & Schumaker, 1991; Strichart & Mangrum, 2002). And SNOW was developed specifically for essay tests (Scruggs & Mastropieri, 1992). These five acronyms and the steps they represent are listed in Table 10.3. In addition, other specific test-taking strategies, categorized by type of test items, appear in Table 10.4. And Table 10.5 (pp. 293–298) provides a sample scripted lesson plan for teaching a test-taking strategy.

Limited research has been conducted with specific test-taking strategies. SCORER has been tested across several studies and found to be effective for students with learning disabilities and low achievers (for a synopsis of these studies, see Putnam, 1992). PIRATES has also been tested empirically and found to be an effective strategy for adolescents with learning disabilities (Hughes & Schumaker, 1991). Wehrung-Schaffner and Sapona (1990) created the test-taking strategy FORCE and tested it with adolescents with learning disabilities. Results indicated that students’ test scores improved as they used the strategy.
### Table 10.4  Other Specific Test-Taking Strategies, Categorized by Type of Test Item

<table>
<thead>
<tr>
<th>Test Item Types</th>
<th>Test-Taking Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multiple-Choice</strong></td>
<td>Before reading the choices, try to answer the question.</td>
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<tr>
<td></td>
<td>Consider all choices carefully.</td>
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<tr>
<td></td>
<td>Eliminate choices.</td>
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<tr>
<td></td>
<td>Look for clue words (like <em>always</em> or <em>rarely</em>).</td>
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<tr>
<td></td>
<td>Compare the choices with each other and the relationship to the step statements.</td>
</tr>
<tr>
<td><strong>Sentence Completion</strong></td>
<td>If unsure of the answer, guess.</td>
</tr>
<tr>
<td></td>
<td>Fill in at least partial information.</td>
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<tr>
<td></td>
<td>Make the sentence consistent and logical.</td>
</tr>
<tr>
<td><strong>Essay</strong></td>
<td>Answer every item.</td>
</tr>
<tr>
<td></td>
<td>Use your time wisely.</td>
</tr>
<tr>
<td></td>
<td>If writing you answers, use your best penmanship.</td>
</tr>
</tbody>
</table>

### Table 10.3  Examples of Test-Taking Strategies

**Test Preparation**

- **FORCE** (Wehrung-Schaffner & Sapona, 1990)
  - Find out (what the test will cover and what types of questions will be asked).
  - Organize (by collecting all the necessary materials to study).
  - Review the material.
  - Concentrate and make a cue sheet.
  - Early exam (practice by drilling or having a partner ask you questions.)

- **DETER** (Strichart & Mangrum, 2002)
  - Directions, read them.
  - Examine the test.
  - Time, check it.
  - Easy ones first.
  - Review my work.

- **SCORER** (Carman & Adams, 1984)
  - Schedule time.
  - Clue words, look for.
  - Omit difficult questions.
  - Read carefully.
  - Estimate answers.
  - Review your work.

- **PIRATES** (Hughes & Schumaker, 1991)
  - Prepare to succeed.
  - Inspect the instructions.
  - Read, remember, reduce.
  - Answer or abandon.
  - Turn back.

- **SNOW** (Scruggs & Mastropieri, 1992)
  - Study the question.
  - Note important points.
  - Organize important information before writing.
  - Write directly to the point of the question.

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  - Organize (by collecting all the necessary materials to study).
  - Review the material.
  - Concentrate and make a cue sheet.
  - Early exam (practice by drilling or having a partner ask you questions.)

- **DETER** (Strichart & Mangrum, 2002)
  - Directions, read them.
  - Examine the test.
  - Time, check it.
  - Easy ones first.
  - Review my work.

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  - Schedule time.
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  - Estimate answers.
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- **PIRATES** (Hughes & Schumaker, 1991)
  - Prepare to succeed.
  - Inspect the instructions.
  - Read, remember, reduce.
  - Answer or abandon.
  - Turn back.

- **SNOW** (Scruggs & Mastropieri, 1992)
  - Study the question.
  - Note important points.
  - Organize important information before writing.
  - Write directly to the point of the question.
Table 10.5  Scripted Lesson Plan for Teaching Test-Taking Skills

<table>
<thead>
<tr>
<th>Topic</th>
<th>Test-taking skills</th>
</tr>
</thead>
</table>

**IEP Objective**
When given a year-end achievement assessment with multiple-choice questions, the student will read each question, read all of the possible answers, and mark the choice the student believes is correct for each multiple-choice question.

**Lesson Objective**
When given a blank piece of paper, the student will write the steps of the DETER (Strichart & Mangrum, 2002) strategy with 100 percent accuracy. When given five sample tests, the student will read the directions, write the type of questions, write how much time is available per question, circle and answer the easy questions, and write a check mark after he or she has reviewed his or her work.

