Models of Teaching and Developing as a Teacher
Chapter 1

This is a book about different approaches to teaching. It is widely believed that teachers who vary their instruction possess more professional expertise and produce more learning in their students than do teachers who use the same approach to meet all their learning goals. Research confirms this belief (Good & Brophy, 2008), and professional organizations endorse the need for instructional alternatives (Interstate New Teacher Assessment and Support Consortium, 2009; National Board for Professional Teaching Standards, 2006).

To illustrate different approaches to instruction, let’s briefly examine four teachers working in different content areas and at different grade levels.

Bob Duchene, a high school American history teacher, has drawn a map of Southeast Asia on the board and has also written an outline that represents some of the key elements involved in the Vietnam War. He wants his students to know factual information about events leading up to the war and also wants the students to understand how these events triggered the war itself.

Bob then presents information about the world at the time, such as the fear of communism in our country, and the domino theory, which suggested that if Vietnam became communist, then other countries in Southeast Asia, such as Cambodia, Thailand, Malaysia, and even India, might fall into the same ideology. This fear led to the United States making a commitment in Vietnam that became very controversial and eventually led to its defeat.
Judy Holmquist, a ninth-grade geography teacher, wants her students to understand how the geography of an area influences its economy.

She has her students use the Internet and other resources to gather information about the geography and the economies of four states—Alaska, California, New York, and Florida—and they record the information on a large chart that she displays in the front of the room.

After the information has been gathered and displayed, she has the students work in pairs to identify similarities and differences in the geography and economies of the four states and then make general statements about the relationship between the two. Finally, she has the students use the generalizations to make conclusions about the economies of two additional U.S. states.

Richard Nelms, a seventh-grade life science teacher, wants his students to understand the characteristics of flatworms, segmented worms, and roundworms. He draws examples of the worms on the board and then explains that some flatworms are free-living, such as planarians, which have the amazing ability to regenerate lost body parts; and others are parasitic, such as tapeworms. He has one of his students hold the end of a piece of string and then measures out portions a meter at a time until the students around the room are holding portions of a thirty-meter length of string. He points out that a tapeworm this long can live in the digestive tract of a human being.

He then holds up an earthworm about four inches long as an example of a segmented worm and explains that it needs to be quickly placed in moist soil or it will perish. He notes that there are more than 1,500 species of earthworms, ranging in length from less than a millimeter to more than twenty feet.

He continues by explaining that roundworms taper at both ends and that although most are free-living, some are parasitic, such as pinworms and heartworms.

Laura Hunter, a fifth-grade teacher, wants her students to develop strategies for finding the area of irregularly shaped figures. She presents them with a schematic that they can use to guide their thinking as they attempt to find the area of the carpeted portion of their classroom, which has an irregular shape, as you see in the sketch here.
The students first measure the dimensions of their room, as well as portions that do not have carpet below them, such as the sink, counter, and bench areas around the perimeter. They then calculate the total area of the room and subtract the areas not covered by carpet.

As the four examples show, the teachers had different learning goals, so their approaches also differed. Bob used what amounted to essentially a lecture, whereas Judy’s approach was almost the opposite. Richard’s approach fell somewhere in between, and Laura focused more on process—problem solving strategies than on specific forms of content.

We will return to our teachers as this initial chapter unfolds, but before we do, let’s see what research indicates about teachers’ impact on student learning.

**Teachers Make a Difference**

Next to the influence of the family, good teaching is the most important factor in student learning. It’s more important than curriculum, technology, classroom organization, peers, financing, school and class size, and school principals (Hattie, 2003). In fact, good teaching is so compelling that *Newsweek* magazine’s feature article for March 15, 2010, focused on the need for good teachers (Thomas & Wingert, 2010), and the *New York Times* magazine included a lengthy article titled *Building a Better Teacher* in its March 7, 2010, issue (Green, 2010).

A large and consistent body of research underscores this contention (Good & Brophy, 2008; Kukla-Acevedo, 2009; Song & Felch, 2009). Research using sophisticated statistical techniques indicates that teaching expertise accounts for about 30 percent of the variance in student achievement (Hattie, 2003). This figure is impressive, considering that the only factor ranking higher is students themselves—that is, their ability, motivation, and home environment.

This evidence runs counter to the trend toward devising so-called idiot-proof solutions to teaching and learning, in which attempts have been made to restrain teachers based on the assumption that they lack the expertise to make sound educational decisions. The result has been tight curriculum specifications and, in some cases, even scripts of the teaching act, all designed to help students perform well on high-stakes tests.

Research has also identified important differences between teaching expertise and teaching experience per se, and it raises questions about the value of experience. It suggests that teachers show rapid improvement during their first five years of teaching and then tend to level off. Teachers with twenty years of experience are often no more effective than peers with only five years in the classroom (Song & Felch, 2009).

Compared to teachers who are merely experienced, expert teachers are more knowledgeable. They have a deep understanding of the content they teach, they are able to organize and represent this content in ways that are understandable to students, and they have a repertoire of teaching strategies that they can use to help students meet different learning goals.

