CHAPTER 10

Using Teacher-Centered Teaching Methods

Not only is there an art in knowing a thing, but also a certain art in teaching it.

—Cicero

OVERVIEW

We will now engage in a study of actions and skills that produce learning. In this chapter, you will study direct approaches that can be used to organize and present integrated bodies of knowledge for instruction. Direct teaching and exposition approaches to teaching integrated bodies of knowledge provide us with direct instructional alternatives.

Effective questioning patterns have long been associated with good teaching. As such, it is important that prospective teachers recognize and use behavior patterns related to the productive use of the different levels of questions, as well as the different kinds of questions and proven questioning techniques. Thus, in this chapter, we will focus special attention on questioning and its effective use in the classroom.

OBJECTIVES

After completing your study of Chapter 10, you should be able to do the following:

1. Identify factors that should be considered in selecting teaching techniques and strategies.

2. Define and discuss the strengths and weaknesses of the direct teaching and exposition teaching approaches.

3. Describe ways to improve teacher presentations through effective questioning.

4. Identify and differentiate between the different categories of questions, as well as the levels within these categories.

5. Compare and contrast focusing, prompting, and probing questions.

6. Define and explain the benefits derived from the use of the redirecting technique, wait time, and halting time.

S tudents often need help in learning how to learn. Basically, you will have three types of students in your classes: students who can learn on their own, students who need some help in learning, and students who need a lot of help in learning. Your job will be to provide training to those students who need help with the skills needed in building concepts. Thus, your instructional purposes will be to make information meaningful, to help students develop learning and study skills, and to teach so knowledge can be applied or transferred to other areas.

Successful teachers draw from a variety of strategies (methods and procedures) in accomplishing their instructional purposes. Strategies should be selected that best serve the delivery of content and achievement of the purposes and objectives. If strategies are just arbitrarily chosen, then their emphases are on themselves, rather than on content, purposes, or objectives.

Strategies, then, should be viewed as utilitarian: They achieve the instructional intent. For example, if the intent of a social studies lesson is to share views on some controversial issue, it is obvious that the discussion method and applicable procedures should assist in achieving this objective. The lecture method, or simply showing a film, would not support the intent of the lesson.

With all the possible strategies, how do you decide which is best? Experience can often be the best basis for selection; however, other factors often must be considered in your selection of strategies:

- What are the students' needs?
- What age are the students?
- What are the students' intellectual abilities?
- What are the students' physical and mental characteristics?
- What are the students' attention spans?
- What is the lesson purpose?
- What content is to be taught?

You should take such factors into account when you consider teaching strategies and, above all, select those strategies that best serve the teaching situation.

Some strategies influence students directly, whereas others influence students indirectly; that is, some strategies emphasize focused, teacher-directed instruction, whereas others involve students actively in their own learning. Thus, there are two major ways of delivering instruction: directly or indirectly. The direct delivery of instruction ("telling") is the "traditional" or didactic mode, in which knowledge is passed on through the teacher, the textbook, or both. The indirect avenue of instruction ("showing") provides students with access to information and experiences whereby they develop knowledge and skills.

The main strength of the direct instructional strategy is that it is efficient, especially in quickly providing information to the students. It is also an effective way to allow students to achieve mastery when learning fundamental facts, rules, formulas, or sequences. The direct instructional strategy is not an effective way to teach higher level thinking, analysis, or evaluation. It cannot be used to teach material over a long period of time or present additional details to students who have already mastered the basic concepts. In contrast, the indirect instructional strategy presents students with instructional stimuli in the form of materials, objects, and events and requires students to go beyond the basic information that they are given to make their own conclusions and generalizations. Indirect

Video Link 10.1:
Watch a video about instructional strategies at www.sagepub .com/moore4e

instruction allows teachers to engage their students in activities that require the students to learn independently. Students take an active role in their learning by developing ideas, testing their own conclusions, and discussing their results. This allows students to independently discover patterns and relationships in their learning and knowledge. Students go beyond the basic problems presented to them, allowing them to develop advanced levels of thinking analysis.

Although instructional strategies can be categorized as direct or indirect, the distinctions are not always clear-cut. For example, a teacher may provide information through the lecture method (from the direct instructional strategy) while using a small-group discussion method to ask students to determine the significance of information that was presented (from the indirect instructional strategy).

How much time should be devoted to each of the two modes of instruction? This is a complex question. At this point, suffice it to say that the amount of time spent varies, depending on the subject, grade level, students, time, and material available, as well as the philosophy of the teacher and the school. Experience suggests, however, a compelling relationship between method of instruction and student retention, depicted in Table 10.1, in which a blend of "telling" and "showing" techniques results in greater retention. Furthermore, varying the strategy can positively affect student motivation to learn. It is a fortunate situation when you have a choice of equally effective strategies for achieving your instructional intent. In such instances, it is possible to choose a method and procedure (strategy) that will foster motivation, improve classroom control, or cost less to implement. Indeed, you should become skilled in combining various strategies into a total lesson package.

TABLE 10.1 Relationship Between Method of Instruction and Retention (in Percentages)

Methods of Instruction	Recall 3 Hours Later	Recall 3 Days Later
Telling when used alone	70	10
Showing when used alone	72	20
Blend of telling and showing	85	65

Often, too much classroom learning is rote; that is, it is the memorization of facts or associations, such as math facts, rules of grammar, words in foreign languages, or presidents and vice presidents of the United States. Optimal learning takes place when information is made meaningful. Essentially, information must be well organized and tied into an existing cognitive structure. To accomplish this task, students must be encouraged to think about new material in ways that connect it to information or ideas already in the students' minds and to generate their own questions about the material.

The ultimate goal of teaching and learning is to develop students' ability to apply classroom-acquired information outside the classroom or in different subjects. For example, students should be able to write a letter outside the classroom, and they should be able to use mathematical skills in their science class. This ability is referred to as **transfer**. With transfer, you are trying to develop the ability to apply knowledge acquired in one

situation to new situations. Presumably, students in a Spanish class will be able to communicate with people who speak Spanish. The likelihood of transfer can be enhanced by making the original learning situation as similar as possible to the situation to which information or skills will be applied. For instance, science should be taught through the use of realistic problems from your students' daily lives. Of course, another means for accomplishing transfer is through learning: Students cannot use information they do not thoroughly understand. Finally, similarity and thoroughness make it more likely that students will be able to apply newly acquired information in real-life problem situations.

The remainder of this chapter will elaborate on the direct modes of instruction: direct teaching, exposition teaching, and exposition with interaction teaching. These are modes of instruction with which you have had much experience. We will review the more authentic modes and procedures in Chapters 11 and 12 and some of the integrated direct approaches and procedures in Chapter 13.