<table>
<thead>
<tr>
<th>Lesson Component</th>
<th>Teacher Questions, Instructions, and Feedback</th>
<th>Anticipated Student Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attending Cue</strong></td>
<td>SAY: “Eyes on me. We’re ready to start our study skills lesson.”</td>
<td>(Students look at teacher.)</td>
</tr>
<tr>
<td><strong>Anticipatory Set</strong></td>
<td>SAY: “To start today’s lesson, we’re going to take a quick quiz. As soon as I hand you the slip of paper, please turn it over and write the definition for the word written on the paper.” ASK: “Who’d like to read the word and the definition you wrote?”</td>
<td>(Students take the paper and begin writing a definition.) (A student raises her hand.) “The word was deter, and it means to discourage from doing.”</td>
</tr>
<tr>
<td></td>
<td>SAY: “Go ahead, Rosa.” FEEDBACK: “Excellent, Rosa. You remembered the definition from last week’s vocabulary list.” SAY: “Today we’re going to use the word deter to help you from being discouraged when you take tests. If you can remember the word, you’ll be able to remember a strategy that will make taking tests easier.”</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Lesson Component</th>
<th>Teacher Questions, Instructions, and Feedback</th>
<th>Anticipated Student Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prerequisite Check and Purpose Statement</td>
<td>SAY: “You’ve convinced me that you remember the steps for preparing for a test. One more check before we start our lesson. I’m going to dictate some division problems. Write and solve the problems after you hear them. Ready? Forty divided by ten. Forty-five divided by fifteen. Fifteen divided by five.”</td>
<td>(Students begin writing.)</td>
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<tr>
<td></td>
<td>SAY: “Check your own answers. 40 divided by 10 is 4. 45 divided by 15 is 3. 15 divided by 5 is 3. Now you’re ready to learn a strategy you can use when you take a test.”</td>
<td></td>
</tr>
<tr>
<td>Instruction and Modeling</td>
<td>SAY: “As I stated said earlier, the strategy we’re using is DETER. Each letter of this word will help you remember what to do when you take a test. I’ve written each letter of this strategy and the keyword associated with each letter on the board. (Show the first letter.) The first letter D refers to the test’s directions. Read the directions carefully.”</td>
<td></td>
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<tr>
<td></td>
<td>ASK: “What does the letter D remind you to do?”</td>
<td>“Read the directions.”</td>
</tr>
<tr>
<td></td>
<td>ASK: “How should you read the directions?”</td>
<td>“Carefully.”</td>
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<td></td>
<td>FEEDBACK: “That’s right.”</td>
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<tr>
<td></td>
<td>SAY: “On the overhead I have test directions. Read these directions with me. ‘Read each question and decide which answer . . .’ ”</td>
<td>(Students read.)</td>
</tr>
<tr>
<td></td>
<td>ERROR CORRECTION: “Only a few of you are reading with me. Let’s all read this together. ‘Read each question and decide which answer best answers the question.’”</td>
<td>(Students read.)</td>
</tr>
<tr>
<td></td>
<td>FEEDBACK: “That was much better.”</td>
<td></td>
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<td></td>
<td>SAY: “These directions are easy to understand. I read each question and decide which answer best answers the question. If the directions are hard to understand, I ask the teacher to explain them.”</td>
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<tr>
<td></td>
<td>ASK: “What should I do if I don’t understand part of the directions?”</td>
<td>“Ask the teacher.”</td>
</tr>
<tr>
<td></td>
<td>FEEDBACK: “That’s right. I’d ask the teacher.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASK: “What does D stand for?”</td>
<td>“Read the directions.”</td>
</tr>
<tr>
<td></td>
<td>FEEDBACK: “Good.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SAY: “After I read the directions carefully, the next letter in DETER is E. (Show the letter E.) The letter E helps me remember to examine the test. I examine the entire test to see how much I have to do. I examine the test right after I read the directions.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASK: “What does the E stand for?”</td>
<td>“Examine.”</td>
</tr>
<tr>
<td></td>
<td>FEEDBACK: “You’re doing a great job listening. That’s right. I examine the test.”</td>
<td></td>
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<tr>
<td></td>
<td>SAY: “When I examine this test (put sample test on the overhead), I skim the test to see what kind of questions are on the test. This sample test has 30 multiple-choice questions. At the top of my test, I am going to write multiple-choice.”</td>
<td></td>
</tr>
</tbody>
</table>
### Table 10.5 (continued)

<table>
<thead>
<tr>
<th>Lesson Component</th>
<th>Teacher Questions, Instructions, and Feedback</th>
<th>Anticipated Student Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instruction and Modeling (continued)</strong></td>
<td><strong>ASK:</strong> “What’s on my test?”</td>
<td>“Thirty multiple-choice questions.”</td>
</tr>
<tr>
<td></td>
<td><strong>ASK:</strong> “What does the E represent?”</td>
<td>“Examine the test.”</td>
</tr>
<tr>
<td></td>
<td><strong>FEEDBACK:</strong> “That’s correct.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SAY:</strong> “I’ve examined the test. Now I move to the next step of the strategy. The next letter in DETER is T. (Show the T.) The T stands for time; check the time. After I’ve examined the test, I decide how much time I should spend answering each item on the test. For this test I have 60 minutes to complete the test. I divide the time by the number of questions I have, which is 60 divided by 30. I have about 2 minutes to answer each question. I will write 2 minutes at the top of my test.”</td>
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<tr>
<td></td>
<td><strong>ASK:</strong> “Is 2 minutes very long for each question?”</td>
<td>“No.”</td>
</tr>
<tr>
<td></td>
<td><strong>FEEDBACK:</strong> “You’re right, it isn’t very much time.”</td>
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<td></td>
<td><strong>SAY:</strong> “I will have to work quickly if I am going to finish the test.”</td>
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<tr>
<td></td>
<td><strong>ASK:</strong> “How do I determine how much time I have for each question?”</td>
<td>“Divide the time by the number of questions.”</td>
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<tr>
<td></td>
<td><strong>FEEDBACK:</strong> “Correct!”</td>
<td>“Check the time.”</td>
</tr>
<tr>
<td></td>
<td><strong>ASK:</strong> “What does the T represent?”</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SAY:</strong> “After I decide how much time I have for each question, I start completing the test. The next letter in our strategy is E. (Show the E.) This E stands for easy ones first. When I start to answer the questions, I answer the ones that are easiest for me first.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>ASK:</strong> “What does E stand for?”</td>
<td>“Examine.”</td>
</tr>
<tr>
<td></td>
<td><strong>ERROR CORRECTION:</strong> “The first E in the strategy stands for Examine. This E stands for easy ones first.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SAY:</strong> “What does this E stand for?”</td>
<td>“Easy ones first.”</td>
</tr>
<tr>
<td></td>
<td><strong>FEEDBACK:</strong> “Good.”</td>
<td></td>
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<tr>
<td></td>
<td><strong>SAY:</strong> “I skim the questions to look for questions that I think will be easy to answer. In this sample test, I’m going to circle the questions that are easy for me to answer. I will answer these first. Looking at this test, questions 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 15, 18, 20, 25, 27, 29, and 30 look easy. I will circle these, and will answer them first.”</td>
<td></td>
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<tr>
<td></td>
<td><strong>ASK:</strong> “Which questions do I answer first?”</td>
<td>“The easiest ones.”</td>
</tr>
<tr>
<td></td>
<td><strong>FEEDBACK:</strong> “Right.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SAY:</strong> “When I finish the test, the last thing I do is R—Review my work.” (Show the R.)</td>
<td>“Review my work.”</td>
</tr>
<tr>
<td></td>
<td><strong>ASK:</strong> “What do I do last?”</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>FEEDBACK:</strong> “Correct.”</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Lesson Component</th>
<th>Teacher Questions, Instructions, and Feedback</th>
<th>Anticipated Student Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instruction and Modeling (continued)</strong></td>
<td>SAY: “If I have time I go back and review my work, I read each question again, and check my answers. Watch as I read the questions and check my answers.” (Demonstrate reading the questions and checking answers.)</td>
<td>“Review my work.”</td>
</tr>
<tr>
<td>ASK: “What do I do last?”</td>
<td>FEEDBACK: “Good job. We’re ready to try this together.”</td>
<td></td>
</tr>
<tr>
<td><strong>Guided Practice</strong></td>
<td>SAY: “First, let’s read the steps of the DETER strategy together. Ready? Read.” (Read each letter and keyword with students.)</td>
<td>“D—Read the directions”</td>
</tr>
<tr>
<td>FEEDBACK: “Good reading.”</td>
<td>E—Examine the test</td>
<td></td>
</tr>
<tr>
<td>SAY: “Do you think you can remember the steps of the strategy if I erase two of the steps?” (Erase two steps. With class, recite the steps of the strategy. Erase the rest of the steps and have the class recite the steps from memory.)</td>
<td>T—Check the time</td>
<td></td>
</tr>
<tr>
<td>SAY: “You’ve done a great job learning the steps of this strategy. Let’s practice using the strategy.” (Hand out a packet with sample tests.)</td>
<td>E—Easy ones first</td>
<td></td>
</tr>
<tr>
<td>SAY: “Let’s look at the first sample test.”</td>
<td>R—Review my work.”</td>
<td></td>
</tr>
<tr>
<td>ASK: “What’s the first thing we do when we see this test?”</td>
<td>(Class recites the steps of the strategy.)</td>
<td></td>
</tr>
<tr>
<td>FEEDBACK: “That’s right. We read the directions.”</td>
<td>“D—Read the directions”</td>
<td></td>
</tr>
<tr>
<td>SAY: “Let’s read the directions together.” (With class, read the directions.)</td>
<td>E—Examine the test</td>
<td></td>
</tr>
<tr>
<td>FEEDBACK: “Good job.”</td>
<td>T—Check the time</td>
<td></td>
</tr>
<tr>
<td>ASK: “What’s the next step?”</td>
<td>E—Easy ones first</td>
<td></td>
</tr>
<tr>
<td>FEEDBACK: “Excellent.”</td>
<td>R—Review my work.”</td>
<td></td>
</tr>
<tr>
<td>SAY: “What is on this test?”</td>
<td>“D—Read the directions”</td>
<td></td>
</tr>
<tr>
<td>FEEDBACK: “Correct. Write short-answer at the top of the test.”</td>
<td>E—Examine the test</td>
<td></td>
</tr>
<tr>
<td>ASK: “After we examine the test, what’s next?”</td>
<td>T—Check the time.”</td>
<td></td>
</tr>
<tr>
<td>FEEDBACK: “That’s right. We check the time.”</td>
<td>“Five minutes.”</td>
<td></td>
</tr>
<tr>
<td>ASK: “How much time will you have to take this test?”</td>
<td>“One minute.”</td>
<td></td>
</tr>
<tr>
<td>FEEDBACK: “Excellent.”</td>
<td>“Time divided by the number of questions.”</td>
<td></td>
</tr>
<tr>
<td>ASK: “How did you figure that out?”</td>
<td>(Students write.)</td>
<td></td>
</tr>
<tr>
<td>FEEDBACK: “Correct.”</td>
<td>(Students write 1.)</td>
<td></td>
</tr>
<tr>
<td>SAY: “On your test, write the time per question next to the time allotted for the test.”</td>
<td>“E—Easy ones first.”</td>
<td></td>
</tr>
<tr>
<td>ASK: “After you check the time, what do you do?”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Table 10.5  (continued)