Helping you expand your repertoire of teaching strategies, so important for teaching expertise, is what this book is about. We turn to this topic next.
The Need for Instructional Alternatives

As you saw in the vignettes that introduced the chapter, each teacher had different learning goals, and they attempted to help their students reach these goals in different ways. Bob Duchene, for example, wanted his students to understand historical information about the Vietnam War, and he used an expository approach to instruction. Judy Holmquist’s approach was much more student-centered. Her learning goals were different from Bob’s, so she chose a different instructional strategy.

The situation was similar with Richard Nelms and Laura Hunter. Richard wanted his students to learn about types of worms, and he explained their characteristics to his students. Laura’s goals were very different. She adopted a problem-based learning approach because she wanted her students to develop their abilities to set up and solve a complex problem. Different approaches to teaching are needed to reach these different goals. We turn to this topic next.

Strategies and Models for Teachers

The terms strategies, instructional strategies, instructional approaches, and instructional models are sometimes used synonymously. We will be more precise in our definitions in this book and will focus on the concepts strategies and models. Let’s look at them.

Strategies for Teachers

Strategies are general approaches to instruction that apply in a variety of content areas and are used to meet a range of learning objectives. For example, the ability to engage students is essential if they are to learn as much as possible. Questioning is arguably the most effective way for teachers to engage students, and teachers use questioning regardless of the teaching model they employ. Questioning is a teaching strategy. As another example, reviewing a previously discussed topic before beginning a lesson is also important, regardless of the teaching model being used, as is providing students with feedback about homework items, quizzes, and tests. Review and feedback are both teaching strategies.

These strategies are general and apply to all grade levels, content areas, and topics. For example, first-grade teachers use questioning as a strategy to guide their students’ understanding of the sounds of letter blends, and high school teachers use questioning to guide their students’ understanding of topics ranging from chemical equations to the characters in Hawthorne’s The Scarlet Letter. (We examine general teaching strategies in detail in Chapter 3.)

Models of Teaching

By comparison, teaching models are specific approaches to instruction that have three characteristics:

- **Goals:** They are designed to help students develop critical-thinking abilities and acquire deep understanding of specific forms of content.

- **Phases:** They include a series of steps—often referred to as “phases” —that are intended to help students reach specific learning goals.

- **Foundations:** They are supported by theory and research on learning and motivation.

These characteristics are outlined in Figure 1.1.
Figure 1.1
Characteristics of Teaching Models

Goals: Models promote deep understanding of content and critical thinking.

Phases: Models follow a series of prescribed steps.

Foundations: Models are supported by theory and research.

Teaching strategies are incorporated within each of the models. For instance, questioning is essential for the success of all the models in this book, as are careful lesson organization, feedback, and other strategies.

To examine teaching models more closely, we can compare the role of a teacher using a model to that of an engineer. In considering a project, an engineer first identifies the type of structure to be built, such as a bridge, building, or road. Having selected a project, an appropriate design or blueprint is chosen. The specifications of the blueprint determine the actions the engineer will take and the kind of structure that will result. Similarly, when you use a models approach to instruction, you first identify learning goals, and you then select the model that will best help you reach those goals. The model then guides your actions. For example, Bob Duchene’s goal was for his students to understand information about the Vietnam War. When a goal is for students to get information from a variety of sources, and the information would be difficult to get in another way, lectures can be useful. On the other hand, Judy Holquist’s goal was for students to identify patterns and try to establish cause-and-effect relationships, so she chose a different model. (Judy’s full lesson is used to illustrate our discussion of the Integrative Model in Chapter 7.) The same is true for Richard Nelms and Laura Hunter. (Laura’s full lesson is used to illustrate our discussion of the Problem-Based Learning Model in Chapter 8.) These teachers selected models that would best help them reach their learning goals for the students.

So, using this analogy, an instructional model is a type of blueprint for teaching. Just as a blueprint provides structure and direction for the engineer, the model provides structure and direction for the teacher. However, a blueprint does not dictate all of the actions of an engineer, and a model cannot dictate all of the actions taken by a teacher. A blueprint is not a substitute for basic engineering skills, and a teaching model is not a substitute for basic teaching skills. It cannot take the place of qualities that expert teachers must have, such as professional knowledge, sensitivity to students, and the ability to make decisions in ill-defined situations. The model is instead a tool designed to help teachers make their instruction systematic and efficient.

Models provide enough flexibility to allow teachers to use their own creativity, just as engineers use creativity in the act of construction. As with a blueprint, an instructional model is a design for teaching within which teachers use all of the skills and insights at their command.

The number of possible learning objectives is so large and diverse that it is impossible to discuss them all in depth in one book. All of the models discussed in this text are based on cognitive learning theory, and they are designed to reach cognitive objectives. (We discuss principles of cognitive learning theory in Chapter 2.) Let’s examine this cognitive dimension of learning.
Models of Teaching and Developing as a Teacher

Cognitive Learning Goals

When we use the term \textit{cognitive}, we are referring to thinking in its various forms. This thinking can be as simple as remembering a phone number, or as complex as solving sophisticated problems in any field. The term \textit{cognitive domain} is the learning domain that focuses on knowledge and intellectual skills. Other domains exist, however, and they are important in the overall learning process.