Direct Teaching

Direct teaching, sometimes called *systematic teaching* or *active teaching*, is a teacher-centered, skill-building instructional model with the teacher being a major information provider. The teacher's role is to pass facts, rules, or action sequences to students in the most direct way possible. This usually takes a presentation with explanations format (modified lecture), examples, and opportunities for practice and feedback. Some educators criticize the direct teaching approach because the sources of student motivation are mostly extrinsic, students have little control over the pacing of their learning, students make few important decisions about their learning, and there may be little opportunity for divergent or creative thinking.

The direct teaching format calls for teacher-student interactions involving questions and answers, review and practice, and the correction of student errors. The direct teaching strategy works best with teaching skill subjects such as reading, writing, mathematics, grammar, computer literacy, and factual parts of science and history. Young children, slower learners, and students of all ages and abilities during the first stages of learning informative material or material that is difficult to learn will benefit most from direct teaching.

Different educators describe the specific elements of direct teaching differently (see Burden & Byrd, 2010; Goeke, 2008; Orlich et al., 2010). They generally agree, however, as to the sequence of events that characterizes effective direct teaching lessons. First, the teacher brings students up-to-date on any skills they might need for the lesson and tells them what they are going to learn. Then, the teacher devotes most of the lesson time to teaching the skills or information, giving students opportunities to practice the skills or express the information, and questioning or quizzing students to determine whether they are learning what is intended. The general lesson structure will vary in different subject areas and at different grade levels. Teachers of older students may take several days for each step in the process, ending with a formal test or quiz. Teachers of younger children may go through the entire process in one instructional period, using informal assessments at the end.

REFLECTIONS ON TEACHER PRACTICE 10.1 | Answering Questions

1. How can you encourage students to find their own answers to all questions?

2. Why is it important that teachers work on improving students' listening skills? How are listening and questioning related?

I teach sixth grade and was going home each and every day mentally wiped out because I think I answered 9,000 questions. Questions like "Should I put my name on my paper?" (Of course.) "Can I write in red pen?" (Never.) I started calling these "self-explanatory questions" because they pertained to policy that they should have had under control by now—and I think some of them just liked to hear themselves talk. Anyway, I started with discussing strategies of how they could find answers to their questions before asking me—basically just wanting to work on their listening skills. (Hey, isn't that a standard?!) I even went so far as to give them each three tickets for the day—if they had a question to ask me (not content related) that they could have found the answer for themselves, I took a ticket away in exchange for an answer. Some kids didn't even make it through first period.

As a result, I had a parent COMPLETELY flip out and call our assistant principal. She totally supported me to this parent, but I had to write a "letter of explanation" about why I had to use the ticket system in my classroom. I made sure that I filled it with things like "listening is a skill that will benefit all students" and "by answering fewer self-explanatory questions I have more time for one-on-one instruction with students" and so forth and so on. It just made me angry that they would even waste time questioning it. At any rate, the ticket system has worked. If students make it to the end of the day with a ticket, they get a piece of candy.

Now, we have stretched it to three tickets for the week—make it to Friday and you get candy. My days go much smoother!

—*Michelle, elementary teacher*

Please visit the student study site at www.sagepub.com/moore4e for additional discussion questions and assignments.

SOURCE: Reprinted with permission from ProTeacher, a professional community for elementary school teachers (www.proteacher.net).

A brief description of the parts of direct teaching follows:

1. *State learning objectives and orient students to the lesson.* Tell students what they will learn and what will be expected of them. State the goals and objectives of the lesson. Establish a mental set or attitude of readiness to learn in students. This is your set induction.

2. *Review prerequisites.* Go over any skills or concepts students will need to understand the lesson. Provide advance organizers to give students a framework for understanding the new material.

3. *Present new material.* Teach the lesson, presenting information, giving concrete and varied examples and nonexamples, demonstrating concepts, and so on. Present the material in small steps. Present an outline when material is complex.

4. *Provide guided practice and conduct learning probes.* Pose questions to students to assess their level of understanding and correct their misconceptions. Give students practice problems and check for misconceptions and misunderstanding. Have students summarize in their own words. Reteach as necessary.

5. *Provide independent practice.* Give students an opportunity to practice new skills or use new information on their own, in seatwork, or in cooperative groups.

6. *Assess performance and provide feedback.* Review independent practice work or give a quiz. Give feedback on correct answers, and reteach skills as needed.

7. *Provide distributed practice and review.* Assign homework to provide distributed practice on the new material.

Madeline Hunter's "mastery teaching" contains many of the features of the direct teaching strategy and has been implemented in many parts of the country. Mastery teaching uses the following five steps:

1. *Anticipatory set.* The teacher presents a short activity to get students' minds ready for the planned lesson.

2. *Instruction or providing information (input).* Information is presented, including modeling and checking for understanding.

3. *Guided practice.* Students practice new learning under direct teacher supervision.

4. *Closure or checking for performance.* The teacher reviews or wraps up the lesson by posing questions for the class.

5. *Independent practice.* The teacher releases students to practice new materials on their own.

Keep in mind, however, that not all elements of the direct teaching strategy belong in every lesson, although they will occur in a typical unit plan composed of several lessons. Complete Expansion Activity 10.1: Direct Instruction to explore your thoughts on the implementation of the direct instruction strategy.

Let's now look at the various components of direct instruction in more detail. Expository teaching (lecturing and explaining) and questioning hold key roles in the success of direct instruction.

Exposition Teaching

Exposition teaching is considered to be the best way to communicate large amounts of information in a short period of time. Exposition techniques comprise the methods in which an authority—teacher, textbook, film, or computer—presents information without overt interaction between the authority and the students.

Lecture

The **lecture** (telling and explaining) is probably the most widely used exposition teaching method. Virtually every teacher employs it to some degree, and some use it almost

> **Expansion Activity 10.1**
> **DIRECT INSTRUCTION**
>
> List the sequence of steps that you feel should characterize a direct instruction lesson at the grade level you expect to teach. How does your sequence of activities compare with the seven steps presented in the text? What is your rationale behind any differences? Share your steps with several classmates. Do they agree?

exclusively. The lecture is not usually recommended for children in elementary school because it is often difficult for young students to remain still and attentive long enough to learn. However, there will always be a place for lectures in the curriculum as teachers tell, explain, and share knowledge (Lawson, 2010).

Lecturing from the textbook could well be the most common teaching method used in today's schools. The content of such lectures usually is structured directly from the course textbook, progressing from Chapter 1 to the end of the book without deviation, as illustrated in Table 10.2.

Textbook lecturing requires very little teacher preparation when the structure of the textbook is strictly followed. Textbook lectures can get extremely boring because the teacher usually is lecturing about the material students were assigned to read. If no new content is added to the lesson, students tend to either read the text or listen to the lectures—seldom both.

