How can teachers use strategies to enhance student learning?

Children's unique learning needs finally are being recognized as the norm rather than the exception in our nation's schools.

(Warger & Pugach, 1996)
Students view classrooms as positive learning environments when they experience success. To be successful, students need to understand what is being taught and be able to complete their assignments. Knowledge that they have a repertoire of strategies to draw on can increase their confidence in taking on challenging tasks. It also can contribute to a sense of pride when a task is completed successfully. Although some students easily thrive at school, others struggle to survive the rigors of the classroom. According to Wager and Pugach (1996), students have problems with the classroom curriculum when the cognitive level is too high or when they do not have an adequate knowledge base or the necessary prerequisite/analytical skills to understand and master its content. Although some problems stem from reading difficulties as described in Chapter 8, many may be the result of not having or activating the appropriate learning strategies or skills that will ensure successful learning. When teachers include learning strategies in their teaching, they model techniques that can help all students in the inclusive classroom. When students integrate these strategies into their own learning, they have acquired tools for learning that reach beyond classroom walls.

**LEARNING STRATEGIES**

**What is a learning strategy?** A learning strategy is a technique or method used to assist in the learning and remembering of information. In the literature, learning strategies have been defined as:

- Unconscious mental schemes for memorizing, solving problems, planning or organizing (Bos & Anders, 1990).
- Techniques, principles, or rules that enable students to learn, solve problems, or complete tasks independently (Schumaker, Denton, & Deshler, 1984).
- Ways to facilitate acquisition, manipulation, integration, storage, and retrieval of information across situations and settings (Alley & Deshler, 1979).
- Techniques or strategies used by an individual to improve learning by translating information into a form that is meaningful and memorable (Lenz & Bulgren, 1995).

Learning strategies are varied and include advance organizers, mnemonic devices, and graphic organizers such as concept, thinking, and story maps. Each technique is designed to increase a student’s cognition through the development of metacognition. Cognition is the mental processing used to acquire knowledge. It includes abilities such as thinking and problem solving. Metacognition is the knowledge one has of one’s own thinking and learning processes. It includes (1) a constant monitoring of learning—whether what is being taught or read is understood; (2) an awareness of strategies to be used when faced with a learning task; and (3) an ability to select and use appropriate strategies to complete tasks. It is “thinking about thinking” (Dickson, 1983; Hallahan & Kauffman, 1994; Bean, Singer, Sorter, & Frazee, 1986). Metacognitive skills help students learn, remember, retrieve, and use information.

Students must learn, remember, and later recall information that is presented throughout the school day as they listen to lectures, read, participate in discussions, observe demonstrations and multimedia presentations, and answer questions. Students who accomplish these things usually approach school with confidence. In some instances they automatically apply strategies to organize and learn information. Other times their use of a strategy is the result of consciously thinking of an effective way to approach a learning task. In both instances students are using metacognitive skills.

Other students appear helpless or become oppositional when confronted with such learning tasks. They often find schoolwork and lessons overwhelming because they do not have or systematically use strategies. They have not developed the metacognitive skills to analyze a task, or they do not choose appropriate strategies to help them with tasks. Over time these students become frustrated, unsuccessful underachievers who view the classroom as a negative, hostile environment (Stanovich, 1986). In order for these students to be successful in their learning endeavors, they must be taught to use, effectively select and apply appropriate strategies. Furthermore, instruction in specific learning strategies can be enhanced by combining it with attribution training (Borkowski, Weyhing, & Carr, 1988; Graham, 1991). Through attribution training students
learn to credit their success to the use of strategies and their own metacognitive skills rather than to luck or external factors.

Learning strategies can assist all students. They can help younger students, including those with diverse learning needs, master basic skills and concepts that are part of the elementary school curriculum. Strategies become especially relevant and useful to older students as they make the transition from the mastery of basic skills focus of the elementary school to the acquisition of academic content focus of secondary schools. They can help students, including those with learning differences, to better understand, remember, associate, and apply concepts across content areas.

Teachers can play an important role in the development of students' metacognitive skills. By integrating learning strategies into their teaching, they can guide their students' understanding, learning, and recall of content material. According to Lenz (1990) and Lenz and Bulgren (1995), both externally mediated and internally mediated strategies are essential to improve student learning. Externally mediated strategies focus on improving student learning through the use of curriculum materials, texts, graphics, media, and teacher instruction. Internally mediated strategies are strategies implemented by students to meet the demands of a learning task. The strategies teachers use within their instruction provide models that students can incorporate into their own learning. These strategies isolate important information and supporting details that can help bridge the achievement gap for low performing students with diverse learning needs (Flood & Lapp, 1988). Teaching strategies modeled by teachers as they instruct students in the classroom may become learning strategies students remember and use when presented with a learning task. It is important to remember that although teachers can help develop students' metacognitive skills, students ultimately decide if and when they will use a strategy.

Teachers base their instruction on what their students know and what they need to learn. Within this instructional framework, they also must choose and include appropriate methods and strategies to teach that information. There are many strategies available for teachers' use—strategies that provide an overview of the information and organize the content before instruction takes place; strategies that assist in the learning of new information; strategies that help students integrate new content with things they already know; strategies that help students remember and recall information; and strategies that teach students the skills they need to become responsible for their own learning. Whether used before, during, or after concept attainment, each strategy provides a unique way of organizing information so that it can be learned, and presents a framework that will assist students in remembering and recalling concepts and related information.

There are many different strategies and formats that teachers can use to organize information. In the early 1960s Ausubel began his work with advance organizers, prose presentations placed before the text (Ausubel, 1960, 1968). These passages, written with a higher vocabulary and "generality" level than the actual text, were designed to organize prior learning of the student and "strengthen existing cognitive structures" (Ausubel, 1968; Dunston, 1992; Holley & Dansereau, 1984b; Moore & Readence, 1984). As interest in organizers grew, the need to simplify the process led to the development of the structured overview (Barron, 1969). The structured overview focused on using key vocabulary terms to activate prior knowledge rather than the lengthy, difficult prose found in the advance organizer (Dunston, 1992). Today teachers use many forms of organizers throughout their lessons to organize information. This chapter will discuss various forms of advance organizers (organizational information before the lesson), graphic organizers (visual presentation of information), mnemonic strategies (key words to recall information), and other learning strategy models.

**Advance Organizers**

Advance organizers are activities that are used to orient students to a new learning task. They are used before the lesson begins to focus attention and organize student thinking. Before students start to listen to a lecture in class, begin a reading assignment, or complete a homework assignment, advance organizers facilitate recall of prior knowledge and prepare them for learning by:

- Stating the general or specific concepts to be learned.
- Providing background information related to new learning.
Establishing the relevance of the content.