Domains of Learning

In comparison with the cognitive domain, the \textit{affective domain} deals with attitudes, motivation, willingness to participate, valuing what is being learned, and ultimately incorporating those values into daily living. The affective domain is essential for learning but is often not specifically addressed in the school curriculum. For example, we want students to willingly show up to class, do their homework, and hopefully take the next more advanced course in the content area, such as choosing to take algebra II after completing algebra I and geometry. Students’ motivation is essential if they are going to achieve as much as possible, and much of the affective domain can be distilled down and discussed with the concept of \textit{motivation to learn}.

The \textit{psychomotor domain} focuses on performing motor activities to a specified level of accuracy, smoothness, speed, or force. In schools we see psychomotor learning in areas such as lab courses in science, vocational courses, physical education, aspects of using technology, and the performing arts. The psychomotor domain is paramount in sports, such as football, basketball, soccer.

The \textit{interpersonal domain} focuses on social skills and people’s ability to interact effectively with others. Abilities such as asking for and receiving information, elaborating on others’ ideas, considering others’ perspectives (perspective taking), and disagreeing without being disagreeable are all abilities that reside in this domain.

The cognitive domain is the core learning domain in schools, and at least some cognitive component exists in the other three. For instance, the more learners understand about a topic or a content area (a cognitive outcome), the greater the learners’ interest in the topic tends to become (an affective result) (Schunk, Pintrich, & Meece, 2008). Because student motivation is so essential for learning, we include a discussion of motivation in each of the chapters that focus on specific models.

Similarly, before learners can perform a psychomotor skill, such as making a jump shot in basketball, they must understand the skill. For example, to make a jump shot effectively, they should understand its characteristics, such as pointing their elbows forward, laying their wrists back, and keeping the ball on their fingertips. Admittedly, some professional basketball players perform quite well with ugly jump shots, but they might be more effective if they had developed an understanding of the skill (a cognitive component) before developing bad habits. The models in this book can be used to help students develop the knowledge that supports objectives in the psychomotor domain. Similarly, social skills, such as perspective taking, include a cognitive component, and students who are able to interact effectively with others learn more than their less able peers. Because social interaction between the teacher and students and students with each other is so important, each of the models in this text strongly emphasizes this process.

Because cognitive learning outcomes are emphasized in schools, and standards emphasize these outcomes, the focus in this book is on the cognitive domain. Yet as we examine and illustrate the models, we keep in mind that goals in the other domains, such as learner motivation and social interaction, are essential, and they are themes that exist in all the models.

Let’s turn now to a more detailed examination of cognitive objectives.
Levels of Cognitive Goals  Not all cognitive goals are alike. For example, remembering a phone number and solving a complex problem are both cognitive activities, but they are very different in terms of the thinking required. To help teachers better understand differences in thinking, Benjamin Bloom, in 1956, led a group of educational psychologists who developed a system to classify levels of intellectual behavior that is important for learning (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956). The result was the famous “Bloom’s taxonomy,” which has been prominent in education ever since. The taxonomy classifies thinking into six levels:

- **Knowledge**: Knowing facts and definitions, such as knowing the capitals of the states.
- **Comprehension**: Understanding meaning and interpretation, such as being able to identify examples of similes and metaphors in a written passage.
- **Application**: Applying understanding acquired in one context to a unique context, such as solving a unique word problem in math.
- **Analysis**: Separating ideas into component parts to understand their structure, such as recognizing logical fallacies in reasoning.
- **Synthesis**: Building a structure or pattern from a variety of elements, such as constructing an original persuasive essay.
- **Evaluation**: Assessing the value of ideas or materials, such as selecting the most efficient strategy for solving a problem.

You are probably familiar with Bloom’s taxonomy, since it has been widely used in education for more than a half century. One of its most important contributions is to remind us that our learning goals should require students to think at levels higher than knowledge as often as possible. A long history of research consistently indicates that the overwhelming majority of test questions students encounter require them to think only at this lowest level (Miller, Linn, & Gronlund, 2009).

We understand much more about learning and teaching than we did in the middle of the twentieth century, when the original taxonomy was created, and cognitive learning theory is now a prominent influence in education. To reflect this influence, researchers have revised the original 1956 taxonomy (Anderson & Krathwohl, 2001). This revision exists in the form of a matrix with twenty-four cells that represent the intersection of four types of knowledge with six cognitive processes, which can then be used to classify learning goals and assessments. The matrix appears in Table 1.1.