Lectures can be formal or informal. The informal lecture is generally an informative talk made by the teacher. The informal lecture is usually peppered with question-and-answer sessions to help students consolidate and organize the new information. A formal lecture is more like giving a speech on some subject.
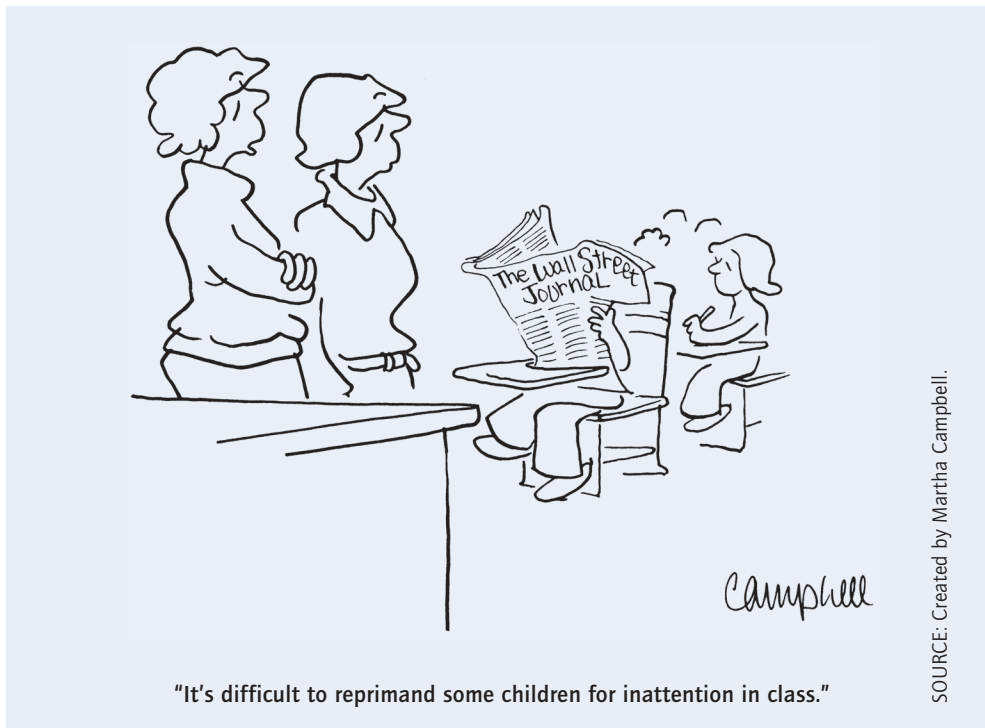
Lectures vary in length and formality. They can last for an entire class period or for just a few minutes, depending upon the content, students' age, and teachers' teaching style. Formal lectures allow no interruptions or questions; less formal lectures invite periodic student participation. Though often criticized by some educators, the teacher presentation does possess some unique strengths.

Strengths of the Lecture

The lecture is an excellent way to set up an atmosphere for learning about a new topic, create a frame of reference, introduce a unit, or provide a focus for student activities. Moreover, a short lecture can effectively wrap up an activity, unit, or lesson. Finally, a lecture is time-efficient because teachers use their planning time organizing content information instead of devising instructional procedures. Thus, they have ample opportunity to collect related materials, assemble them into a meaningful framework, and present the information to students in a relatively short period of time. The teacher simply plans a lecture for the desired length of time.

Weaknesses of the Lecture

The lecture has several serious flaws, however. First, it is passive learning, with very low student involvement. Students are expected, and even encouraged, to sit quietly, listen, and perhaps take notes. Thus, it is not a good approach for helping students develop skills in thinking, problem solving, and creativity.

"It's difficult to reprimand some children for inattention in class."

SOURCE: Created by Martha Campbell.

Second, lectures are often boring and do not motivate. For this reason—except in unusual cases—very little of a lecture is retained by students. Indeed, because lectures tend to focus on the lowest level of cognition, understanding and transfer are often limited.

Finally, the lecture method may lead to the development of discipline problems. Most lectures generate little interest, and student attention soon wanes and turns to more stimulating and often undesirable activities. Thus, not only does the lecture lose the attention of those involved in these unwanted activities, but the lecture itself is often disrupted. The wise teacher should always remember that most students are easily bored and usually have a low tolerance for boredom.

Planning the Lecture

Planning is essential for a good lecture. Lectures must be well crafted to be clear and persuasive. The lecture must be designed to gain—and maintain—student attention throughout the lesson, to instill motivation, and to accomplish lesson objectives. Let's now look at some techniques that can help achieve these ends.

The most successful lectures should be relatively short. Even older, brighter students probably won't listen to a lecture for more than about 20 minutes. Therefore, limit your lectures to short periods of time and periodically change to other activities (preferably to those that require active student involvement). For example, the subdivisions of a lesson (with time allotted for each activity) might be as follows (asterisks denote activities in which the teacher is lecturing):

1. Share lesson objectives; provide overview of topic (5 minutes)*.
2. Show a film or Internet clip (10 minutes).
3. Discuss the film (10 minutes)*.
4. Present a physical demonstration (5 minutes)*.
5. Have student teams complete activity (15 minutes).
6. Wrap up and review (5 minutes)*.

Although this plan uses lecturing where appropriate, it relies on other techniques to augment the learning—namely, discussion, demonstration, and student activity. Less than half of the time is devoted to lecturing; most of the time allows for more student involvement.

As you learned in Chapter 7, you should begin your lecture with a quality set induction that arouses students' interest, hooks into previous learning, creates a mind-set for learning, and establishes a framework for the information you will present. Share your academic and behavioral expectations in student-friendly language. Use visual aids—a whiteboard, overhead projection, SMART Board, handout, or PowerPoint. Keep students involved taking notes or completing advanced organizers. Finally, create a quality closure to review the major points of your presentation.

In summary, a good lecture must be well planned if it is to be clear and persuasive. Try following this good planning formula:

- Tell students what you are going to tell them.
- Tell them.
- Tell them what you have told them.

The proper application of this formula will result in a logical, well-organized lecture with a firm introduction and a well-planned wrap-up.

Delivering the Lecture

Effective lectures must maintain student interest and attention from beginning to end. Factors such as the tempo, audiovisual aids, stimulus variation, and language can exert major influence on student interest and attention.

Pace your presentation to maintain student interest without causing information overload. Periodically check student comprehension; adjust your pace accordingly. Speak in an expressive, enthusiastic voice tone that all students can hear. Use stimulus variation techniques, such as gestures, pauses, enthusiasm, and teacher movement, to maintain students' attention.

Finally, make regular eye contact with every student in your classroom. This maintains students' attention, promotes positive teacher-student relationships, and decreases misbehaviors. Eye contact gives students the feeling that you are addressing each of them personally. Indeed, watching students' body language provides you with valuable feedback on how well a presentation is being received and lets you know if it's time to switch strategies to keep students interested.