<table>
<thead>
<tr>
<th>Lesson Component</th>
<th>Teacher Questions, Instructions, and Feedback</th>
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<tbody>
<tr>
<td><strong>FEEDBACK:</strong> “Correct.” Say: “Let’s skim the questions and circle the numbers of the questions that are easy to answer.” (Read the questions with students.) Ask: “Is question one easy to answer?” Say: “Since number 1 is an easy question, circle the number and go ahead and answer the question.” (With students, skim the rest of the questions and determine if they are easy to answer.) Ask: “What’s the last thing you do when you take a test?” Error correction: “The last thing you do is R—Review. What is the last thing you do?” Ask: “How do you review?” Feedback: “That’s right.” Say: “Go ahead and reread the questions we’ve answered and check your answers. When you’ve finished reviewing, put a check mark at the top of the test to indicate you’ve checked your work.” Feedback: “You’ve done a great job using the DETER strategy to complete this sample test. Let’s try this again with another test.” (Guide the class through the complete process three more times using three sample tests.)</td>
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<th>Lesson Component</th>
<th>Teacher Questions, Instructions, and Feedback</th>
<th>Anticipated Student Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Practice</td>
<td>SAY: “Now you’re ready to use this strategy on your own. Here is a packet of five short tests. (Hand out tests. See Figure A.) On top of the packet is a blank piece of paper. Before you work on the test, write each letter of the DETER strategy with the keyword or words that represent each step of the strategy. For each test, I’d like you to use the DETER strategy. It’s OK to read out loud. Just use your quiet voice when you read. I’d like you to answer as many questions on the tests as you can. You’ll have five minutes per test to practice this strategy. Any questions?” SAY: “All of the questions on these tests should be easy for you. Do your best, and remember the second E.” ASK: “Class, what’s the second E in deter?” ASK: “What does it mean?” FEEDBACK: “That’s right.” SAY: “Go ahead and start working.”</td>
<td>“What if we don’t know the answers?” “E—Easy ones first.” “Do the easy ones first.”</td>
</tr>
<tr>
<td>Closure</td>
<td>SAY: “Today you learned a test-taking strategy. Tomorrow we’ll practice using the strategy some more. One last time, what are the steps of the strategy?”</td>
<td>“D—Read the directions E—Examine the test T—Check the time E—Easy ones first R—Review my work.”</td>
</tr>
</tbody>
</table>

Figure A  Practice Test

Name ______________________ Date ____________ Type of questions ________________

Time to complete test: 5 minutes Review

Directions: Carefully read each question. Each of the questions is a short-answer question. Answer each question with a complete sentence.

1. Who was the first president of the United States?
2. During which war did the United States declare independence from Great Britain?
3. Who was the commander of the U.S. army during this war?
4. Why did the United States declare its independence from Great Britain?
5. Who won the war?
Note-Taking Strategies

Ms. Ho begins her class each day reviewing what she has already taught her students about how to take notes. The class generated a list of steps they need to follow to effectively take notes from the material she presents in class. They then created an acronym to remember the steps. Each day the students write the acronym on their paper as a prompt to remember what to do. Ms. Ho has observed a noticeable increase in the students’ performance since teaching this note-taking strategy.