<table>
<thead>
<tr>
<th>The Knowledge Dimension</th>
<th>The Cognitive Process Dimension</th>
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<tbody>
<tr>
<td>A. Factual knowledge</td>
<td>1. Remember</td>
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<tr>
<td>B. Conceptual knowledge</td>
<td>2. Understand</td>
</tr>
<tr>
<td>C. Procedural knowledge</td>
<td>3. Apply</td>
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<td>D. Metacognitive knowledge</td>
<td>4. Analyze</td>
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<td></td>
<td>5. Evaluate</td>
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<td></td>
<td>6. Create</td>
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Table 1.1 A Taxonomy for Learning, Teaching, and Assessing

From Lorin W. Anderson & David R. Krathwohl A Taxonomy For Learning, Teaching, and Assessing Published by Allyn and Bacon, Boston, MA. Copyright © 2001 by Pearson Education. Reprinted by permission of the publisher.
Models of Teaching and Developing as a Teacher

To see how the taxonomy works, let’s look again at the teachers at the beginning of the chapter. All of them had specific cognitive goals for their students. For example:

- Bob Duchene wanted his students to know factual information about events leading up to the Vietnam War, and he also wanted his students to understand how these events triggered the war itself.
- Judy Holmquist’s goal was for her students to apply an understanding of the relationship between geography and economy to the economies of different U.S. states.
- Richard Nelms wanted his students to understand the characteristics of roundworms, flatworms, and segmented worms.
- Laura Hunter’s goal was for her students to use a schematic to develop a strategy for finding the area of the carpeted portion of their classroom.

Now let’s see how these goals can be classified using the taxonomy. Bob’s first goal would be classified into the cell where factual knowledge intersects with remember, since he wanted his students to know factual events leading up to the war. Understanding how the events triggered the war is a more advanced form of thinking, and this goal would be classified into the cell where factual knowledge intersects with analyze. Being able to combine different facts to see how they contributed to the war requires a sophisticated form of analysis.

Judy wanted her students to be able to apply the relationship between economy and geography to the economies of different states. Since economy and geography are both concepts, Judy’s goal would be classified into the cell where conceptual knowledge intersects with apply.

Roundworms, flatworms, and segmented worms are also concepts, so Richard’s goal would be classified into the cell where conceptual knowledge intersects with understand, since he wanted his students to understand the characteristics of each type of worm.

Finally, Laura wanted her students to develop a strategy for finding the carpeted area of their classroom, a sophisticated goal for fifth-graders. Since designing a strategy to solve a problem involves a procedure, her goal would be classified into the cell where procedural knowledge intersects with create.

More important than the actual classification of each learning goal is the fact that all of the goals except Bob’s first one involved more than remembering factual knowledge. The models in this book are all designed to promote thinking beyond what would be classified into this most basic level of learning.

It goes without saying that learning and teaching do not exist in isolation, nor do they apply in the abstract. Rather, they are embedded in the context of today’s world. Let’s take a look at this world.

**Learning and Teaching in Today’s World**

Teaching and learning in today’s world are changing dramatically. Among the most common changes are:

- The influence of standards and accountability in teaching and learning
- The increasing diversity of our students
- The impact of technology

We examine these influences in the sections that follow.
Standards and the Need for Instructional Alternatives

If you’re a practicing teacher, **standards**, statements that describe what students should know or be able to do at the end of a period of study (McCombs, 2005), are integral to your professional vocabulary. The influence of standards has evolved over several years as a result of concerns about American students’ lack of knowledge and skills. For instance, one survey found that more than half of high school students identified Germany, Japan, or Italy, instead of the Soviet Union, as America’s World War II ally; another indicated that two-thirds of high school seniors couldn’t explain an old photo of a sign over a theater door reading COLORED ENTRANCE (Bauerlein, 2008). In addition, a survey of eighteen-to-twenty-four-year-olds revealed that six of ten respondents couldn’t find Iraq on a map of the Middle East (Manzo, 2006). Similar concerns have been raised in math and science, where international comparisons indicate that American students lag behind their counterparts in other countries (Gonzales et al., 2004; Lemke et al., 2004). All of these findings led to the standards movement in education.

The Standards Movement in Education Standards have been influencing teaching in the United States for more than twenty years, and their history provides us with insights into standards’ strengths and weaknesses. The standards movement is commonly traced to the publication of *A Nation at Risk: The Imperative for Educational Reform*, published by the National Commission on Excellence in Education (1983). This document famously stated:

> If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war. As it stands, we have allowed this to happen to ourselves. We have even squandered the gains in student achievement made in the wake of the Sputnik challenge. Moreover, we have dismantled essential support systems which helped make those gains possible. We have, in effect, been committing an act of unthinking, unilateral educational disarmament. (National Commission on Excellence in Education, 1983, p. 9)

This report came at a time when other countries, such as Germany and Japan, were outcompeting us both industrially and educationally, and it struck a chord with U.S. leaders; if we were to compete internationally, we had to have better schools.

Since 1983, a number of reform efforts have been passed in an attempt to address the concerns initially raised by *A Nation at Risk*. The signing into law of a revision of the federal Elementary and Secondary Education Act (ESEA) by the George W. Bush administration in 2001 was one of the most significant. Renamed the No Child Left Behind (NCLB) Act, the law asked America’s schools to describe their success in terms of the extent to which students could meet specified standards. No Child Left Behind has been controversial, but it, and the standards movement in general, has left a lasting legacy. Whether or not we agree with the idea of standards, they’re here to stay. Since 2000–2001, every state in the nation has developed standards in different content areas, and the Obama administration showed no inclination to reduce the emphasis on standards.