Enhancing Direct Instruction With Technology

The effectiveness and quality of direct instruction can be greatly improved through the use of technology. By integrating technology into instruction, teacher lectures and presentations come alive and teachers are better able to capture and keep the attention of students while presenting current information in novel ways. Indeed, make your lectures and presentations as multisensory and multimedia as is feasible through the use of interactive videos, print media, photographs, films, computer graphics, and hypermedia.

PowerPoint and SMART Boards are probably the best known teacher lecture and presentation tools available. PowerPoint is an ideal tool for creating memorable classroom lectures and presentations. For example, you can use PowerPoint to create slide shows of vocabulary words that students need to learn, run study shows with words appearing along with pictures and definitions (and sound, if appropriate) to help students remember meanings, animate words and graphics, show QuickTime movies, give instructions on adding two one-digit numbers without regrouping, teach the concepts of speed and motion, and even give tests.

SMART Boards are an excellent way to display PowerPoints and various other technology applications. Teachers or students can write on the SMART Board screen and save the notations as typed or handwritten text for future reference. Students can also use interactive software that requires them to group objects, select objects, and activate links. They can take quizzes using response systems and questions displayed on the SMART Board screen. The uses of PowerPoint and SMART Board technology in presenting information and teaching are unlimited.

Flipped Classroom Model

Many educators are experimenting with the idea of a flipped classroom model (Bergmann & Sams, 2012). The flipped classroom technology-driven model inverts traditional lecture teaching methods by delivering instruction online outside of class and moving "homework" into the classroom. Under this model, teachers make videos of their lessons, often simply filming the whiteboard as the teacher makes notations and recording their

The use of instructional materials and media enhances most presentations and stimulates student interest.

voice as they explain the concept. The videos are uploaded onto a school website, or even YouTube, where students can access them on computers or smartphones as homework. Thus, students spend class time actively working as opposed to passively sitting through lectures. Students work collaboratively and practice concept exercises; they can ask questions and work through problems with the guidance of their teachers and the support of their peers—fostering this collaborative learning environment even further. Outside the classroom, students watch lectures at their own pace, communicating with peers and teachers via online discussion and online social networking. The ability to pause, rewind, and rewatch videos gives students the opportunity to spend more time learning about concepts they find challenging. Those students who have mastered a concept need not waste time reviewing with the rest of the class. Moving lectures outside the classroom also allows teachers to spend more time with each student. Students report that they love the flipped classroom model. However, they feel it does demand more of them.

Table 10.3 summarizes the different direct teaching and exposition teaching methods. Review the summary and complete Reflect and Apply Exercise 10.1.

TABLE 10.3 Exposition Teaching

Method	Description
Direct teaching	Teacher controls instruction by presenting information and giving directions to the class; associated with teacher-centered, teacher-controlled classrooms; an instructional procedure for teaching content in the most efficient, straightforward way.
Lecture	Teacher presents information, with no overt interaction with students.
Presentation	Teacher presents information, with limited overt interaction with students.
Illustrated talk	Teacher delivers a presentation that relies heavily on visual aids to convey ideas to students.
Teaching lecture	Teacher delivers an oral presentation that allows some participation by the students.
Textbook teaching	Teacher talks about and explains material presented in the textbook.
Flipped classroom model	Instruction is delivered outside the classroom through interactive, teacher-created videos and "homework" moves to the classroom.

REFLECT AND APPLY EXERCISE 10.1   Direct Teaching and Lecturing

REFLECT

- Reflect on the teaching methods used by your past teachers. Did they use lectures? Were the lectures effective? Why or why not?
- How viable is the flipped classroom for use at the elementary level? Middle school level? High school level?

APPLY

- What are some things you want to keep in mind when making lectures in your future classroom? How will you ensure you're meeting the needs of your students?
- How much time should be devoted to direct teaching and to indirect teaching at the grade level you expect to teach? Which mode of delivery do you favor? Why?
- What are some benefits and problems associated with the flipped classroom model at the grade level you expect to teach?

Exposition With Interaction Teaching

Exposition with interaction teaching is a method of teaching in which an authority presents information and follows it up with questioning that determines whether that information has been understood. Essentially, this method is a two-phase technique: First, information is disseminated by the teacher or through students' study of written material. Second, the teacher checks for comprehension by asking questions to assess student understanding of the material explained or studied.

The comprehension monitoring phase of this teaching technique requires that the teacher be knowledgeable and an effective questioner. Because questioning is so essential to the overall success of exposition with interaction, let's first analyze this important skill in some detail.

Video Link 10.2: Watch a video about the exposition with interaction method at www.sagepub.com/moore4e

The Art of Questioning

Proper questioning is a sophisticated art at which many of us are less than proficient even though we have asked thousands of questions in our lives. Research indicates that questioning is second only to lecturing in popularity as a teaching method. Teachers spend anywhere from 35% to 50% of their instructional time conducting questioning sessions. Teachers ask questions for a variety of purposes, including the following:

- To develop interest and motivate students
- To evaluate students' preparation and check on homework

Lectures need not be passive learning. They can be made stimulating.

- To develop critical thinking skills
- To review and summarize previous lessons
- To assess achievement of objectives

Questioning is an important part of the teaching-learning process because it enables teachers and students to establish what is already known, use and extend this knowledge, and then develop new ideas. It also provides a structure to examine ideas and information. Questioning is important to developing reflective and metacognitive thinking. It requires students to reflect on their understandings and can lead to changes and improvements in learning, thinking, and teaching.

Good questioners must be skilled in formulating good questions: Questions must be asked at the appropriate level, they must be of the appropriate type, and, above all, they must be worded properly. Moreover, the art of questioning requires mastery of techniques for follow-up to students' responses—or lack of response—to questioning. The kinds of questions asked, the way they are asked, and the responses given affect both the self-esteem of the students and their participation. Let's now look at the different levels at which questions may be asked.

Levels of Questions

Questions may be categorized as being "narrow" or "broad." Narrow questions usually ask for only factual recall or specific correct answers, whereas broad questions seldom can be answered with a single word. Moreover, broad questions do not have one correct answer and call on students to reach beyond simple memory. Broad questions prompt students to use the thinking process in formulating answers. Both narrow and broad questions contribute to the learning process. Too often, however, teachers rely too heavily on narrow questions when learning would be greatly enhanced through the use of both types of questions.

You must adapt the level of your questions to the purpose for which they are being asked. Consequently, ask questions that reveal whether students have gained specific knowledge, as well as questions that stimulate the thinking process. Because thinking can take place at several levels of sophistication, it is important that you as a teacher be able to classify—and ask—questions at these different levels.