Listing the topics and subtopics that will be discussed.

Explaining the order in which new information will be presented.

Explaining the physical requirements needed to accomplish the task.

Introducing relevant vocabulary.

Stating the desired goals or outcomes. (Lenz, 1983, 1987)

There are many types of advance organizers. Oral introductions to a lesson, written questions presented at the beginning of a chapter in a text, study guides, or graphic organizers can all be used as advance organizers. Advance organizers can be either externally or internally mediated strategies (Lenz, 1987). Teachers can integrate advance organizers into teaching and give students oral cues (external). They also can train students to listen for information presented in the advance organizer and to use it to further their learning (internal). Advance organizers that were originally externally mediated strategies may gradually become internally mediated strategies used by students. In either form, they offer organizational cues that alert students to focus on important information. MicroStudies 9.1a–c describe some of the different types of advance organizers that can be used in the classroom.

### MicroStudy 9.1a

When available, Ms. Oulette, resource teacher, coteaches science and social studies for Mrs. Avery’s fourth- and fifth-grade students at Green Mountain Elementary School. The classes meet every other day so that one week science is taught on Monday, Wednesday, and Friday and social studies on Tuesday and Thursday. The next week the subjects are reversed—social studies is taught on MWF and science on TTH. This week, Mrs. Avery and Ms. Oulette decide to introduce a unit on animals.

Mrs. Avery and Ms. Oulette have designed a study guide that they will use initially as an advance organizer. It will also be used as the cover for the animal booklet they will make.

The study guide is a circle divided into 10 pie-slice-shaped areas. The top half of the circle represents the five vertebrate groups—amphibians (a), birds (b), fish (f), mammals (m), and reptiles (r). The lower half represents the invertebrate animal groups—sponges (s), stinging cells (sc), worms (w), spiny skins (ss), and soft bodies (sb). Each slice will contain the animal group initial (near the middle), the name of the animal that belongs to that group, and a picture of that animal. Although students will be given a blank guide to complete during the unit study, Mrs. Avery will use a previously completed guide as an advance organizer to introduce the unit with a brief discussion about the animal groups and to explain what the students will learn during the unit (see Figure 9.1a).

### MicroStudy 9.1b

Mrs. Jones has decided to use a web as an advance organizer to introduce the new social studies topic, the southern region of the United States. It will serve as an overview of the unit and will show her students the different topics that will be covered during the unit. This web map will also be used to review content and will serve as the basis for other webs that will be used for each topic (see Figure 9.1b).
Slosovich is preparing the materials for a upcoming unit on microeconomics and macroeconomics (see MicroStudy 8.4b). He has just completed a study outline to help his students identify key concepts and terms that will be used in the unit. Although many of the students in his classroom have limited reading skills, this outline will provide an overview of the topic and identify important information for them.

**Questions for Reflection on MicroStudies 9.1a-c**

How have these methods served as an advance organizer in each classroom? Do you think each is effective for orienting students to content information?

**Figure 9.1a**

**Animal Study Guide**

Source: A. McArthur, Pitt County Schools, Greenville, NC.
Advance organizers like the ones used in MicroStudies 9.1a–c can result in improved grades for students with disabilities, especially if supplemented by marked texts or audiotapes (Schumaker, Deshler, Alley, Warner, & Denton, 1982). A frequently provided adaptation in content area classes for students with low reading ability is to provide audiotapes of textbook chapters. However, often students who are unable to process textbook chapters independently through reading also have difficulty attending, comprehending, and organizing the content when listening to a lengthy verbatim audiotape of the text. Using an advance organizer as a guide for highlighting and summarizing key concepts and information in a text selection can compensate for this difficulty.

PREPARING AUDIOTAPES TO ACCOMPANY ADVANCE ORGANIZERS

The more closely the format of the audiotape parallels the format of the advance organizer, the easier it will be for students to follow. The format we have used successfully is similar to, but simpler than, early versions of the "organizer outline" that was piloted successfully at the Kansas Institute on Learning Disabilities (Schumaker, 1983). It requires more skill to prepare an audiotape in this format than a verbatim reading, but the resulting tape is usually shorter in length. The tapes are most helpful to students in meeting mainstream class requirements if the tape preparer has frequently observed the class or interviewed the teacher. Staff who invest time in preparing advance organizers and audiotapes for required courses plan to use them in successive semesters and with different teachers. However, a key to success in any class is figuring out what the instructor believes is most important to know. Therefore, the most valued audiotapes are those developed by asking the teacher a few key questions, like what are the most important concepts for students to remember from this chapter? or what kind of questions should students be prepared to answer about this chapter? Of course if the classroom teacher developed the advance organizer, then it is a relatively easy task to structure an audiotape that will help students succeed on follow-up assignments or tests.

Steps in preparing audiotapes to accompany advance organizers:

1. Read the chapter title. (Ask students to highlight it on their advance organizer.) Identify in a sentence or two what the chapter is about and how it relates to earlier chapters.
2. Depending on length, read or paraphrase the introductory paragraph(s).
3. Instruct the student to follow along in "skimming" the chapter, noting each time you advance to a new page. For each page, read the section headings and captions under any
figures or illustrations. Point out how the headings correspond to entries on the advance organizer.

4. At the end of the chapter, read the summary verbatim.

5. Insert an audible cue so the tape can be paused or reset at this position. Then return to the beginning of the chapter and review each section with details. Usually at least the first sentence or two should be read verbatim (transitions and topic sentences are important for continuity). Then the main ideas may be paraphrased. Key vocabulary should be identified and recorded or highlighted on the advance organizer. (Definitions may be added by students at this time.)

6. Facts like names, dates, events should also be noted on the advance organizer for reference when studying or responding to questions.

As a rule, advance organizers should include only the essential concepts and be simple to follow but may serve as a helpful framework for recording additional information. Our experience in one junior high school, at which all content teachers were required to provide advance organizers along with a list of homework assignments to go home weekly, was a proliferation of a standardized, linear-text-style organizer that was of limited use to students. Therefore, requesting advance organizers weekly may be less effective than encouraging development of higher quality organizers for larger units of study, or for topics which students find most challenging. (Preparation of such organizers is a good opportunity for collaboration among special educators or support staff and content teachers.) Although in the example an advance organizer was used in conjunction with an audiotape and textbook, it is important to note that any combination can be used, including graphic organizers which are described next.