Standards in Today’s Schools In today’s schools, standards have been written for content areas ranging from traditional topics, such as reading, writing, math, and science, to others less prominent, such as:

- Physical education
- Fine arts
Models of Teaching and Developing as a Teacher

- Economics
- Agricultural science
- Business education
- Technology applications
- Trade and industrial education
- Spanish language arts and English as a second language

Even this list is not exhaustive.

Many professional organizations, such as the National Council of Teachers of Mathematics (National Council of Teachers of Mathematics, 2008), the National Council of Teachers of English (International Reading Association & National Council of Teachers of English, 2008), and others that focus on science, social studies, early childhood education, special education, the arts, health education, and bilingual education also have produced standards. Most of the state standards are grounded in the standards prepared by these organizations. Let’s look at some descriptions and examples of state standards.

Standards in different states are labeled in different ways, such as “Essential Knowledge and Skills” (Texas Education Agency, 2008a), “Learning Standards” (Illinois State Board of Education, 2008a), “Content Standards” (California State Board of Education, 2008), or “Sunshine State Standards” (Florida Department of Education, 2007). Regardless of the labels, each state’s standards describe what students should know or be able to do.

Since space doesn’t allow us to list examples from every state, we’re going to present representative samples for the sake of illustration. You can easily access your own state’s standards by clicking on the following link: http://www.education-world.com/standards/state/index.shtml. Then click on the pull-down menu and select your state.

How do standards from different states look? The following is an example for fourth-grade math from the state of Texas:

(4.2) Number, operation, and quantitative reasoning. The student describes and compares fractional parts of whole objects or sets of objects
The student is expected to:
(A) use concrete objects and pictorial models to generate equivalent fractions. (Texas Education Agency, 2008b)

The number (4.2) identifies this as the second standard in the list of fourth-grade standards in math, and the letter (A) represents the first in a list of student expectations. Different states code their standards in varying ways, but all are designed to describe learning and assessment targets for teachers and students.

As another example, the following standard is from the state of Illinois for middle school science:

Illinois Science Assessment Framework
Standard 12F - Astronomy (Grade 7)
12.7.91 Understanding that objects in the solar system are for the most part in regular and predictable motion. Know that those motions explain such phenomena as the day, the year, the phases of the moon, and eclipses. (Illinois State Board of Education, 2008b)

Though the Illinois standard is coded differently from the Texas example, both describe what students should know or be able to do.
As a third example, look at the following selection from the state of Florida:

The student understands the common features of a variety of literary forms. (LA.E.1.4)

1. identifies the characteristics that distinguish literary forms.
2. understands why certain literary works are considered classics.

(Florida Department of Education, 2009)

So, why are we including a discussion of standards in this chapter? Two reasons. First, as you likely already know, you are expected to help your students reach these standards, and they and you will be held accountable for reaching them through the process of high-stakes testing. Second, and more importantly for our discussion here, you won't use the same approach to instruction to help your students meet each standard. This need for adjustment is consistent with the heading of this section, “Standards and the Need for Instructional Alternatives.” For example, the fourth-grade standard from Texas says, “The student describes and compares fractional parts of whole objects or sets of objects” and is expected to “use concrete objects and pictorial models to generate equivalent fractions.” You could simply explain the concept of equivalent fractions to students and show them how to generate equivalent fractions such as you see here.

$$\frac{\frac{3}{4}}{\frac{3}{12}} = \frac{3}{12}$$

This process demonstrates that 1/4th is equal to 3/12th.

As an alternative, you could show them the drawings you see below. Here the students can see that the area that is 1/4th of the top drawing is identical to the area that is 3/12th of the bottom drawing. This simple representation shows that 1/4th and 3/12th are equivalent and makes the concept of equivalent fractions much easier to understand. The second approach is more meaningful for students and more consistent with the wording of the standard.

On the other hand, understanding “such phenomena as the day, the year, the phases of the moon, and eclipses,” as prescribed in the Illinois standard, requires a different strategy. Showing students pictorial representations of the day or year, for example, would not be the most effective approach. A more effective strategy would be to actually demonstrate these phenomena with a flashlight and models of the Earth and Moon. And understanding “why certain literary works are considered classics” suggests that still another approach would be most effective. For example, having students read and discuss different literary classics would probably be the best approach. As the discussions evolve, and with guidance from the teacher, students would gradually understand why these works are considered classics.

Professional organizations have also weighed in on the need for instructional alternatives. Let’s take a look.
Professional Organizations’ Standards: Teacher Knowledge and Teacher Abilities

About the middle of the twentieth century, views of learning experienced a major shift, away from an emphasis on specific, observable behaviors and toward internal, mental processes. This shift, commonly described as the “cognitive revolution,” has resulted in a greater emphasis on teachers’ knowledge and thinking in the process of developing professional expertise (Royer, 2005; Sawyer, 2006).