Many effective classification systems have been developed for describing the levels of questions. Most of these systems are useful only to the extent that they can provide a framework for formulating questions at the desired level within a classroom environment. Consequently, some teachers may want to use only a two-level classification system, whereas others may want to use a more detailed system.

This discussion will focus on two systems that will be of most benefit to you as a classroom teacher. The first widely used system classifies questions as either *convergent* or *divergent;* the second categorizes questions according to the mental operation students use in answering them. These two classification systems are only two of the many systems to which you can refer in your classroom. When you prepare questions, however, evaluate them according to some classification system. By doing so, you will significantly improve the quality of your questions.

Convergent and Divergent Questions

One of the simplest and easiest ways of classifying questions is to determine whether they are convergent or divergent. **Convergent questions** allow for only a few right responses, whereas **divergent questions** allow for many correct responses.

Questions regarding concrete facts that have been learned and committed to memory are convergent. Most who, what, and where questions are also classified as convergent:

"What is 2 + 2?"

"Who was the 25th president of the United States?"

"What type of equation is $x^2 + 3x + 3 = 0$?"

"Where is Stratford-upon-Avon located?"

"What was the major cause of the Great Depression?"

"Mirror, mirror, on the wall, who's the most sensitive, open,
student-centered, and innovative teacher of all?"

SOURCE: Created by Ford Button.

Convergent questions may also require students to recall and integrate or analyze information for determining *one expected* correct answer. Thus, the following questions would also be classified as convergent:

"Based on our discussion, what is the major cause of water pollution?"

"If you combine the formulas for a triangle and a rectangle, what would be the formula for finding the area of a trapezoid?"

"Based on our definition of a noun, can you name three nouns?"

Most alternate-response questions, such as yes/no and true/false questions, would also be classified as convergent because the responses available to students are limited.

Conversely, questions calling for opinions, hypotheses, or evaluation are divergent in that many possible correct responses may be given:

"Why do you suppose we entered World War II?"

"What would be a good name for this painting?"

"Can you give me a sentence in which this word is used correctly?"

"Why is it important that we speak correctly?"

Divergent questions should be used frequently because they encourage broader responses and, therefore, are more likely to engage students in the learning process. They prompt students to think. Convergent questions, however, are equally important in that they deal with the background information needed in dealing with divergent questions. In the classroom, it is generally desirable to use convergent questions initially and then move toward divergent questions.

Mental Operation Questions

Based on the work of J. P. Guilford and Benjamin Bloom, Moore (2007) developed the Mental Operation system for classifying questions. Table 10.4 shows the relationship between the Mental Operation system, Guilford's Structure of the Intellect model, and Bloom's Taxonomy. The **Mental Operation system** is basically a four-category system that combines the cognitive and memory categories of the Guilford model into a single factual category. In addition, it combines four of Bloom's categories of higher order thinking into two categories (see Chapter 6). The categories of questions that make up the Mental Operation model are factual, empirical, productive, and evaluative.

Factual questions test the student's recall or recognition of information learned by rote. That is, they test the student's recall or recognition of information that has been committed to memory through some form of repetition or rehearsal. Some examples of factual questions are listed as follows:

"Who drilled the first oil well?"

"Joe, can you define the short story?"

"Which of these is the chemical formula for salt?"

"What is the formula for the volume of a cylinder?"

TABLE 10.4 Categories of Questions		
Mental Operation Questions	**Guilford's Structure of the Intellect**	**Bloom's Taxonomy**
1. Factual	Cognitive/memory	Knowledge/comprehension
2. Empirical	Convergent thinking	Application/analysis
3. Productive	Divergent thinking	Synthesis
4. Evaluative	Evaluative thinking	Evaluation

Empirical questions require that students integrate or analyze remembered or given information and supply a single, correct, *predictable* answer. Indeed, the question may call for quite a lot of thinking, but, once thought out, the answer is usually a single correct answer. Empirical questions are also narrow questions. Some examples of empirical questions include the following:

"Based on our study of California, what conditions led to its becoming a state?"

"Given that this circle has a radius of 5 centimeters, what is its area?"

"According to the information provided in the text, what is the most economical source of energy presently being used in the United States?"

"Which of these two forms of government is most like the British?"

Note that when answering these questions, students must recall learned information and carry out a mental activity with that information to arrive at the correct answer. There is, however, only one correct, predictable answer.

Productive questions do not have a single, correct answer, and it may be impossible to predict what the answer will be. Productive questions are open ended and call for students to use their imaginations and think creatively. These questions ask students to develop a unique idea. Although the broad nature of productive questions prompts students to go beyond the simple recall of remembered information, students still need the basic related information to answer them. Following are some examples of productive questions:

"How can we improve our understanding and use of English?"

"What changes would we see in society if we were to eliminate unemployment in the world?"

"What are some possible solutions to the problem of world hunger?"

"What do you suppose the painter's intent was in this painting?"

Finally, **evaluative questions** require that students put a value on something or make some kind of judgment. Evaluative questions are special cases of productive questions in that they, too, are often open-ended. However, they can be more difficult to answer than productive questions in that some internal or external criteria must be used; that is, some

criteria must be established for making the judgment. The responses to evaluative questions can often be predicted or limited by the number of choices. For example, the question "Which of these two short stories is the best?" limits the responses to two, whereas the question "What is the best automobile made today?" allows a variety of responses. Other examples of evaluative questions are as follows:

"Who was our greatest scientist?"

"How would you rate our success in controlling government spending in this nation?"

"Do you think the author of the play developed the characters sufficiently?"

"Are Native Americans portrayed accurately in the movies?"

These questions call on students to make judgments based on internal criteria. When student responses are formally evaluated and bear directly on grades, however, you must establish evaluative criteria. The alternative is to rely on students' internalized criteria, which you cannot evaluate, confirm, or refute. You can establish evaluative criteria for your evaluative questions by following them up with an empirical or a productive question that asks for the reasons behind the stated judgment or value or by making sure you develop and ask evaluative questions in a way that includes external criteria.

Use of the Mental Operation system of classifying questions (Table 10.5) should give you the needed framework for improving your questioning skill. You should be asking questions at all four levels of the system, instead of at the factual level only, as many

TABLE 10.5	Levels of Classroom Questions	
Category	**Type of Thinking**	**Examples**
Factual	Student simply recalls information.	"Define . . ."
		"Who was . . ."
		"What did the text say . . ."
Empirical	Student integrates and analyzes given or recalled information.	"Compare . . ."
		"Explain in your own words . . ."
		"Calculate the . . ."
Productive	Student thinks creatively and imaginatively and produces unique idea or response.	"What will life be like . . ."
		"What's a good name for . . ."
		"How could we . . ."
Evaluative	Student makes judgments or expresses values.	"Which painting is best?"
		"Why do you favor this . . ."
		"Who is the best . . ."

teachers do. To this end, you should plan and ask more productive and evaluative questions than is commonly done by teachers. These questions will give your students the opportunity to think and reason.