**Graphic Organizers**

Graphic organizers are visual and verbal illustrations of information (Jones, Pierce, & Hunter, 1988; Bromley, Irwin-DeVities, & Modlo, 1995). Well-designed graphic organizers visually depict the relationships among main concepts and important details. They were originally developed to enhance understanding of text passages, but now they are used also to graphically illustrate information presented through other sources such as videos, lectures, brainstorming, and discussions (Bromley, Irwin-DeVities, & Modlo, 1995; Dunston, 1992). Meaningful visual organizers are an essential part of classroom lessons and discussions, for they can be used as teaching strategies by teachers as well as learning strategies for students. They also offer teachers a way to motivate, challenge, and encourage cooperative interactions among students with diverse learning styles and abilities.

Graphic organizers help students learn in a variety of ways. When used as prelearning activities they help students relate new information and vocabulary (Bos & Anders, 1990). They facilitate recall of prior information (Boothby & Alvermann, 1984; Bos & Anders, 1990); help students remember and retrieve key ideas (Van Patten, Chao, & Reigeluth, 1986); are useful when synthesizing information (Van Patten et al., 1986); and help students develop thinking skills (Clarke, 1990). Graphic organizers visually depict key concepts and vocabulary; distinguish significant information from insignificant information; and recall and visually show relationships between the ideas (Flood & Lapp, 1988). They relate, synthesize, and integrate new information with things students have previously learned. Graphic organizers establish visual links between ideas and understanding (Bromley et al., 1995; Van Patten et al., 1986).

Graphic organizers also promote active learning. They involve students in the learning process (Moore & Readence, 1984), for students become involved in that process as they verbally and visually work with concepts. By identifying key ideas, discussing these ideas, and discovering relationships between these ideas, they are able to complete the graphic organizer. Not only do students understand the information, but completed organizers also provide excellent guides to review and summarize what they have learned. As graphic organizers become an integral part of their learning, students enjoy and learn by designing their own graphic organizers (Bromley & Irwin-DeVities, 1995; Friend & Bursack, 1996; Jones, Pierce, & Hunter, 1988).
There are many different graphic organizers that teachers can use in their classrooms to assist with instruction. Information in texts is typically organized and presented through description, comparison, chronology, process, or causal description of concepts. This content can be visually represented using different types of graphic organizers (Flood & Lapp, 1988).

**GRAPHIC ORGANIZER PATTERNS**

According to Clarke (1990), graphic organizers "take their form from the presumed structure of relationships among ideas. Different kinds of relationships—like parts to the whole, cause to effect, or evidence to conclusion—suggest different kinds of graphic representations" (p. 30). Four basic organizational patterns are used to develop graphic organizers. Each of the patterns—hierarchical, conceptual, sequential, and cyclical—uses a specific graphic pattern to present important key concepts and ideas and to display relationships between them (see Figure 9.2). The hierarchical

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**Figure 9.2**: Commonly Used Graphic Organizer Patterns

- **VENN DIAGRAM**: similarities/differences
- **SPIDER CONCEPT MAP**: main idea, concept, detail
  - describe central concept
- **TIME LINE**: sequence of events over time
- **HIERARCHICAL MAP**: major concept, subconcepts, details
- **SEQUENCE CHART**: chronological order of events
- **SERIES MAP**: Event 1, Event 2, Event 3, (Summary)
  - stages; sequence of events
- **CYCLE**: circular series of events, process
- **WEB**: concepts
pattern stresses the relationship between a main concept, subconcepts, and related details. This linear pattern is often used to classify information. The conceptual pattern is used to illustrate a central idea or concept and its supporting facts. It includes Venn diagrams, concept maps, and webs that describe and compare/contrast information. The **sequential pattern** arranges events in chronological order. Time lines and sequential events chains are examples of this pattern. The **cyclical pattern** is used to illustrate a continuous series of events. This pattern is circular and is useful for illustrating continuous information (Bromley & Irwin-Devities, 1995; Archer & Gleason, 1990).

As teachers develop graphic organizers, they must select and use a pattern that (1) presents the ideas, concepts, and details students need to learn, and (2) reflects the interrelationships between these ideas and concepts. Graphic organizers that provide this type of framework for students not only organize content information, but also teach and reinforce their learning. The graphic organizers selected by teachers in MicroStudies 9.2a-c organized information visually to display specific content relationships.

Although many graphic organizer patterns can be used to visually display concept information, the pattern chosen must assist the teacher in teaching the content material as well as meet the learning needs of the students. The purpose of using any type of graphic organizer is to help students remember and retrieve important concepts, ideas, and details. However, when teachers find that the information they want displayed in a graphic organizer does not fit any existing pattern, they modify existing patterns to create a form that is most effective in presenting concepts in their classrooms (see MicroStudies 9.3a-c).

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**MicroStudy 9.2a**

The students in Miss Elm’s K-4 class are studying children and put them in the correct community and have learned about each place on the diagram. Raise your hand if you have an idea. The students offer a variety of answers, the class discusses and urban, and rural. The class has talked about the differences and similarities in their answers on the board. After they have lifestyles. They have discussed their similarities, differences, Miss Elm says, Now let’s think of things that are the same for both Richard and Joan. Do they live in the country or the city? The class thinks. Once they have placed all their answers, they begin classifying them. There are two types of communities in the middle section, which is board, which is divided down the middle. (See figure 9.2a.)

We have been talking about the differences between the same Joan and Richard this week is today. Joan is different. In reading and math. She decides to use the same you see on the board. On one side your Venn diagram in other lessons later in the other Joan—Urban, the third week to reinforce the concept.

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**Questions for Reflection on MicroStudy 9.2a**

What determined the graphic organizer pattern that was selected in MicroStudy 9.2a? Were there other choices Miss Elm could have used to illustrate this information? If so, explain. Draw another graphic organizer using this pattern that uses pictures instead of words.
The students in Mr. Pierce's sixth-grade communication skills class will be reading a story in their literature book that takes place in Egypt around 2700 B.C. At a sixth-grade team meeting, Mr. Pierce, Mrs. Jones, and Ms. Galloway decide to incorporate some activities across the curriculum to make the story more meaningful. Mrs. Jones noted that Kevin and Fred, in particular, had a difficult time understanding concepts of time—past, present, and future—before I was born, and when I get older.” During the unit on colonization, the team decides to use a sequence chart (see Figure 9.2) as a graphic organizer to show the order in which key discoveries were made in the Egyptian culture (e.g., invention of the solar calendar, hieroglyphic writing, al phabetic writing, construction of the great pyramids, etc.). However, Mrs. Jones realizes that for Kevin and Fred to really grasp the significance of how long ago this culture existed, a time line also should be constructed to scale (see Figure 9.2). To illustrate the passage of time effectively, she and Ms. Galloway will help the class develop a proportional time line to mount along the wall over the lockers down the entire length of the sixth-grade wing. Students can make graphic symbols and labels for key events they’ve already studied (such as the colonization of the United States and the projected date of colonization of the moon) and add to the time line all year. Ms. Kim, the resource teacher, promises to use the time line as a reference when conferencing with Kevin and Fred about the Egyptian reading and other class projects.