Research in a variety of fields confirms the importance of knowledge in the development of expert performance (Bruning, Schraw, Norby, & Ronning, 2004), and this is true for teaching as well. “The accumulation of richly structured and accessible bodies of knowledge allows individuals to engage in expert thinking and action. In studies of teaching, this understanding of expertise has led researchers to devote increased attention to teachers’ knowledge and its organization” (Borko & Putnam, 1996, p. 674).

This need for knowledge is reflected in standards prescribed by important professional organizations. We look at three of them in the sections that follow. The first two, the Model Core Teaching Standards, and the National Board for Professional Teaching Standards, are designed for teachers, and the third, the Common Core State Standards Initiative is aimed at students.

The Model Core Teaching Standards

In response to the increased emphasis on professional knowledge in teaching, the Council of Chief State School Officers (CCSSO), a nonpartisan, nonprofit organization of officials who lead public schools in the states, District of Columbia, the Department of Defense, and American territories have created the Model Core Teaching Standards, essential knowledge, performances, and dispositions that veteran teachers should possess to ensure that all students learn. (Council of Chief State School Officers, 2010). The standards are “…an initial effort to articulate, through the lens of the teacher, what effective teaching and learning should look like” (CCSSO, 2010, p. 4).

The standards are grouped into four general categories:

- **The learner and learning.** Teachers must understand students, their differences, and how they learn.
- **Content.** Teachers must have a deep understanding of the content they teach and how to make that content understandable to students.
- **Instructional Practice.** Teachers must understand and integrate planning, instructional practice, and assessment to promote learning for all students.
- **Professional Responsibility.** Teachers must regularly examine their own work through self-reflection and collaboration with colleagues.

The 10 standards are classified within the four categories. They are outlined in Table 1.2.

The National Board for Professional Teaching Standards

The National Board for Professional Teaching Standards (NBPTS) is a professional organization that sets voluntary standards designed to recognize experienced teachers who possess extensive professional knowledge. As with INTASC, the NBPTS was created in 1987 and is composed primarily of K–12 teachers but also includes union and business leaders and university faculty (NBPTS, 2006). The NBPTS seeks to strengthen teaching as a profession and raise the quality of education by recognizing the contributions of exemplary teachers through national board certification, compensating them financially, giving them increased responsibility, and increasing their role in decision making.
National board certification is based on standards that grew out of the board’s policy statement *What Teachers Should Know and Be Able to Do* (NBPTS, 2002). The NBPTS summarized the professional standards contained in this report into five core propositions about professional teacher competencies. These propositions and how they play out in practice are outlined in Table 1.3 (National Board for Professional Teaching Standards, 2008).

The need for teachers who possess extensive professional knowledge and a repertoire of teaching strategies is illustrated in both the INTASC standards and the NBPTS propositions. For example, INTASC Standard 4 states, “The teacher understands and uses a variety of instructional strategies to encourage student development of critical thinking, problem solving, and performance skills.” Also, NBPTS Proposition 2 says, “NBCTs [national board-certified
<table>
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<th>Proposition</th>
<th>Description</th>
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| 1 Teachers are committed to students and their learning. | - NBCTs are dedicated to making knowledge accessible to all students. They believe all students can learn.  
- They treat students equitably. They recognize the individual differences that distinguish their students from one another and they take account for these differences in their practice.  
- NBCTs understand how students develop and learn.  
- They respect the cultural and family differences students bring to their classroom.  
- They are concerned with their students’ self-concept, their motivation and the effects of learning on peer relationships.  
- NBCTs are also concerned with the development of character and civic responsibility. |
| 2 Teachers know the subjects they teach and how to teach those subjects to students. | - NBCTs have mastery over the subject(s) they teach. They have a deep understanding of the history, structure and real-world applications of the subject.  
- They have skill and experience in teaching it, and they are very familiar with the skills gaps and preconceptions students may bring to the subject.  
- They are able to use diverse instructional strategies to teach for understanding. |
| 3 Teachers are responsible for managing and monitoring student learning. | - NBCTs deliver effective instruction. They move fluently through a range of instructional techniques, keeping students motivated, engaged and focused.  
- They know how to engage students to ensure a disciplined learning environment, and how to organize instruction to meet instructional goals.  
- NBCTs know how to assess the progress of individual students as well as the class as a whole.  
- They use multiple methods for measuring student growth and understanding, and they can clearly explain student performance to parents. |
| 4 Teachers think systematically about their practice and learn from experience. | - NBCTs model what it means to be an educated person—they read, they question, they create and they are willing to try new things.  
- They are familiar with learning theories and instructional strategies and stay abreast of current issues in American education.  
- They critically examine their practice on a regular basis to deepen knowledge, expand their repertoire of skills, and incorporate new findings into their practice. |
| 5 Teachers are members of learning communities. | - NBCTs collaborate with others to improve student learning.  
- They are leaders and actively know how to seek and build partnerships with community groups and businesses.  
- They work with other professionals on instructional policy, curriculum development and staff development.  
- They can evaluate school progress and the allocation of resources in order to meet state and local education objectives.  
- They know how to work collaboratively with parents to engage them productively in the work of the school. |
teachers] are able to use diverse instructional strategies to teach for understanding,” and Proposition 3 states, “NBCTs deliver effective instruction. They move fluently through a range of instructional techniques, keeping students motivated, engaged and focused.”