Types of Questions

As an effective teacher, you must ask the right types of questions. That is, you must adapt the type of question to the specific purpose for which you are asking the question. For example, you may want to ask questions to determine the level of your students' study, increase student involvement and interaction, increase clarification, or stimulate student awareness. These purposes call for different types of questions.

Focusing Questions

Focusing questions, which may be factual, empirical, productive, or evaluative, are used to direct student attention. Focusing questions can determine what has been learned by students, motivate and arouse student interest at the start of a lesson or during the lesson, stimulate involvement and check understanding during a lesson, and check students' understanding of lesson material at the close of a lesson.

Did students read the assigned chapter? No use discussing the material if it wasn't read! Did the students learn and understand the material assigned? Can students apply the information? Focusing questions can provide valuable information regarding these concerns. Ask factual questions to check on basic knowledge at the beginning of or during a lesson. Use empirical questions to have students figure out correct solutions for problems related to assignments or issues being discussed. Pose productive and evaluative questions for motivating and stimulating thinking and interest in the topic.

When opening a lesson or discussion with a question, it is good practice to use a productive or evaluative question that focuses on the upcoming topic. The question should be such that it arouses students' interest and thinking:

"What do you suppose would happen if I were to drop these two objects at the same time?"

"How could we test the hypothesis suggested by the results?"

"Should we do away with the income tax in the United States?"

These questions should then be followed with questions at all levels to develop understanding and to maintain interest.

Prompting Questions

What should you do when a student fails to answer a question? Most teachers answer the question themselves or move on to another student. This technique will get your question answered, but it fails to involve the original student in the discussion. Rather, it leaves that student with a sense of failure, which, more than likely, will result in even less participation in the future. A better way to address this problem is to use a prompting question as a follow-up to the unanswered question.

Questions can often give a lesson life and arouse student interest.

Prompting questions use clues that help students answer questions or correct initially inaccurate responses. Thus, a prompting question is usually a rewording of the original question—with clues added. Consider this example of a prompting questioning sequence:

Teacher: What is x^2 times x^3, Pat?

Pat: I don't know.

Teacher: Well, let's see if we can figure it out. What do we do with the exponents when we multiply variables?

Pat: Multiply?

Teacher: No.

Pat: Add!

Teacher: Right! So, if we add 2 + 3, what will our answer be?

Pat: [Pause] 5.

Teacher: So what would x^2 times x^3 be?

Pat: x^5.

Teacher: Very good, Pat.

Your use of prompting questions with students should lead to a sense of success when they finally answer correctly. Indeed, the successes could even act as **reinforcers** to students, which result in even greater participation.

Probing Questions

Up to this point, we have discussed focusing questions and prompting questions. The former can be used for determining the level of learning and understanding and for increasing student participation, whereas the latter can be used when no response to a question is forthcoming. Another situation with which a teacher must contend occurs when the student's response is either incorrect or correct yet insufficient because it lacks depth. In such cases, you should have the student correct the mistake or ask that he or she supply the additional needed information. This is accomplished through the use of probing questions.

Probing questions aim at correcting, improving, or expanding a student's initial response. They compel the student to think more thoroughly about the initial response. Probing questions can be used for correcting an initial response, eliciting clarification, developing critical awareness, or refocusing a response.

You may want to ask a probing question for the purpose of clarification. Students sometimes give flimsily thought-out answers or give only half-answers to questions. These responses should be followed up with probing questions that force the student to think more thoroughly and urge him or her to firm up the response. Such probing questions are as follows:

"What are you saying?"

"What do you mean by the terms . . . ?"

"Would you say that in another way?"

"Could you elaborate on those two points?"

"Can you explain that point more fully?"

You sometimes may want students to justify their answers; that is, you may want to foster their critical awareness. This also can be accomplished with probing questions. Probing questions that could be used to develop critical awareness are as follows:

"What is your factual basis for these beliefs?"

"Why do you believe that?"

"What are you assuming when you make that statement?"

"What are your reasons for those assumptions?"

"Are you sure there isn't more evidence to support that issue?"

Finally, you may want to probe to refocus a correct, satisfactory student response to a related issue. Examples of questions that could serve this function follow:

"Let's look at your answer with respect to this new information."

"Can you relate your answer to yesterday's discussion?"

"What implications does this conclusion have for. . . . ?"

"Apply these solutions to. . . ."

"Can you relate Mary's earlier answer to this issue?"

The different types of questions will be invaluable to you as a teaching tool. When used effectively, they can increase student participation and involve students in their own learning. You should practice these different questions and become proficient in their use.

Questioning Techniques

Certain techniques associated with asking questions tend to increase the quantity of and enhance the quality of the students' responses. Let's now look at four such techniques.

Redirecting

Redirecting is a technique that is useful for increasing the amount of student participation. It allows you to draw students into a discussion by asking them to respond to a question in light of a previous response from another student. Because this technique requires several correct responses to a single question, the question asked must be divergent, productive, or evaluative. The following is an example of how you might redirect a question:

Teacher: We have now studied the administrations of several presidents. Which president do you think made the greatest contribution? [Pause. Several hands go up.] Cindi?

Cindi: Lincoln.

Teacher: Jeff?

Jeff: Washington.

Teacher: Mary, what is your opinion?

Mary: Kennedy.

You should note that, if you are using redirecting correctly, you do not react to the student responses. You simply redirect the question to another student. Thus, it is hoped that this technique will lead to greater student participation and involvement and, consequently, to greater learning and increased interest.

The redirecting technique can also be used effectively with students who are nonvolunteers. You should try to involve these nonvolunteers as much as possible because, as noted earlier, participation enhances learning and stimulates interest.

It is important to remember, however, that nonvolunteers should never be forced to answer; rather, they should be given the opportunity to contribute to the discussion. In addition, you should give nonvolunteers ample time to consider a response. This time

needed for students in considering their responses to questions is referred to as **wait time**, introduced in Chapter 4. Let's now look at the appropriate use of wait time in questioning.

Wait Time

Students need time for thinking and pondering the responses they will give to your questions. Research by Rowe (1974a, 1974b, 1978), however, has shown that teachers wait, on average, only about 1 second for students to give an answer. Rowe's research also revealed that when teachers learned to increase wait time from 3 to 5 seconds, the following results occurred:

1. Student response time increased.
2. Failure to respond tended to decrease.
3. Students asked more questions.
4. Unsolicited responses tended to increase.
5. Student confidence increased.