Ms. Santos read a paper-writing strategy, SCORE A, in a professional journal (Korinek & Bulls, 1996). The strategy was an excellent way to get her tenth-grade English students involved in the writing process. She already successfully uses many graphic organizers to instruct the students in this class, so decides to design an organizer using the series map to help them learn the strategy (see Figure 9.4).
**Questions for Reflection on MicroStudies 9.2b and 9.2c**

What determined the graphic organizer patterns that were selected in MicroStudies 9.2b and 9.2c? Were there other choices that could have been used? Choose an alternative and sketch it.

**Figure 9.4**

- S Select a Subject
- C Create Categories
- O Obtain Sources
- R Read and Take Notes
- E Evenly Organize the Information
- A Apply the Process Writing Steps


**MicroStudy 9.3a**

What determined the graphic organizer pattern that was selected in MicroStudy 9.3a? The spider concept map pattern also could be used to illustrate this information. Design a map using this pattern and information from MicroStudy 9.3a, Figure 9.2, and Figure 9.5. Is there any other pattern that could effectively organize and teach this information?
**What are crickets?**
- Body parts: eyes, antennae, wings, 3 pairs of legs, 3 main body sections: head, thorax, abdomen

**How do they make music?**
- By rubbing their wings together
- Mating
- "Hear sounds with organs front legs"

**What is a Cricket?**
- Group: Invertebrates
- Class: Arthropod/Insect
- Scientific name: Orthoptera Gryllidae

**What do they eat?**
- Plants and remains of other insects

**Where do they live?**
- Pastures, meadows (open grassy areas)
- Along roads
- In houses

**What are Common Kinds?**
- House
- Common, black, field
- Tree cricket
- Ant-loving

**What is a cricket?**
- Type of jumping insect, related to the grasshopper

Source: A. McArthur, Pitt County Schools, Greenville, NC.

**MicroStudy 9.3b**
A true science project is an investigation of a question, involving research, planning and application of the scientific method to seek an answer to the question.

**Figure 9.6a**

**FLOW-SEQUENCE CHART FOR TEACHING THE SCIENTIFIC METHOD**

1. Select a Topic
   - one that you are interested in
   - one that you can perform experiments on
2. Identify a Question to be asked
   - clearly written
   - can and be answered by measuring something
3. Formulate a Hypothesis - predict / guess
   - answers the question
   - is brief and to the point
   - uses the same word pattern as the
4. Design and Plan your experiment
   - Materials needed
     - Can be common materials; avoid the use of expensive and quantity needed
   - Procedure (Instructions)
     - Must be complete
     - Accurate, using exact measurements
     - Give in the correct order
   - Variables (the conditions that change)
     - Experimental / change / variable
     - Control group / no change / variable
5. Conduct the experiment
   - record observations
   - 3 trials (x)
6. Analyze results
   - average 3 trials
   - display results in graph line graphs need title and data points should be labeled
7. Draw a conclusion
   - make sense of what was observed
   - what the experiment proved will either prove or disprove your hypothesis - if it doesn't matter if hypothesis is wrong
   - Display (display board)
     - neatly arranged and labeled
     - colorful and creative

Source: A. McArthur, Pitt County Schools, Greenville, NC.
One third of the students in Mr. Southwick's tenth-grade general math course did not pass the math competency exam. As he did an item analysis of the problems his students missed, he noticed that most of the students had trouble in the sections that required estimating and rounding of numbers. There are students with varying abilities in this class but most do not like math at all. To present the rounding process in a way to increase understanding, Mr. Southwick had his class develop a graphic organizer, which he copied and distributed. This graphic organizer contained the vocabulary used in rounding as well as things students must know in order to round a number, including a rounding rap. The students really enjoyed the lesson and most importantly, Mr. Southwick noticed several students who had difficulty on the test due to the organization while working on problems. I gave them a guide to use still round and obtain a better score.

**Questions for Reflection on MicroStudies 9.3b and 9.3c**

Evaluate these graphic organizers. Do you think they are effective in presenting the information? Do you have any other suggestions for their design? Content?