The strategies and models described in this book help teachers acquire the repertoire of teaching approaches that both INTASC and the NBPTS say expert teachers need. In addition, these strategies and models emphasize the critical thinking and problem solving emphasized in the INTASC standards, as well as the factors that increase learner motivation emphasized in both the INTASC standards and NBPTS propositions. (We discuss learner motivation in Chapter 2, and we examine critical thinking in depth in Chapter 3.)

The Common Core State Standards Initiative

In spite of progress in the “standards movement” since A Nation at Risk was published, American students still remain behind other nations in terms of academic achievement and readiness to succeed in life after school (Ginsburg, Leinwand, & Decker, 2009). Inconsistency among the states and the charge that some states lowered their standards to meet the mandates of the No Child Left Behind Act are offered as reasons.

In response to these issues, the Common Core State Standards Initiative (CCSSI), a state-led effort to establish a single set of clear educational standards for English-language arts and mathematics that states can share and voluntarily adopt, was launched in 2009 (Common Core State Standards Initiative, 2010a). The CCSSI is coordinated by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO). It has been endorsed by every state except Alaska and Texas, and it has also been endorsed by the Virgin Islands, Puerto Rico, the District of Columbia, and the Obama administration. The standards are designed to ensure that students graduating from high school are prepared to go to college or enter the workforce and that parents, teachers, and students have a clear understanding of what is expected of them. The standards are also linked to international benchmarks to help ensure that American students are competitive in the emerging global marketplace (Ginsburg, Leinwand, & Decker, 2009; Lee & Spratley, 2010).

The following example is a CCSSI standard for first-grade math:

First grade:
Number—Operations and the Problems They Solve
Addition and subtraction

1. Understand the properties of addition.
   a. Addition is commutative. For example, if 3 cups are added to a stack of 8 cups, then the total number of cups is the same as when 8 cups are added to a stack of 3 cups; that is, $8 + 3 = 3 + 8$.
   b. Addition is associative. For example, $4 + 3 + 2$ can be found by first adding $4 + 3 = 7$ then adding $7 + 2 = 9$, or by first adding $3 + 2 = 5$ then adding $4 + 5 = 9$.
   c. 0 is the additive identity.

2. Explain and justify properties of addition and subtraction, e.g., by using representations such as objects, drawings, and story contexts. Explain what happens when:
   a. The order of addends in a sum is changed in a sum with two addends.
   b. 0 is added to a number.
   c. A number is subtracted from itself.
   d. One addend in a sum is increased by 1 and the other addend is decreased by 1. Limit to two addends. (Common Core State Standards Initiative, 2010b, p. 13)
Now here is an example CCSSI standard for middle and high school writing:

Writing Standards for History/Social Studies and Science 6–12
Grades 9–10 students:

1. Write informative/explanatory texts, including the narration of historical events or scientific procedures/experiments, in which they:
   a. Introduce a topic and organize information under concepts and into categories, making clear the connections and distinctions between key ideas; use formatting and graphics (e.g., headings, figures, tables, graphs, illustrations) . . . to clarify ideas.
   b. Develop a topic that has historical or scientific significance using well-chosen, relevant, and sufficient facts, data, details, quotations, examples, extended definitions, or other information.
   c. Use varied transitions and sentence structures to create cohesion, clarify information and ideas, and link major sections in the text.
   d. Use precise language and domain-specific vocabulary to convey a style appropriate to the specific discipline and context as well as to the expertise of likely readers.
   e. Provide a conclusion that follows logically from the information or explanation provided and that articulates the implications or significance of the topic. Common Core State Standards Initiative. (2010c, p. 60)

As you see, the CCSSI examples are similar to many of the existing state standards. The primary advantage of the CCSSI is the consistency that the standards provide, both among states in the United States and internationally.

As you might expect, the CCSSI is somewhat controversial. Supporters point to the research base and international comparisons that have been used to draft the standards. On the other hand, some critics question whether the content implied in the standards contribute to students' career readiness, and others comment that the standards require skills, such as critical thinking, without addressing the underlying content needed to learn those skills. Overall, however, the standards are endorsed by most professional groups (Gewertz, 2010). The standards movement, in general, is a part of your teaching life. The trend is certain to continue, and the common core standards are likely to be a part of the future.

Exploring Diversity: Learner Diversity in Today's Schools

DeVonne Lampkin is a fifth-grade teacher at Abbess Park Elementary School. Her school is in a middle-class geographical region of a large metropolitan area. She has twenty-two students in her class, six of whom are African American and three are Asian Americans. She also has one student, named Hajaar, whose parents are orthodox Muslims originally from Saudi Arabia.

Because of her family's religious beliefs, Hajaar is not allowed to sit by a boy in class, stand by a boy in a line, or work with a boy on an assignment. In describing these needs, DeVonne comments on how helpful the other students in the class are, and the support they give both Hajaar and her. She offers examples, such as a student saying, "Mrs. Lampkin, she can't stand by me," and she can be observed smiling at the students' upbeat responses to Hajaar's needs.