Students with mild disabilities have difficulty taking notes regardless of whether they are listening to instruction (e.g., teacher lecture, video presentation) or reading material (e.g., textbook). The quality of note taking is influenced by both the note taker’s background knowledge of the subject as well as the skills for note taking. Effective note takers identify and distinguish between main ideas and details, paraphrase by condensing information and putting it in their own words, avoid random or verbatim notes, integrate new information with old information, identify various words or graphic structures (e.g., headings, bolded or italicized words), and organize notes by placing information in appropriate groups or patterns (Ornstein, 1991).

Improved note taking can occur by teaching note-taking skills and/or modifying instruction to facilitate note taking. Both strategies are discussed below.

Teaching Note-Taking Skills

Lecturing has been found to comprise as much as 47 percent of class periods in secondary schools (Putnam, Deshler, & Schumaker, 1992). Yet, effective lecture learning is very difficult. During lectures, for example, “students must continuously and simultaneously listen, select important ideas, hold and manipulate lecture ideas, interpret the information, decide what to transcribe, and record notes” (Kiewra, DuBois, Christian, McShane, Meyerhoff, & Roskelley, 1991, p. 241). Inasmuch as increased numbers of students with disabilities are placed in general education classrooms, skills in note taking during teacher lecturing are critical for success.

Students can be taught specific steps to complete to take notes successfully. Scanlon, Deshler, and Schumaker (1996), for example, created the ORDER strategy and demonstrated that it could be taught by general education teachers to support students with learning disabilities in their classrooms. The ORDER strategy has five steps with one substrategy (FLOW) (see Table 10.6).

Using this strategy, students are taught to open their minds and take notes, followed by recognizing the structure that underlines the organization of the content. They are given a menu from which to choose, including (1) sequence, including cause and effect, (2) compare/contrast, (3) description, including enumeration, and (4) problem solution. The student then individually creates a graphic organizer based on the structure and the contents of the notes. In order to design an organizer, students are taught the FLOW strategy. The
student first finds and lists the important information, then checks to make certain the appropriate structure was selected (look and check). Next, the student organizes the information by marking it with numbers, letters, or symbols to identify where it will be placed on the organizer. Last, the student creates a visual representation of the organizer. In the fourth and fifth steps of the ORDER strategy, the student explains the organizer to the teacher and then uses it to study for a test or as an outline for a written product.

Two note-taking strategies, CALL UP and “A” NOTES, were developed by Czarnecki, Rosko, and Fine (1998) (see Table 10.6). The CALL UP strategy teaches students...
Guided Lesson

Note-Taking Skills

Lesson Objective
When given a worksheet with the acronym CALL UP listed, students will follow the steps with 100 percent accuracy, including copying information written on the board, writing a sentence that adds details, writing the lecture question and answer, reading a paragraph from their text, and writing a short summary in their own words.

Materials
CALL UP Strategy Prompt Sheet. The prompt lists the steps of the CALL UP strategy and provides blank lines for practicing the skill described for each step.

An independent practice sheet with the letters of the strategy printed next to blank lines.

Anticipatory Set, Review, and Prerequisite Check
When you are studying for a test and you want to remember something we’ve discussed in class, will you be able to call me up and ask me questions on the phone? Probably not. I don’t think I’ll be available after school hours. Instead, you’ll want to read your class notes, and CALL UP information from your notes. If you take good notes there will be no reason to call me.

Yesterday we practiced copying information quickly and accurately. I’ve written three topics on the board (reptiles, birds, and mammals). Take out your notebooks and pencils and copy the information as quickly as you can. We also practiced writing phrases that summarized information. I will tell you two sentences, and I want you to write a brief summary of my sentences. (“Mammals are animals that give birth to live animals. When reptiles reproduce, they lay eggs.”)

Purpose
Today you will learn the CALL UP strategy for taking notes. Why is learning to take notes important? (Students respond.)

Instruction and Modeling
I will use the CALL UP strategy to help me take notes in class. First, I will explain the steps of the strategy.

1. First, C—Copy important information from the board. Teachers usually write important information on the board. For example, I have a definition of amphibians written on the board. To take good notes, I would copy this definition into my notes. (The teacher demonstrates.)

2. Next, A—Add details. During a lecture, a teacher will tell more information about the topic. To add details, write summary statements of the information the teacher provides. For instance, the teacher says, “When amphibians are young, they live in the water.” The summary statement I would write would be, “Young amphibians live in water.” (The teacher demonstrates.)

3. Then, L—Listen and write the question. Sometimes, when teachers present information, they ask questions. If a teacher asks a question during a lecture, it’s probably an important question, so you’ll want to write the question. For instance, the teacher asks, “How are amphibians able to be both land and water animals?” When I use this strategy, I would write that question in my notes. (The teacher demonstrates.)

4. The next step is L—Listen and write the answer. When a teacher poses a question during a lecture, the teacher will most likely answer the question. When the teacher gives the answer, write the answer in your notes. For instance, the teacher says, “When amphibians are young, they live in the water like fish. But, as they grow older, they lose their fishlike characteristics and change to become land animals.” I would write that information in my notes. (The teacher demonstrates.)

5. The last steps of the strategy are to U—Utilize your text, and P—Put it in your own words. After the teacher finishes the lecture, she will probably assign (continued)
Guided Lesson (continued)

You a section to read in your textbook. When you read the text selection, add information from the text to your notes by putting the information in your own words. We've practiced this before so you know how to do this. Let me demonstrate. (Teacher demonstrates.)

Guided Practice
Next, we'll practice using this strategy together. Here's your copy of the steps of the strategy. Before we practice using the strategy, let's read the steps together a few times. (The teacher and class read the steps three to four times. The teacher may ask students to repeat the steps from memory.)

Now that we know these steps, let's practice using this strategy. In this section of the board, I have some new information about amphibians written. We'll use this information to practice the strategy.

1. First, let's C—Copy. Please read this information and then copy it on your strategy sheet. (Teacher and class read and copy.)
2. Now, we A—Add details. I will tell you two sentences about amphibians. We will write these details in our strategy sheet. (The teacher says, “Amphibians have smooth skin instead of fur, scales, or feathers. They breathe with gills, lungs, and skin.”) Let's write these details on our sheet.
3. Next, L—Listen and write the question. The question is “When do amphibians develop these characteristics?” We write this question on our sheet.
4. The next is L—Listen and write the answer. The answer is “When amphibians are young, they live in the water and have gills and tails. When they grow older, they lose their tails and gills and grow limbs.” Let's write this answer on our sheet.
5. The final steps are to U—Utilize the text, and P—Put it in your words. On the board is a short section of the text. (“Amphibian larvae move like fish; they wiggle their bodies and flatten their tails to move. Adult amphibians use their front and back legs to move.”) Let's read this together, and then we'll write a summary in our own words (Teacher and class read the section and then write a summary statement on the prompt sheet.)