**Figure 9.7**

![Graphic Organizer for Rounding](image)

```
planning

mental math

uses

spending $

is used for

Rounding Rap
Find the number,
Look next door;
Five or bigger,
Add one more.

rounding

is like

almost

vocabulary

closer to

estimating

nearer

examples

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Source: A. McArthur, Pitt County Schools, Greenville, NC.
Understanding conceptual information and content vocabulary are important components of mastering content. All graphic organizers are visual representations of information. However, some organizers follow specific patterns, while others may incorporate pictures and drawings or use other creative means to illustrate concepts, add details, and focus on vocabulary. Mastropiere and Fulk (1990) found students learned twice as much information when specific content area instruction was accompanied by pictorial reconstructive elaborations. These pictures were based on words and designed to make the content more familiar and more meaningful.

It is important that teachers use methods that activate their students' interest, prior knowledge, and curiosity about new information (Clarke, 1990). Graphic organizers that use pictures to illustrate a concept instead of, or in combination with, text help achieve these goals. In inclusive classrooms where students have diverse abilities, learning styles, and achievement levels, the use of pictures to identify, teach, and reinforce important concepts and vocabulary can help student success.

The graphic organizers in Figure 9.8 include pictures and drawings as an integral part of their design. Organizers 9.8a–c were developed for a social studies class. In each, pictures and drawings play a major role in illustrating key concepts and defining vocabulary. Figure 9.8a was used in a review lesson about the differences between weather and climate, in preparation for an activity where the students had to interpret a weather map. This organizer uses letters in the vocabulary words to generate a concept associated with the word. Figure 9.8b was used to teach and review vocabulary and concepts presented in a unit on eastern North Carolina. Drawings and maps provided visual cues that delineated important information. Figure 9.8c focuses on maps. This organizer links pictures, vocabulary, and definitions so students can associate a term and its meaning to some type of visual. Figure 9.8d, developed for a science unit, uses simple line drawings and diagrams to explain and provide cues for vocabulary.

The graphic organizers in Figure 9.9 use pictures and graphics in a different way. The organizer in Figure 9.9a uses metaphor to capture the nature of a text chapter. This concept could be extended by having students develop their own graphic organizers using metaphors for key concepts and topics. In contrast, the organizer in Figure 9.9b uses a combination of drawing, figures, and line art to organize and identify major events, concepts, and vocabulary. This four-page organizer was developed for a unit on medieval literature. It includes background information about the medieval period, vocabulary, influences on society, and ends with outline information on The Canterbury Tales and a selection from Morte D'Arthur. Throughout the organizer, various graphics such as pictures, lines, boxes, and arrows are used to emphasize important facts and details within each topic and relationships between topics. The integration of various types of visual information into graphic organizers such as these furnishes visual cues that can help students, including those with special learning needs, to learn, remember, and recall important information.

Thinking Maps® were developed as a language of visual tools by David Hyerle, who integrated the effectiveness of visual representations with underlying cognitive skills and patterns. They create, organize, and question content information, and they encourage students to see their thinking, think about their thinking, and talk about their thinking. Thinking Maps® are "designs for thinking connectively." They are visual tools that show how ideas can be separated and connected within a certain frame of reference (Hyerle, 1991, 1995). Thinking Maps® help all students. However, they provide additional support for those who have not developed their metacognitive skills and are unable to think about their thinking or give themselves instructions. Thinking Maps® are especially helpful to students, such as those with learning disabilities, who do not use learning strategies to help them learn, remember, or solve problems (Torgeson, 1975, 1980; Halahan, Kaufman, & Llloyd, 1996; Bender, 1995).

Thinking maps are based on thinking processes. There are eight basic thinking maps, each representing a general thinking pattern (see Figure 9.10). The Circle/Frame Map is used for defining in context; the Bubble Map for describing; the Double Bubble Map for comparing and contrasting; the Tree Map for classifying; the Brace Map for whole-part relationships; the Flow Map for sequencing; the Multiflow Map for cause and effect; and the Bridge Map for analogies.

What are some effective graphic organizers teachers can use to develop thinking skills?
Thinking maps are versatile and can be used in all content areas including math, English, communication skills, literature, science, art, music, or social studies. The maps in Figure 9.11a-c were developed for use in a math unit on integers. The circle map, Integers in "Real Life" Situations (see Figure 9.11a) was developed to introduce the unit. The information in the
center is provided to elicit students' prior knowledge of the unit. At the end it can be used to assess growth in a fashion similar to the "open response prompts" described in Chapter 5. Initially, the circle map can be used without the frame of reference to encourage all responses. Later, the student focus can be shifted in a particular direction by adding the frame of reference. The circle map can also be used to show relevance or importance of content. This is an important part of "gaining commitment" early in a lesson, particularly when working with secondary students.

The tree map, Rules for Computing With Integers (see Figure 9.11b), classifies and organizes the rules used to add, subtract, multiply, and divide integers. The concept of integers becomes much more manageable when students learn that they need to only use and apply five rules. Computing integers is a prealgebra and algebra 1 requirement, so this organizer is extremely helpful, especially for students who have trouble in math. The flow map, Computing With Integers (see Figure 9.11c), lists the steps students must follow to compute integers. It incorporates the rules
Circle Map: 
Integers in "real-life" situations (Perspectives noted in frame of reference) 

![Circle Map Diagram](attachment:image.jpg)

Weather reporting/forecasting

Rules for Computing with Integers

- Addition
- Subtraction
- Multiplication & Division

Rules:
1. Look at operation sign (+, -, ×, ÷).
2. Focus on rules for that particular operation.
3. Look at signs of integers (are they alike or different)?
4. Focus on the particular rule that applies.
5. Determine the sign of answer by applying rule.
6. Complete the math.

Source: J. MacIntyre, Nash/Rocky Mount Schools, Rocky Mount, NC.
**Figure 9.12** Bridge Map Applied to the Content Area of English Language Arts

English

Relating Factor: "is used in English and communication to"

<table>
<thead>
<tr>
<th>Verb</th>
<th>As</th>
<th>noun</th>
<th>As</th>
<th>adjective</th>
<th>As</th>
<th>adverb</th>
</tr>
</thead>
<tbody>
<tr>
<td>tell the action or state of being</td>
<td>tell who the action is about who is in the state of being</td>
<td>describe nouns or pronouns</td>
<td>-clarify the action or state of being</td>
<td>-describes adjectives verbs or other adverbs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>preposition</td>
<td>As</td>
<td>conjunction</td>
<td>As</td>
<td>pronouns</td>
<td>As</td>
<td>interjections</td>
</tr>
<tr>
<td>show relation</td>
<td>join phrases</td>
<td>take the place of nouns</td>
<td>Show exclamation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: J. MacIntyre, Nash/Rocky Mount Schools, Rocky Mount, NC.

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given in the tree map and provides students with a strategy to sequentially decipher and decode signed problems. Another basic skill that many students with limited English or disabilities find difficult is identifying parts of speech. The bridge map in Figure 9.12 is designed for use in English classes when the parts of speech and their purposes are being discussed. This map, stuck in the cover of a notebook, can be the key to many students' successful completion of homework on their own. However, it is important for teachers to model out loud how to use the maps as learning strategies and initially provide guided practice in using them.

Thinking maps are organizers that can effectively present information, develop higher order thinking skills, as well as assess student growth. Using the thinking processes that are inherent in the content, these maps also provide an effective way for students to learn and remember content information and concepts. When all teachers throughout a school use thinking maps in their teaching (total immersion), a sequential, consistent approach to thinking and learning is established. There are very specific procedures that have been developed to implement each of these thinking maps through training and additional materials (Hyerle, 1991, 1995).