Basically, there are two types of wait time. *Wait Time 1* is the time provided for the first student response to a question. *Wait Time 2* is the total time a teacher waits for all students to respond to the same question or for students to respond to each other's response to a question. Wait Time 2 may involve several minutes. If you are to engage students more in your lessons, you must learn to increase your wait time tolerance so students have more opportunities to think and to ponder their answers.

The typical pattern of questioning in the average classroom can be depicted as follows:

Teacher → Student A

Teacher → Student B

Teacher → Student C

This pattern represents nothing more than a question-and-answer period. The teacher asks a question of a student, the student answers, the teacher moves to the next student and asks a question, the student answers, the teacher moves to the next student, and so on. Students often receive little time for thinking and expressing themselves and usually no time for reacting to each other's comments. In fact, most of the questions are typically at the lower level. Appropriate use of questioning techniques, higher level questions, and wait time can and should change this sequence to that shown in Figure 10.1.
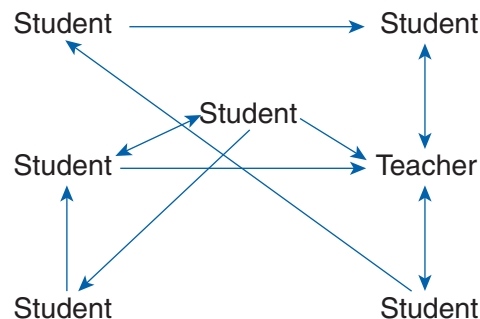

Figure 10.1
New Classroom Questioning Pattern

This pattern facilitates student discussion, welcomes extended responses, and provides opportunities for commenting on other students' questions and for asking questions. There is real involvement! Indeed, you will find that extending the time you wait after a question from 3 to 5 seconds—and giving students time to react to your questions and other students' responses—is well worth the added effort.

Halting Time

When presenting complex material, you need to learn to halt in what you are saying and give students time to think. This pause is referred to as **halting time**. No questions are asked, and no student comments are elicited. In using the halting time technique, you present some complex material or complicated directions and then stop momentarily so students have time to consider the information or carry out the directions. During this pause, you visually check with the class to see whether they are with you and understand what you are trying to communicate. If your observations are positive, you continue. If students appear to be confused, you may want to redo the explanation or directions.

Reinforcement

Once you have asked a question and have received an acceptable response, you must react to the response. Should you merely accept the response without comment and continue with the lesson, or should you offer praise for a job well done? Your reinforcement—that is, your pattern of positive reaction—will have a powerful effect on the direction of the interaction in the classroom.

Rewards and praise often encourage students to participate. Phrases such as "Fine answer," "Great," "What an outstanding idea," and "Super" may be used when rewarding students' correct answers.

Reinforcement is often a good idea, but the too-frequent application of reinforcement can negate the benefits of using wait time. If reinforcement is given too early in an answering sequence, other students may decide not to respond because they fear their answer could not match an earlier response. After all, didn't you say the earlier response was "great"? Rather than give reinforcement early in the questioning-answering sequence, you should allow as many students as possible to respond to the question, then reinforce all of them for their contributions. You can always return to the best answer for further comment.

Tips on Questioning

Asking good questions is an art. It is an art, however, that can be mastered with practice. The improper use of questioning can negatively affect learning. Teachers who strive for higher level questions, for example, may lose interest in the just as important bread-and-butter memory questions. They may even tend to cater to the capacities of superior students. Let's now look at some questioning tips that may prove helpful in avoiding questioning pitfalls.

Questions should be clear, and you should ask the question before designating who is to answer. Ask the question, wait for the class to think about it, and then specify an

individual to answer. As usual, there are exceptions to this rule. When you call on an inattentive student, it is often wise to designate the individual first, so that the student is sure to hear the question. Similarly, you should call the name first of slow or shy students so that they can prepare themselves.

Distribute your questions about the class fairly. Avoid directing all questions to a selective few bright students. Also avoid using a mechanical system for asking questions because students soon catch on to such systems—such as going by alphabetical order or row by row—and they will pay attention only when it is their turn.

Do not ask more than one question at a time. Asking too many questions at once often confuses students. Simultaneous questions permit no time to think, and when several questions are asked, students are not sure which question to answer first.

Do not ask too many questions. Often, you need to establish a knowledge base before initiating a questioning sequence. This is especially true when the questions require thinking and reasoning.

Ask questions at all ability levels in the class. Some questions should be easy, whereas others should be more difficult. Also, use questions to help students modify their inaccurate responses. Use prompting and probing questions to help students think more thoroughly about their responses. This approach will increase involvement, develop better thinking skills, and reinforce student successes.

Finally, listen carefully to student responses. Wait at least 3 seconds following a student response. This allows the student time for making further comments and gives other students time to react to the initial student's response.

The key to the effective use of exposition with interaction is good questioning. Therefore, you must refine your ability to think, plan, and ask questions throughout your lessons. Let's now look at some methods that contain many of the features of the exposition and exposition with interaction strategies.

Lecture Recitation

Lecture recitation is an instructional method in which the teacher presents information by telling and explaining and follows up with question-and-answer sessions at periodical intervals. Thus, questions are used for summarizing the content of the lecture and for helping students consolidate and organize the presented information.

The lecture recitation method is often efficient in terms of time, flexibility, and learning while actively involving students in the lesson. Its basic structure of teacher talk/ teacher question/student response/teacher talk makes questioning the key component to the method. Moreover, this method is highly adaptable to a large variety of topics and frequently is used as a companion to the lecture method or to the study of a textbook. Indeed, it is a form of recitation.

A hybrid form of the lecture recitation method, in which questions are interspersed throughout the lecture, has proven to be the most popular among classroom teachers. When proper lecturing is executed and when questions are strategically used, this method is an effective and efficient way of teaching content. That is, the questions can and should be designed to provide feedback on understanding, add variety to the

lecture, and maintain the students' attention. Moreover, questions from students can also help clarify the content and shed light on how well the lecture is being understood.

Textbook Recitation

The **textbook recitation** method is relatively simple: You assign students content to read and study in their textbook and then question them on what they have read and studied. Textbook recitation is an effective technique for teaching basic information simply because students are often motivated to read and study the assignment in anticipation of being called on to recite the information. However, this method does not foster true understanding and the application of the assigned content.

On the other hand, textbook recitation has the added advantages of giving students feedback on the accuracy of the content learned and of providing them with the opportunity to learn from the replies of fellow students. Indeed, these ends can be accomplished by planning higher level questions in advance, with an emphasis on questioning sequences that will develop thinking and reasoning skills.

This concludes our discussion of various direct teaching methods. Complete Reflect and Apply Exercise 10.2.

REFLECTIONS ON TEACHER PRACTICE 10.2   Motivating Students to Read

1. Why should reading be an important part of the curriculum in all subject areas?
2. How can students be motivated to read?