(The teacher has three to four more guided practice examples ready. She practices the strategy with the class until the class can independently follow the steps of the strategy and fill in the prompt sheets. The teacher fades prompts as the students complete the steps of the strategy.)

Independent Practice
The teacher has the following final example ready. The teacher presents the information, and the students write the notes, using a blank CALL UP sheet.

Reproduction facts for independent practice
Females lay eggs in water. Females can release as many as 200 eggs. After females release eggs, males fertilize them. Frog eggs are sticky and attach to underwater plants. The sticky substance makes it difficult for predators to grasp the eggs. Most amphibians abandon their eggs after they lay them.
Strategies for Learning

Creating great looking graphic organizers, visual prompts, and mnemonic devices does not have to be a difficult task. The above example was created using the computer program Inspiration®. Inspiration® is a program designed for helping students and teachers create graphic organizers, outlines, and visual representations of concepts and content information. The program is easy to use and is a great resource for implementing the concepts discussed in this chapter. In fact, Inspiration® is so easy to use that students in grades 6 through 12 can quickly learn program features and create their own visual learning supports. For younger children (grades K through 5) Kidspiration® provides an easy way to apply the proven principles of visual learning. With Kidspiration®, students build graphic organizers by combining pictures, text, and spoken words to represent thoughts and information.

**Think about it: How could Inspiration® or Kidspiration® enable you to incorporate organizing strategies in your lessons?**


and topic. Then the main ideas and details are “named” and highlighted. The third step involves observing ideas in the text. They then make notations in the margins using the SAND substrategy. The last two steps involve reviewing their notes to fix unclear or missing information and summarizing the overall idea in a sentence or two at the bottom of the notes (Czarnecki et al., 1998).
Other methods for teaching note-taking skills have been suggested. For example, Meeks (1991) suggests teachers provide a 15- to 20-minute presentation while students take notes. Then the teacher calls on students to copy their notes on the board while the class critiques the notes. Another consideration is to make students accountable for taking notes. In this situation, teachers could collect students’ notebooks, record whether or not they took notes, and then analyze the notes, identifying ways they could be improved and teaching to those skills.

**Structuring Teacher Instruction to Facilitate Note Taking**

As discussed previously, graphic organizers can provide frameworks for note taking. These graphic organizers can be given to the students partially completed. As the teacher lectures, students fill in the blanks. Tips for developing guided notes to be used in this manner are outlined in Table 10.7 Additional ideas for structuring lectures to facilitate note taking appear in Table 10.8. Figure 10.7 provides the self-talk students can be taught to use with guided notes.

Research supports the effectiveness of note taking and note-taking strategies. Porte (2001) states:

> The dynamic complexity of taking one’s own notes, combined with the value of review of complete notes . . . has led many educators to the practice of handing out complete notes. Studies have shown, however, that listening and then being given notes is not as effective as taking one’s own notes. (p. 16)

### Table 10.7 Developing Guided Notes

<table>
<thead>
<tr>
<th>Steps for Developing Guided Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Use existing lecture notes including main ideas, key terms and phrases, and definitions.</td>
</tr>
<tr>
<td>• Use a consistent format, including columnar format (comparative information) and skeletal format (outline) that parallels the sequence of the lecture.</td>
</tr>
<tr>
<td>• Place a review tally box in the corner of the guided notes in which students can tally every time they review the notes.</td>
</tr>
<tr>
<td>• Use completed guided notes as overhead transparencies. Cover the transparency, revealing each section only as it is being discussed.</td>
</tr>
<tr>
<td>• Provide visual cues, such as individual blanks for each word to be filled in or a list of numbers under a heading, on the students’ copies to convey the amount and type of information used.</td>
</tr>
<tr>
<td>• Give students the guided notes for a whole unit or chapter before discussing.</td>
</tr>
<tr>
<td>• Randomly select students’ guided notes at the beginning of class. Review the content and clarify misunderstandings.</td>
</tr>
<tr>
<td>• Model how to fill out the guided notes by using a short (3- to 5-minute) prerecorded lecture and an overhead transparency of the guided notes.</td>
</tr>
</tbody>
</table>

Source: Table created from information drawn from Lazarus (1996).
Research with school-aged students with mild/moderate disabilities is limited. Two examples follow. First, Lazarus (1996) demonstrated that guided notes improved chapter test scores of two students with mild disabilities in a general education science class to the level of their typical peers. Second, Boyle and Weishaar (2001) taught 13 high school students representing this same population strategic note taking. The students taught note-taking procedures scored significantly higher on recalling information, comprehension, and number of notes recorded than students who used conventional note taking.

### Table 10.8  Structuring Lectures to Facilitate Note Taking

<table>
<thead>
<tr>
<th>Ideas for Structuring Lectures</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Identify times when students should not take notes but just listen for understanding and ask questions. Then provide them ample time to copy notes from the board or generate their own outlines. (Baumler, 1991)</td>
</tr>
<tr>
<td>• Duplicate overhead transparencies and use them as handouts. (Baumler, 1991)</td>
</tr>
<tr>
<td>• Allow time for students to go over their notes immediately following instruction to ensure they understand. Then answer any questions they may ask.</td>
</tr>
<tr>
<td>• Provide a sequence of steps for students on a board or poster paper (e.g., sequence in math operations). (Meeks, 1991)</td>
</tr>
<tr>
<td>• Set up the lectures to make them “student friendly” and easy for taking notes. This promotes not only students’ strategy use, but “forces teachers to be more aware of how the material is organized and presented.” (Saunders et al., 1995, p. 45)</td>
</tr>
</tbody>
</table>

### Figure 10.7  Self-Talk for Using Guided Notes

<table>
<thead>
<tr>
<th>Steps for Using Guided Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When I take guided notes, I clear my desk and have only my notes and a pencil on my desk.</td>
</tr>
<tr>
<td>2. I listen to the teacher and watch what he does.</td>
</tr>
<tr>
<td>3. When the teacher writes, I write what he writes.</td>
</tr>
<tr>
<td>4. After I’ve written what the teacher writes, I check my notes for accuracy and completeness.</td>
</tr>
</tbody>
</table>

Research with school-aged students with mild/moderate disabilities is limited. Two examples follow. First, Lazarus (1996) demonstrated that guided notes improved chapter test scores of two students with mild disabilities in a general education science class to the level of their typical peers. Second, Boyle and Weishaar (2001) taught 13 high school students representing this same population strategic note taking. The students taught note-taking procedures scored significantly higher on recalling information, comprehension, and number of notes recorded than students who used conventional note taking.