**DEVELOPING GRAPHIC ORGANIZERS**

Archer and Gleason (1990) offer the following guidelines for the development of a graphic organizer: First, determine the critical content (vocabulary, concepts, ideas) to be taught.

**Ask:** What is the essential content of this chapter (section, video, story)? What key terms, people, concepts, and details must students know to understand this content? Second, select a graphic organizer pattern that will reflect the structure of the content. **Ask:** How is this information organized? How can this content be represented visually? What pattern or combination of patterns will be most effective? Third, design a completed organizer; fill in details, vocabulary, and facts. **Ask:** How does this organizer look when completed? Is the information organized? Is it
easy to understand? Does it contain all of the information that is necessary? Will it help students learn the concepts presented? Would a drawing or other graphic add interest and help students remember information? Fourth, create a partially completed organizer (or organizers). Ask: How will this organizer be used? What information should be included on this organizer? Is there enough information given? Is there too much? Last, create a blank organizer. Ask: How will I use this blank form? Is the design organized? Will it be appealing and interesting to students?

The development of graphic organizers can be an interesting, creative task. However, the design of an effective organizer is simple and focused on main concepts rather than details. Visuals can be added in a variety of ways—by using clip art, icons, stick figures, sketches, diagrams, maps, or student artwork. In fact, students themselves enjoy designing and developing organizers. Jones, Pierce, and Hunter (1968) suggest teaching students to develop graphic organizers by using procedures such as graphic outlining and matching content and graphic form. As students become knowledgeable about the process, they will assume more responsibility in the development of organizers.

# TEACHING WITH GRAPHIC ORGANIZERS

Teachers can include graphic organizers in the instructional process in a variety of ways. They can use a graphic organizer before beginning a topic or a lesson as an advance organizer. When used at the beginning of a lesson, a graphic organizer helps students focus on the subject and reviews what they have previously learned. Graphic organizers also can be used during a lesson to organize and explain information. While teaching, content teachers can use the organizer to select key ideas and systematically organize them in patterns that will help students learn so that they can later recall and use the information. Graphic organizers are often used at the end of a lesson as part of lesson closure to review what has been taught and what students have learned. At the end of the series of lessons, the completed graphic organizer can be used to review the whole topic and serve as a study guide for quizzes, projects, or for reference. They can also serve as an assessment or evaluation tool. The consistency and redundancy of using the same map with the same terms and structures is a key to success for many learners with diverse needs (see MicroStudy 9.4).

### MicroStudy 9.4

Mr. Howard used the scientific method with his graphic organizer in his science class. He explained the scientific method, Mr. Howard used a transparency of the graphic organizer, a cover sheet, and an overhead projector. The students used their own copies to help them visually organize information about each step of the method and to follow the discussion. As he revealed new information on the organizer during each lesson, the students also wrote on their individual copies. After the class had discussed the concepts, watched demonstrations, tried experiments, and asked questions, Mr. Howard often used cooperative learning structures like Numbered Heads and Think-Pair-Share as a review (see Chapter 10).

When the unit on the scientific method was completed, everyone in the class had completed the graphic organizer. They had used the organizers each day to review what they had learned and to organize new information. In fact, on several occasions, Mr. Howard had given them a blank organizer and asked them to fill in certain information to assess their progress. Now, the same graphic organizer would be used to guide students as they designed and implemented their science projects and other lab projects throughout the year.
Questions for Reflection on MicroStudy 9.4
Refer to the graphic organizer in Figure 9.6. Specifically, how would you use the organizer before, during, and after teaching a lesson?

Graphic organizers can be used throughout the instructional process as follows (Archer & Gleason, 1990, pp. 361–362):
- Distribute partially completed organizers.
- Place a transparency of the completed organizer on the overhead projector; use a cover sheet so that only the portion of the organizer being discussed is exposed.
- Introduce information on the graphic organizer; stress important relationships and facts; ask students questions; have them repeat information and record information on their organizers; encourage active participation throughout the lesson.
- Periodically, review concepts taught.
- Use a blank map at the end of the lesson to review content.

Graphic organizers can assist all students in organizing, learning, and recalling information. They offer a way for students to be successful in their learning and to meet the challenges presented in their classrooms (Jitendra, 1994).

Mnemonic Strategies

How can mnemonic strategies assist students in remembering information?

Mnemonic strategies increase or enhance memory. They are designed to help students remember things that are important. Mnemonics add interest to teaching and learning, motivate students, and encourage participation during instruction (Mastropieri & Fulk, 1990). They can be used to teach students both abstract and concrete information (Scruggs & Mastropieri, 1992) and can help associative memory (Mastropieri & Scruggs, 1989). A mnemonic may be a simple rhyme or picture that aids the memory. Or, it can be a procedure that helps students remember a process. Students with good metacognitive skills automatically use mnemonics to assist their learning. They often create their own mnemonics to help remember concepts and other information. Other students, especially those whose metacognitive skills are less developed, rely on others to teach them how and when to use these strategies. Examples of several types of mnemonic strategies can be seen in Figure 9.13.

Using a Mnemonic Strategy for Self-Monitoring

Students with disabilities often need explicit instruction in self-monitoring strategies, but other students can benefit from them as well (Schumaker, Deshler, Nolan, Clark, Alley, & Warner, 1981; Engle et al., 1991). Using mnemonics as a cueing system can help students remember a self-monitoring process and increase their motivation to use a strategy. Buchan, Fish, and Prater (1996) describe one such mnemonic they developed for self-monitoring (editing) of specific written language elements. The steps in implementing their Ninja Turtle strategy included:

1. Target the specific steps of a process students need to remember to complete a task independently (e.g., names and titles, capitalization, punctuation errors, and transition words).
2. Identify a current interest of students; Ninja Turtles were popular when the authors used this activity, but any motivating topic can be used. Create a logical, high-interest mnemonic to fit the title letters of steps in the process (e.g., Ninja Turtles Counting Pizza Toppings).
3. Design a graphic to remind the students to use the acronym (e.g., a captioned picture of several turtles garnishing pizzas).
4. Teach the learning strategy using the acquisition steps (described later in this chapter) developed at the University of Kansas (Lenz, Clark, Deshler, & Schumaker, 1988):
   a. **Describe** the strategy; encourage students to suggest reasons for its use.
   b. **Model** the use of the strategy by thinking aloud and using a student's story.
   c. **Verbally rehearse** each part of the sequence (e.g., Say in unison: *Ninja, N, Name*).
   d. Provide **guided practice** applying the strategy with easy materials (e.g., students write *NT*, then *NTCP*, on their papers and cross off the letters as they are guided through the process of self-checking).
   e. Provide **independent practice opportunities** in varied writing settings (e.g., students apply the strategy independently with minimal cueing when editing their papers for various classes).
If students have not participated in developing the mnemonic, then it may be helpful to teach one or two steps at a time to mastery, after briefly introducing the entire strategy and discussing its potential advantages.

Mnemonics are most effective when they follow or are an integral part of instruction. Students must understand the concepts they are trying to remember, or the use of mnemonics to recall key terms will be of limited value. Students who do not understand the underlying conceptual knowledge often recall the letters in the mnemonic correctly but cannot identify the key words or concepts these letters represent. When students make numerous nonmeaningful substitutions of key terms, they are not using the mnemonic as a memory strategy to complement and reinforce their conceptual learning. This may signal that they have not yet developed the necessary level of metacognitive awareness to use this particular mnemonic. Teachers must play a key role here by thinking aloud the process of selecting memory strategies that have been presented to the class on different occasions.