I go to the public library every three weeks and check out high interest picture books that center around whatever I am currently teaching, picture books that are nonfiction, for the most part, and appropriate for middle school students. Lots of DK books, Science Encyclopedias, all-in-one volumes, and Seymour books. They sit in a laundry basket at the front of my room as resources to read.

Here's my one tip that I have used and found wildly successful. Every once in a while, we do a science "read around day." On that day, I take those books from the basket and put them in the middle of the lab tables. When I say "go" they have to select a book and read until I say stop. Usually it's about 3–4 minutes. Then they send their book to the next person. This continues until all four people have read the books at that table.

They don't have to start at the beginning; they can just look at pictures, or use the index to find something that interests them. From here each table interviews each person on what they learned, or what they liked.

From here we switch that pile of books with another table and continue with the process.

They love it, and they hate it. They want to read more of at least one book and they can't because it has rotated around. Well, let me tell you, books fly out of the basket in extra time before class, or if they finish early. The afterglow only lasts a couple of days, but it works. And sometimes, oh how I love those sometimes, someone will ask to have a library pass so they can go see if that book is in our library or if the media specialist can help them interlibrary loan it.

That's what I've tried in science. Now math, well, that's another story. I'm still working on it—mostly working to find read-alouds beyond the standards.

—*Marsha, middle-level teacher*

Please visit the student study site at www.sagepub.com/moore4e for additional discussion questions and assignments.

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REFLECT

- Why is questioning an art?
- Are you a good questioner? How can you improve your skills?
- What are the strengths and weaknesses of the exposition with interaction instructional approach?
- Should teachers use a question classification system? Why?

APPLY

- What question classification system do you plan to use at the grade level you expect to teach? Why?
- Describe the different types of questions that will be most useful for you at the grade level you expect to teach.

CLASSROOM DECISION MAKING

JAMES

James believed his lectures were well planned. But once again it was only 9:15 and today's lecture wasn't going that well. Students simply didn't seem interested in his lecture on the three branches of government. They appeared bored with the whole idea! Some were more interested in the frustrated fly buzzing around the closed window trying to find a way to escape. They probably wished they could escape. Others were doodling in their spiral note-books hoping he thought they were taking notes. Still others were passing notes or talking when they thought he wasn't looking in their direction. At 9:50, the bell finally rang to end another boring day for students.

1. Why was James having such difficulty holding student attention and interest?

2. How can James improve his lecture? Please give a specific example.

3. Would questions and a student response system increase student engagement? Why or why not?

SUMMARY

This chapter focused on direct teaching methods. The main points associated with specific objectives were as follows:

Learning Objective 1: Identify factors that should be considered in selecting teaching techniques and strategies.

- Factors that should be considered in selecting teaching techniques and strategies include students' needs, age of students, students' intellectual abilities, students' physical and mental characteristics, students' attention spans, the lesson purpose, and the content to be taught.

Learning Objective 2: Define and discuss the strengths and weaknesses of the direct teaching and exposition teaching approaches.

- Direct teaching is a teacher-centered skill-building model.
- Exposition teaching offers an effective way to convey a great deal of information in a short period of time.
- Educators are experimenting with the idea of a flipped classroom model. Under this model, instruction is delivered outside the classroom and homework is completed in the classroom.
- Exposition teaching is passive learning.
- Exposition teaching can be boring to students.
- Exposition with interaction teaching is often more effective than exposition teaching.
- The key to exposition with interaction teaching is questioning. Asking good questions is an art that is essential to the lecture recitation and textbook recitation methods.

Learning Objective 3: Describe ways to improve lectures and teacher presentations through effective questioning.

- Lectures and teacher presentation can be improved by following up with questions over the presented material.

Learning Objective 4: Identify and differentiate between the different categories of questions, as well as the levels within these categories.

- The recall of information requires the use of narrow questions (convergent), whereas the desire to stimulate thinking and reasoning calls for the use of broad questions (divergent).
- The Mental Operation question system categorizes questions as factual, empirical, productive, or evaluative.

Learning Objective 5: Compare and contrast focusing, prompting, and probing questions.

- Focusing, prompting, and probing questions can be used to arouse interest and increase involvement.

Learning Objective 6: Define and explain the benefits derived from the use of the redirecting technique, wait time, and halting time.

- Redirecting questions, using wait time and halting time, and using reinforcement can enhance questioning skills.

DISCUSSION QUESTIONS AND ACTIVITIES

1. **Direct instruction.** What aspects of direct instruction might explain its success?
2. **Strategy selection.** You have been assigned a new class to teach. This class consists largely of slow learners. The class is restless, not interested, and hard to manage. What teaching strategies and methods would be best to use with this class if it were the following? Give a valid rationale for your selection.

a. A third-grade class

b. A sixth-grade middle school class

c. A tenth-grade social studies class

3. **The lecture method.** When would it be appropriate to use the lecture method? Consider objectives and purpose. How would one plan an effective lecture? Consider motivation, length, aids, clarity, and interest. How could you tell whether a lecture has been successful?

4. **Preparing questions.** Prepare examples for each level within the following question categories.

a. Convergent and divergent

b. Mental Operation system

5. **Textbook questions.** Obtain the teacher's edition of a textbook for a subject you expect to teach. Analyze the questions contained in the text. What levels and types of questions are most frequently suggested?

TECHNOLOGY CONNECTION

Teachers should always be looking for ways to make teaching strategies more motivating and student centered. Complete the following two application activities to help you identify ways technology can be used to enhance direct instructional methods.

- Find a lesson plan that incorporates one or more of the direct instruction models found in this chapter. Identify the model. How could a teacher use technology to enhance the lesson? You might want to access the following websites for ideas: www.teachnology.com, www.readwritethink.org/, or www.eduref.org/Virtual/Lessons/index.shtml. Form groups of four or five to share ideas. Use PowerPoint and SMART Board technology to share your group's findings with the class.

- Access www.adprima.com and www.adprima.com/direct.htm. The first address has general information for teachers; the second address has information and links about direct instruction. Identify ideas and resources that will improve direct instruction at the grade level you expect to teach. Form groups of four or five to share ideas. Use PowerPoint and SMART Board technology to share your group's findings with the class.

CONNECTION WITH THE FIELD

1. **Questioning in the classroom.** Attend a class in a public school or college classroom. Keep a tally of the levels of questions, as well as types of questions, used by the instructor. Did you see any patterns? What other questioning techniques did you observe? Were they successful? Why or why not?

2. **Teaching.** Prepare and teach a minilesson using a direct methods approach. Use the miniteaching guidelines and forms in Appendix B to plan and analyze your minilesson.

3. **Teaching analysis.** Make a videotape of your miniteaching lesson, and then critically analyze it with your peers.