**Creating Learning Strategies**

Numerous learning strategies have been created by researchers and teachers. Yet, only a few examples are provided within the context of this chapter. You can create your own strategies and, if appropriate, teach students to create them as well. Strategies that are specific to the needs of the setting, content, and learner can be powerful tools in increasing learning capabilities.
Learner Productivity Toolkit

Being nonstrategic learners can inhibit the productivity of students with mild/moderate disabilities. Yet, given the increased national, state, and local emphasis on student outcomes, new attention is being given learner productivity. Appropriately, this term seeks to focus attention on what students need to know and be able to do to successfully engage in the learning process. Certainly, learning-to-learn and self-managed learning are critical parts of this concept.

Learner Productivity Toolkit

The concept of learner productivity has important implications for special education teachers and administrators when considering how to help students with disabilities successfully achieve high standards. For example, if every inclusive classroom were equipped with a learner productivity toolkit specifically designed to meet the range of needs and abilities, the demarcation between assistive and instructional technology would blur, allowing renewed emphasis on performance and achievement.

Thinking about a middle school student with learning disabilities, below are some ideas to consider for creating a toolkit that enhances learner productivity.

Reading

If a student has difficulty reading content area textbooks, providing the information in digital format is essential for students to take advantage of text-to-speech software like ReadPlease (http://www.readplease.com) so they can listen to information they can’t read.

Another strategy involves creating a talking text conversion station using (1) a scanner, (2) optical character recognition (OCR) software, and (3) text-to-speech software to scan text from a textbook into the computer so that the student can listen to the material as it is read by the computer. Examples include Kurzweil 3000, Read and Write Gold, and WYNN.

Researching

When assignments involve conducting research, nothing can beat the value of a Web browser (i.e., Netscape, Internet Explorer) and the skill to use a search engine. Alternative Web browsers like Opera (http://www.opera.com) offer essential accessibility features for blind and low-vision users and others who need alternative navigational tools (keyboard instead of mouse). The website Ask Jeeves for Kids (http://www.ajkids.com) offers a powerful and easy-to-use search tool for students that allows them to search by typing in the question they are trying to answer. Finally, many students find it helpful to be directed to a comprehensive starting point like Yahooligans (http://www.yahooligans.com) or KidsClick! (http://sunsite.berkeley.edu/KidsClick!).

Students can be taught to create their own strategies using the following STRATEGY mnemonic:

- Start by choosing a learning or behavior outcome.
- Task analyze it.
- Rearrange the wording of the steps.
- Ask if you can make a word from the first letters.
Technology Spotlight (continued)

Writing
Writers of all ages and abilities often have difficulty in coming up with ideas and organizing their thoughts. Traditionally, the planning tool for this task has been the outline. The software products Kidspiration® and Inspiration® (Inspiration Software) offer an alternative to outlining known as concept mapping. As ideas are generated during brainstorming, they are placed on the screen. Then, ideas can subsequently be moved around on the screen and clustered into a suitable organizational pattern.

Of course, the basic tool for all writers is the word processor. Common word processors are Word and ClarisWorks. For writers needing additional support, three strategies are commonly utilized. Word prediction products like Co:Writer (Don Johnston) utilize artificial intelligence techniques to predict the word that is being entered in order to speed the text production process. Voice input products like ViaVoice (IBM) and Dragon Dictate (Dragon Systems) enable the user to dictate their ideas and have the computer do the typing for them. Speech output products like Write:OutLoud (Don Johnston) enable a student to listen to what has been written.

Publishing is often considered the final phase of the writing process. Writers have many options in this area as they focus on the visual presentation of their message. Core tools for publishing frequently involve clip art, Microsoft Publisher, and tools like HyperStudio, IntelliPics Studio, and PowerPoint. Each has product support features that make it possible to publish a slide show to the Web. When reports can take the form of a Web page, tools like TrackStar (http://scrtec.org/track/) simplify the process of preparing lists of links to websites.

Math
Just as the word processor is the fundamental tool for a writer, the calculator is the fundamental tool for anyone working with numbers. For students needing additional supports, computer-based calculators like BigCalc (Don Johnston) and MathPad (IntelliTools) can be valuable. Products like IntelliMathics (Intellitools) conveniently support new math curricula by offering math manipulatives, direct instruction, and computation support in an electronic environment.

Think about it: Why do students with disabilities need these supports to help them become self-managed, independent learners?

Try to find a word that relates to the task.
Examine possible synonyms to get the first letter.
Get creative!
Yes, you can make your own strategies.

Buchan, Fish, and Prater (1997) created their own strategy for elementary-school-aged students with mild disabilities to help them with creative writing assignments. The strategy was Ninja Turtles Counting Pizza Toppings. The first letter of each word represented an aspect of their writing for them to check prior to submitting them: Name, Title, Capitalization, Punctuation, Transition words. Seven features that should be considered in the creation of strategy acronyms regardless of the content area appear in Table 10.9.

The Institute for Effective Instruction at the University of Kansas Center for Research on Learning has developed the Strategic Instruction Model (SIM) that includes learning strategies curriculum. Teachers can learn specific instructional strategies by enrolling in courses at the institute. Strategies in their curriculum include:

**Strategies for Reading**
- Word Identification Strategy
- Self-questioning Strategy
- Visual Imagery Strategy
- Paraphrasing Strategy

**Strategies for Studying and Remembering Information**
- FIRST-Letter Mnemonic Strategy
- Paired Associate Strategy
- LINCS Vocabulary Strategy

**Strategies for Writing**
- Sentence Writing Strategy (fundamentals)
- Sentence Writing Strategy (proficiency)
- Paragraph Writing Strategy
- Theme Writing (fundamentals)
- Error Monitoring Strategy
- InSPECT Strategy (word-processing spell-checkers)

### Table 10.9  Features of Effective Strategy Acronyms

<table>
<thead>
<tr>
<th>Effective Acronym Strategy Features</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure that all steps of the strategy are in the students’ repertoire; otherwise, teach them as part of the strategy.</td>
<td></td>
</tr>
<tr>
<td>Incorporate a remembering strategy as part of the overall strategy. For example, create an acronym to remember the strategy steps.</td>
<td></td>
</tr>
<tr>
<td>Keep each step short. Cut out all unnecessary words.</td>
<td></td>
</tr>
<tr>
<td>Start each step with a verb or a keyword related to the cognitive or behavioral requirement.</td>
<td></td>
</tr>
<tr>
<td>Include no more than seven steps.</td>
<td></td>
</tr>
<tr>
<td>The remembering strategy should relate to the overall strategy. For example, create an acronym that ties directly to the intent of the overall strategy.</td>
<td></td>
</tr>
<tr>
<td>Use familiar and simple language and vocabulary to convey strategy steps.</td>
<td></td>
</tr>
</tbody>
</table>