**Strategies for Developing Organizational Skills**

Organizational skills are important for every student to develop. In order to be successful in the classroom, students must be able to remember what work was assigned, be able to manage time, and turn assignments in on time (Shields & Heron, 1989; Cegelka & Berdine, 1995). They must record assignments, have the necessary materials available to complete their assignments, and persist with tasks until assignments are complete. However, many students lack the organizational skills to do this (Polloway, Foley, & Epstein, 1992).

The ability to use organizational skills such as time management, scheduling, and planning can help students become more successful. It's all part of the process to keep track of homework assignments, plan when to do homework, and make sure there is enough time to complete a project or study for a test. One of the first organizational skills students need to learn is how to keep a daily log of homework assignments. Every day, they must systematically write down all assignments given for each class and any materials that will be needed to complete the task. Sitting down to complete an assignment only to find out that a literature text was left in the locker or that the lab sheet is not in the backpack is not only disheartening, but also a waste of time. Teaching and encouraging students to use a notebook or daily planner may be necessary. However, for some students, behavioral monitoring also may be necessary. Each teacher can sign off on assignment entries and work turned in each day, as can many parents for homework done at home. It is often necessary initially for a homeroom or resource teacher at the end of the day to guide the student through a quick review of the next day's assignments to be sure the student understands what to do and has what is needed. If the student is on a behavior contract, then contingencies are reviewed and carried out at this time as well (e.g., staying after school to complete overdue assignments or a note to parents that at-home reinforcements have been earned).

Planning a study schedule is also part of the organizational process. Many students have not developed or mastered the skill of allocating time to complete tasks. A weekly planner with boxes large enough to easily write in activities and assignments is one tool for planning study time. Including commitments such as after-school activities, lessons, and work schedules will provide a realistic view of the actual time that is available for studying. Learning to schedule time is a useful lifelong habit to develop and a positive step toward achieving effective organizational skills. Once again, the responsibility for following a study time plan should belong to the student, but systematic prompting and reinforcement may be needed initially.

Although daily schedules are important, many assignments are long term and extend over a period of time. Planning is necessary if students are to complete projects, study for tests, or write papers on time. One of the difficult stages of this kind of planning is breaking down the task into doable parts. Many students with learning disabilities have difficulty making realistic predictions about how long it will take to complete a task, and in many cases it will take them more time than their peers to complete it. For example, the thought of writing a 10-page paper can be overwhelming. However, when the process is organized into 4 or 5 sequential steps it can seem more possible. Planning forms are available that show how tasks can be planned in a stepwise manner. Some not only break the task into days, but also organize various materials that should be included
in the process. Developing a specific plan with deadlines posed on the stepwise format can provide a system for systematic reinforcement and rehearsal of a successful strategy.

**Strategies Intervention Model**

No discussion about learning strategies would be complete without including information about the seminal research for training teachers and students in secondary schools that was developed at the University of Kansas. The Strategies Intervention Model (SIM), designed to promote content area learning, includes learning, social skill, motivation, and executive strategies (Lenz, Clark, Deshler, & Schumaker, 1988; Schumaker, Deshler, Alley, Warner, & Denton, 1984; Lenz & Bulgren, 1995; Ellis, 1991). The learning strategies included in this model are divided into three strands—the Acquisition strand, the Storage strand, and the Expression and Demonstration of Competence strand. Strategies in the Acquisition strand focus on getting information from written material and include Word Identification, Paraphrasing (Schumaker et al., 1984), Self-Questioning, Visual Imagery, Interpreting Visual Aids, Multipass, and SOS. Strategies in the Storage strand teach students to organize, store, and retrieve information. These strategies include First-Letter Mnemonic (Nagel, Schumaker, & Deshler, 1986), Paired Associates, and Listening and Notetaking. Strategies in the Expression and Demonstration of Competence strand enable students to complete assignments, express themselves in writing, and take tests and include Sentences, Paragraphs, Error Monitoring, Themes, Assignment Completion, and Test Taking strategies (Schumaker et al., 1984).

Strategies in the Strategies Intervention Model are taught by a series of sequential instructional stages. These stages are designed to teach students a variety of strategies depending on their individual needs. The goal of this process is for students to learn a strategy at an automatic level through a process of repetition and structured practice. Stage 1, Pretest, is an assessment of students’ strengths and weaknesses in the targeted strategy/skill. This information shows students how inefficiently they use this skill and how learning the strategy will help them. This step also encourages students to make a verbal commitment to improve their skills. In Stage 2, Describe, the teacher describes the strategy and emphasizes how students can benefit from mastering this strategy. In Stage 3, Model, the strategy is modeled so that students can see the process of how the strategy is used. This provides a visual picture of the strategy to accompany the auditory description. Stage 4, Verbal Practice, requires that the student learn the steps of the strategy at an automatic level before actually using the strategy. Stage 5, Controlled Practice and Feedback, allows the student to practice the strategy and to demonstrate mastery and understanding of the steps. Stage 6, Advanced Practice and Feedback, gives the student a chance to use the strategy with course materials. Stage 7, Posttest and Obtain Commitment to Generalize, measures student progress, compares this progress to the goal set in Stage 1 and encourages the student to use the strategy in a variety of subjects or settings. Stage 8, Generalization, includes three phases of training: Orientation, Activation, and Maintenance. These phases teach the student where the strategy can be used, provide practice using the strategy in a variety of settings, and check to see that the strategy is used appropriately (Lenz, Clark, Deshler, & Schumaker, 1988; Deshler, Ellis, & Lenz, 1997).

These stages form the basis of the Kansas Strategies Intervention Model training method. However, specific procedures have been researched, and training is available to train teachers how to teach and implement these strategies (Lenz, Clark, Deshler, & Schumaker, 1988).

**Developing Strategy Attribution**

After teaching a strategy through SIM or a similar approach, an attribution training program can teach students how and when to make strategy attributions, that is, to connect the use of a strategy with solving the problem. Did the use of the strategy help? Did nonsense of the strategy contribute to the lack of success? Combining attribution training and strategy training “can influence students’ perception of their control over outcomes” (Stevens & Englert, 1993, p. 34).
INTRODUCING STRATEGY ATTRIBUTION

Stevens and Englert (1993) suggest that one way to introduce the usefulness of strategies is to give two groups of students a set of things to memorize within a brief period of time (e.g., 1–4 minutes). Privately, tell one group a strategy for recalling the items. (For example, give the class a list of the months out of order. Suggest to the strategy group that they order the months from shortest to longest in number of letters. Give one minute to memorize and then test the class. Predictably, the group that categorized the months appropriately has more months in the correct order than those who tried to memorize randomly. Follow this quickly with a task relevant to the lesson, so students do not associate attribution with a “trick.”) After a recall quiz, ask students to discuss the strategies they used to recall the items and the extent to which the strategies made a difference in their performance. Provide follow-up tasks so students can continue to test the hypothesis that strategies do make a difference. Students enjoy this type of challenge, and it provides a good opportunity for the teacher and students to model language that attributes their success to the use of strategies.

Suggested steps in introducing strategy attribution are:

1. **Identify a strategy** that can be demonstrated to lead to success, for example, categorizing.
2. **Encourage discussion** to elicit its meaning and value; where and when to use, as in outlining; studying for a test.
3. **Brainstorm reasons** for success or failure in a given task.
4. **Demonstrate relevance** of the strategy to success. (Stevens & Englert, 1993)

It is important to reinforce the attribution of the strategy through examples of schoolwork that exemplify its use or nonuse. Students will need guidance and practice in making strategy attributions about their own work. Working in pairs to analyze their work and identifying which strategies contributed to success leads to a greater awareness of their own thinking and a greater sense of control over the outcome. Strategy attribution training has been effectively used with different types of students, including writers at the middle and high school level who have learning disabilities (Stevens & Englert, 1993) and readers with comprehension difficulties who are hyperactive (Reid & Borkowski, 1987).

STRATEGIES FOR FOCUSING STUDENT ATTENTION

Sometimes students have a good repertoire of strategies for thinking or remembering, but they still have difficulty completing work because of attentional difficulties. Attention deficit disorders are one cause of attentional difficulties, but other types of learning disabilities and emotional disorders may also interfere with students' ability to focus and sustain their attention on schoolwork. Teachers must be aware of and implement strategies that will capture, focus, and sustain their attention in the classroom. However, the ultimate goal of these strategies is to teach these students the skills they need to become responsible for their own behavior and learning.

While all the strategies in this chapter may assist in “structuring” learning processes, students with attention disorders will need additional structure and consistency in the classroom. Although the teaching practices that follow can be beneficial for all students, they are essential for students with attention problems who are typically less organized, very distractible, and often off task. To ensure that these practices are in place in their classrooms, teachers can:

- **Maintain a well-organized classroom.** An ordered environment encourages on-task behavior and avoids disruptions. When students know where they will sit during a class, where the materials they need are located (such as dictionaries, paper, art supplies, and work folders), and the expectations for the class (ruled spiral notebook, text, pencil, neat handwriting, and completion of work), many distractions are controlled. This in turn can assist in increasing on-task behavior by all students in the classroom.

- **Establish a classroom routine** so that what will happen and when it will occur during the day is known (reading, math, library time, assemblies, at the beginning of class to complete the
warm-up exercise that is on the board, etc.). Also, establish and teach any procedures that students are expected to follow such as how headings on class papers should be written, how to turn in assignments, or where to pick up corrected work.

- Develop classroom rules that are consistently taught, monitored, and reinforced.
- Place the desks of students with attention problems away from distractions such as windows, the pencil sharpener, group instruction areas, and other disruptive students. Organize the room so that the desk is accessible for the teacher to monitor behavior and academic work. Proximity to the teacher often encourages on-task behavior.
- Make sure there is enough room around each student's desk to allow for movement without causing distractions and disruptions.
- Develop a management system that is appropriate for the student. Be sure to reinforce appropriate behaviors immediately and consistently. Implement interventions such as positive reinforcement, response cost, token economy, or contingency contracts that are effective.
- Post rules and schedules for student reference. Avoid distracting questions by simply pointing to the visuals as a reminder of the routine and expectations in the classroom.
- Teach organizational strategies such as those described in this chapter.

Although a well-organized, structured classroom has a positive effect on all students, in order to be successful in school students with attention problems must be able to come to attention, focus their attention, and maintain their attention. They must be ready, alert, and motivated to learn; they must slow down, become reflective as they approach tasks, and concentrate; and they must be able to maintain their attention for periods of time (Lerner, Lowenthal, & Lerner, 1995).

As discussed in Chapter 6, the amount of time students are actively engaged in a task is positively associated with achievement (Morgan & Jensen, 1988; Good & Brophy, 1994). In the classroom, teachers can focus the attention of their students by using a predetermined signal such as blinking the lights, raising a hand, or standing in a certain spot. They also can use eye contact and vary the tone of their voice. Showing enthusiasm and excitement about lessons and learning also motivate and capture the attention of students (Lerner et al., 1995; Piffner, 1996; Rief, 1993). Once the attention of these students is focused, many of the following strategies and suggestions can be incorporated into instruction in order to sustain their attention.

When presenting a lesson, state its purpose. Establish a brisk pace, break down tasks into small parts, limit the lengths of assignments, and provide extra time to complete work. Use multisensory materials. Incorporate a variety of activities that require listening, speaking, writing, as well as hands-on activities. Vary lesson presentation and include an assortment of materials. Use an overhead, demonstrations, and materials such as maps, charts, computers, or illustrations. Point to these materials when using them and use color to highlight important information. Provide continuous and specific feedback, emphasizing positively framed redirection (Please do... ). Reinforce appropriate actions and achievements. Since many students with attention problems need more time than their peers to complete assignments, assign a manageable amount of homework that can be successfully completed (Rief, 1993; DuPaul & Stoner, 1994; Piffner, 1996; Lerner et al., 1995).

The strategies just discussed may assist the learning of many students in the classroom. However, they are essential for students with attentional difficulties. Without these strategies, their inattention makes achievement in school difficult, if not improbable.

SUMMARY

Strategies provide effective ways to approach learning. They can be used to help students organize information, assist in learning details, explain concepts, show relationships, or develop memory
skills. As teachers strive to create positive learning environments, strategies such as advance organizers, mnemonic devices, graphic organizers, and organizational strategies can meet the learning needs of their students. When these strategies are used by teachers in their classrooms, they provide a model that students can apply to strengthen their own ability to learn and remember. While all students may benefit from classroom instruction that incorporates the types of strategies discussed in this chapter, students with disabilities or other special learning needs may need more extensive periods of explicit instruction and guided practice in the strategies than their peers. This can be provided through coteaching approaches (including peer teaching), as described in Chapter 11, or through pull-out services specifically for this purpose. However, if pull-out services are the choice, then it’s critical that authentic assignments and materials from the classroom be used to practice applying the strategies whenever possible, to facilitate motivation and generalization.

Learning strategies help students become independent learners and are especially helpful in inclusive classrooms. They not only provide guidelines for all students, but can be modified to meet individual student needs. Teachers must choose strategies that match the diverse learning needs of individual students and be responsible and selective in choosing strategies that will enable students to be successful. For students with attentional difficulties, this includes considerable structuring of the learning environment as well as explicit strategy instruction in focusing and sustaining attention in order to complete tasks in a timely way. Although teachers model and teach students to apply strategies, it is the students who must choose to use them. The value of teaching strategies to encourage self-determination, most especially to develop a sense of self-empowerment on the part of students with disabilities, is amply documented in the literature (Wall & Dattilio, 1995). Strategy attribution training can facilitate the transition to self-monitoring and independent use of strategies. However, the successful experiences students encounter using strategies will encourage their continued use.