Source: Table created from information drawn from Lenz et al. (1996).
Strategies for Improving Assignment and Test Performance
- Assignment Completion Strategy
- Strategic Tutoring
- Test-Taking Strategy

Strategies for Effectively Interacting with Others
- SLANT—A Classroom Participation Strategy

Cooperative Thinking Strategies
- THINK Strategy (problem solving)
- LEARN Strategy (learning critical information)
- BUILD Strategy (decision making)
- SCORE Skills: Social Skills for Cooperative Groups
- Teamwork Strategy

The Community-Building Series
- Following Instructions Together
- Organizing Together
- Taking Notes Together
- Talking Together

Strategies for Motivation
- Self-Advocacy Strategy
- Possible Selves

Strategies for Math
- Strategic Math Series


Self-Managed Learning

Brayden’s problems attending in class have continued to increase. His teacher has recently attended a district-sponsored workshop and learned about self-monitoring, a method of teaching students to monitor their own behavior. The workshop presenter indicated that this method, if taught and implemented properly, can drastically change students’ on-task behavior and improve their academic skills. Brayden’s teacher is excited to try this technique with Brayden.

Self-management is an umbrella term that encompasses many procedures in which students manage their own behavior and learning. Traditional behavior management programs (e.g., token economies, contingency contracts) require external behavior control because the teacher monitors the student’s behavior and grants the tokens and the reinforcers (see Chapter 4). Self-management training moves students away from external teacher control and toward self-regulation by requiring that students participate actively and take responsibility for their own behavior and learning. Self-monitoring is probably the most prominently used and studied self-management strategy.
Self-Monitoring

Self-monitoring procedures involve the application of two other self-management strategies: self-assessment and self-recording. In self-assessment, the student judges whether a behavior occurred. For example, if students are self-assessing their academic or vocational work, they may ask themselves, “Did I finish my homework?” or “Did I finish wiping the tables?” They may also ask themselves questions related to their work behavior such as “Was I on-task?” or “Did I disrupt my classmates?”

The second component, self-recording, involves recording the occurrence or nonoccurrence of the behavior. Generally, a self-monitoring sheet is used on which students record their answers. Students can be instructed to make their own sheets. Three samples of self-monitoring charts appear in Figure 10.8.

Prompts are an important feature in self-management procedures. For monitoring on-task behaviors, for example, students would most likely be presented with an auditory

---

**Figure 10.8  Samples of Self-Monitoring Charts**

<table>
<thead>
<tr>
<th>Subjects and Assignment</th>
<th>Behavior Check</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reading</strong></td>
<td></td>
</tr>
<tr>
<td>- Read selection</td>
<td>Target Behavior</td>
</tr>
<tr>
<td>- Answered comprehension questions</td>
<td>Stayed in seat</td>
</tr>
<tr>
<td>- Complete one timed reading and recorded time</td>
<td>Raised hand for assistance</td>
</tr>
<tr>
<td><strong>Writing</strong></td>
<td></td>
</tr>
<tr>
<td>- Wrote 3 paragraphs in response journal</td>
<td></td>
</tr>
<tr>
<td>- Completed writing skills worksheet</td>
<td></td>
</tr>
<tr>
<td>- Completed writing challenge assignment</td>
<td></td>
</tr>
<tr>
<td><strong>Math</strong></td>
<td></td>
</tr>
<tr>
<td>- Completed a math facts timing</td>
<td>Target Behavior</td>
</tr>
<tr>
<td>- Completed all independent practice problems</td>
<td>Stayed in seat</td>
</tr>
<tr>
<td>- Raised hand for assistance</td>
<td></td>
</tr>
<tr>
<td><strong>Spelling</strong></td>
<td></td>
</tr>
<tr>
<td>- Wrote spelling words 3 times each</td>
<td>Target Behavior</td>
</tr>
<tr>
<td>- Wrote each spelling word in a sentence</td>
<td>Stayed in seat</td>
</tr>
<tr>
<td>- Raised hand for assistance</td>
<td></td>
</tr>
</tbody>
</table>
b. Homework Completion—Math

Name ____________________________

Week of ____________________________

<table>
<thead>
<tr>
<th>Day of the Week</th>
<th>Assignment</th>
<th>Turned In</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>pp. 110–112 #3-45 (even)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td>pp. 115–117 #1-25 (all)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td>pp. 121–122 #3-6 &amp; 10-25 (all)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td>pp. 125–126 #1-30 (odd)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td>pp. 130–131 Chapter test (all)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Turned In ______________  

Average Score __________________

---

c. Behavior Monitoring Chart

Name ____________________________  Date _________________  Time Period from _____ to ______

Target Behavior: On-task

On-task is:
- Eyes on teacher or on work
- Sitting in chair
- Using correct materials
- Working silently

On-task is NOT: Talking with neighbors, leaving your seat, not working

Each time the tape beeps, mark whether you are on-task.
If you are on-task put an X in the box.
If you are not on-task, put a 0 in the box.

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Total Xs _________________  

Total Os __________________

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Figure 10.8 (continued)
prompt spaced at random intervals. This could take the form of an audiotape being played by a desk or a Walkman-type recorder with earphones. Students listen and when they hear the prompt, ask themselves, “Was I on-task?” and then record their response. An audio prompt may take the form of a bell, xylophone, or piano tone, or someone (even the students themselves) saying, “Check” or asking the question “Am I on-task?”

Visual prompts may also be most helpful. The self-monitoring sheet may act as a visual prompt. Some students may need additional visual prompts. In one study, for example, a poster displaying pictures of on-task behaviors was displayed at the front of the room. It served as a powerful prompt and, according to the teacher, helped not only the target student who was self-monitoring his on-task behavior, but all of the students in the classroom (Prater, Hogan, & Miller, 1992).

Fading of the prompts is a necessary component of self-management training. The ultimate goal is to internalize the behavior. Consequently, the prompts (e.g., the audio tones) should be faded systematically. Generalization is also a concern. If the students can apply the strategy and increase their on-task behavior during math period, will they also do so during reading? Fewer studies have demonstrated generalization successfully.

Self-monitoring of on-task behavior has been documented in the literature as a means for improving both on-task behavior and student learning. Students need specific instruction and training in self-monitoring procedures. The instructional procedures are listed in Table 10.10.

Studies have found self-management training to be effective across a wide range of student characteristics and in various settings. For example, studies have shown self-management training to be effective for students with learning disabilities (e.g., Hallahan & Sapona, 1983; Prater, Joy, Chilman, Temple, & Miller, 1991), behavior disorders (e.g., Hogan & Prater, 1993; Miller, Miller, Wheeler, & Selinger, 1989), attention deficit hyperactivity disorder (e.g., Shimabukuro, Prater, Jenkins, Edelen-Smith, 1999), and mild-to-moderate mental retardation (e.g., McCarl, Svobodny, & Beare, 1991; Osborne, Kosiewicz, Crumley, & Lee, 1987). These procedures have also been demonstrated across a wide range of ages, from elementary students (e.g., McDougall & Brady, 1998) to those in high school and beyond (e.g., Blick & Test, 1987; Prater et al., 1992). In addition, self-management training has been applied across settings—for example, in residential treatment facilities (Miller et al., 1989), vocational training settings (Shapiro, 1989), special education resource rooms (Prater et al., 1992), and general education classrooms (Hughes & Hendrickson, 1987). In addition, self-management training has been used with a variety of behaviors, including reducing disruptive behavior (Hogan & Prater, 1993), increasing time-on-task (Osborne et al., 1987), improving academic achievement (Prater et al., 1992), and increasing vocational work productivity (Grossi & Heward, 1998).

Summary Statements

- Strategies are plans, actions, steps, and processes that allow students to accomplish a learning or problem-solving task.
- Effective strategies encompass both cognitive and behavioral elements.
- Students with mild/moderate disabilities need to be taught strategies directly, as well as prompted and guided in using strategies for learning.
**Table 10.10  Steps for Implementing Self-Monitoring of On-Task Behavior**

<table>
<thead>
<tr>
<th>Implementing Self-Monitoring of On-Task Behavior</th>
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<tbody>
<tr>
<td>1. Identify student(s), setting, and behaviors.</td>
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<td>2. Determine observation procedures.</td>
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<tr>
<td>3. Collect, compute, and graph baseline data.</td>
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<td>4. Gather and/or create needed materials.</td>
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<tr>
<td>5. Teach students to self-monitor.</td>
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<tr>
<td>a. Explain the purpose and enlist commitment from each student.</td>
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<tr>
<td>b. Define on-task and off-task behaviors.</td>
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<tr>
<td>c. Model examples and nonexamples of on-task behaviors through role-playing.</td>
</tr>
<tr>
<td>d. Have students demonstrate examples and nonexamples of on-task behaviors.</td>
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<tr>
<td>e. Teach students the following sequence: hear the tone; ask yourself, “Am I on-task?”; then record.</td>
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<tr>
<td>f. Demonstrate using the audio recording and self-monitoring sheets.</td>
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<tr>
<td>6. Initiate the self-monitoring program.</td>
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<tr>
<td>7. Continue to observe, record, compute, and graph percentage of on-task behavior.</td>
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<tr>
<td>8. Fade audio prompts and self-recording.</td>
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<tr>
<td>a. Increase the time between audio prompts.</td>
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<tr>
<td>b. Eventually eliminate the audio prompts. Students self-record when they think about it.</td>
</tr>
<tr>
<td>c. Eventually eliminate the self-recording.</td>
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<tr>
<td>9. Continue to observe, record, compute, and graph percentage of on-task behavior during fading procedures.</td>
</tr>
</tbody>
</table>

- On-task attention may be maintained through teacher-directed prompts or taught through self-monitoring.
- Teacher-directed strategies for improving selective attention include helping students focus, as well as identifying the relevant stimuli for students and teaching them to identify the relevant stimuli themselves.
- Mnemonic strategies that assist with recall include acronyms, acrostics, rhymes, keywords, and pegwords.
- Students may be instructed in generating their own mnemonic strategies.
- Graphic organizers visually represent knowledge by arranging information in an associative organization.
- Graphic organizers may be developed by the students, the teachers, or both. They may be used before, during, or after instruction.
- Although research on the effectiveness of advance organizers is at best equivocal, use of advance organizers continues to receive general popularity.
- Study guides may be used to introduce new vocabulary, guide reading, review newly introduced concepts, integrate previous information with new content, practice specific skills, or review for a test.
In order to be successful in general education classrooms, students with mild/moderate disabilities need effective test-taking and note-taking strategies.

Test-taking strategies include those that are general (e.g., anxiety reducing or increased motivation) and those that are specific (e.g., SCORER strategy).

Teachers can modify their teaching style to better accommodate note taking.

Teachers are encouraged to create their own learning strategies based on their students’ needs.

Self-monitoring of on-task behavior has been documented in the literature as a means for improving both on-task behavior and student learning.

**Review Questions**

1. Define each of the following terms: strategies, metacognition, and task-specific strategies. Why do students with learning disabilities need instruction in the use of strategies?
2. Explain the five categories of teacher behaviors related to gaining, maintaining, and refocusing student attention. Give an example of each behavior and discuss skills teachers would need to manage student attention while instructing.
3. Students must discriminate between irrelevant and relevant stimuli. Explain how the classroom environment might provide distractions for a student experiencing difficulty with selective attention.
4. Using what you have learned in this text, discuss your options for addressing problems students might have with selective attention.
5. Describe strategies you use to remember information. How are your strategies similar to or different from the memory strategies discussed in this chapter?
6. What should be considered when using a graphic organizer in the classroom?
7. How is an advanced organizer different from a graphic organizer and a study guide?
8. Explain why students with disabilities would need to learn strategies for taking tests.
9. How can teachers structure instruction to facilitate note taking?
10. Discuss how prompts can help students self-manage. When should prompts be faded?

**Activities**

1. Create keywords for the following concepts: precipitation, amiable, and amphibian.
2. Create a study guide for this chapter.
3. Using the minilesson plan as a guide, create minilesson plans for lessons that teach students how to use a study guide and how to highlight important information in short reading selections.
4. Access an atlas. Select three continents and create an acronym to teach the names of some of the countries on the continents.
Standard 4: Instructional Strategies

Special educators possess a repertoire of evidence-based instructional strategies to individualize instruction for individuals with exceptional learning needs (ELN). Special educators select, adapt, and use these instructional strategies to promote challenging learning results in general and special curricula and to appropriately modify learning environments for individuals with ELN. They enhance the learning of critical-thinking, problem-solving, and performance skills of individuals with ELN, and increase their self-awareness, self-management, self-control, self-reliance, and self-esteem. Moreover, special educators emphasize the development, maintenance, and generalization of knowledge and skills across environments, settings, and the lifespan.

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