To see an interview with DeVonne on video, go to the Video Examples section of Topic #12: Diversity: Cultural and Linguistic in the MyEducationLab for your course to watch “Capitalizing on Diversity in Classrooms.” Then discuss this episode with your instructor.
Experiences such as DeVonne’s are becoming more commonplace in U.S. schools. Our students come from increasingly diverse backgrounds. Cultural minorities make up a third of the U.S. population, and the 2000 census indicated that, for the first time, the Hispanic surnames Garcia and Rodriguez are among the ten most common in our country, having replaced Moore and Taylor in that category (Roberts, 2007).

This trend is reflected in our classrooms, where more than four of ten students in the P–12 population are members of cultural minority populations. Children of color currently make up the majority of public school enrollments in six states—California, Hawaii, Louisiana, Mississippi, New Mexico, and Texas—and more than 90 percent of the student population in six major cities: Detroit, New York, the District of Columbia, Chicago, Los Angeles, and Baltimore (Short & Echevarria, 2005; Padilla, 2006).

Whereas most immigrants during the early 1900s came from Europe, more recently they have come from Central America (nearly 40 percent), Asia (25 percent), and the Caribbean (10 percent), with only 14 percent having Europe as their point of origin (U.S. Bureau of Census, 2004). This demographic shift has resulted in a dramatic increase in the proportion of students who are members of cultural minorities (U.S. Department of Education, 2005), and it helps us understand why the backgrounds of DeVonne’s students are so diverse.

By the year 2020, the school-age population will see many more changes. Experts predict further considerable increases in the percentages of all groups of students except white, non-Hispanic. During this time the percentage of white students will decrease from more than 60 percent to a little more than half of the total school population (U.S. Bureau of Census, 2003). By 2050, no single group will be a majority among adults.

**Linguistic Diversity** One of five children in U.S. schools—approximately 14 million students—has immigrant parents, and they bring with them a variety of languages and dialects (Kober, 2006; Padilla, 2006). Experts estimate that the number of students who speak a native language other than English increased 72 percent between 1992 and 2002 (Short & Echevarria, 2005; Padilla, 2006). As our students increasingly bring different native languages to school, we find that their facility with English varies widely (Abedi et al., 2004).

**English Language Learners (ELLs)** are students whose first or home language is not English. As a result of immigration and high birth rates among immigrant families, the number of non-English-speaking students and those with limited English have increased dramatically over the last three decades (Gray & Fleishman, 2005). In California alone, 1.6 million ELLs make up a fourth of that state’s student population (Bielenberg & Fillmore, 2005). Projections indicate that by 2015, more than half of all P–12 students in our country will not speak English as their first language (Gray & Fleishman, 2005). The diversity is staggering; more than 450 languages other than English are spoken in our schools, with Spanish being the most common (Abedi et al., 2004; Kindler, 2002).

**Learner Development**

A volunteer tutor is working on sight word vocabulary with two first-graders, and the word “under” comes up. The tutor asks what under means. After showing several examples of classroom items that are “under” other objects, Tran, the boy, pulls up his shirt to show his Disney-character underwear, proudly proclaiming, “Underwear!” The girl giggles. The tutor, nervous about the prospect of others seeing this display of underwear, says, “Tran, pull down your shirt. What would the principal do if he saw you showing your underwear?” After a moment’s pause, Tran replies, “Give me a wedgie?”
Anyone who has spent time in classrooms knows that young children look, act, and think differently than older students, and they respond to teachers in different ways. These differences reflect their development, the physical, intellectual, moral, emotional, and social changes that occur in students as a result of maturation and experience. In this book we focus primarily on cognitive development, the changes in students’ thinking as they mature and acquire experiences. As you saw with Tran, little people think about the world in ways that are different from older students, and these differences can have a profound influence on your teaching.

Because of these differences, you will need to adapt the strategies and models we discuss in this book to best accommodate your students’ thinking. To help you with this process, we include a section in each chapter called Developmentally Appropriate Practice, which offers suggestions for adapting the strategy or model to different developmental levels.

**Learners with Exceptionalities**  
Learners with exceptionalities are students who need special help and resources to reach their full potential (Kauffman, McGee, & Brigham, 2004). About 6 million students with exceptionalities are enrolled in special programs, two-thirds for relatively minor learning problems (Hardman, Drew, & Egan, 2008). Slightly less than 10 percent of students in a typical school receive special education services, and the kinds of disabilities they have range from mild learning problems to physical impairments such as being deaf or blind (U.S. Department of Education, 2008).

Nearly half of all students with exceptionalities have learning disabilities (also called specific learning disabilities), which are difficulties in acquiring and using reading, writing, reasoning, listening, or mathematical abilities (National Joint Committee on Learning Disabilities, 1994). Problems with reading, writing, and listening are most common (Shaywitz & Shaywitz, 2004), but math-related difficulties also receive attention (Hanich, Jordan, Kaplan, & Dick, 2001). Students with learning disabilities often exhibit some or all of the following characteristics:

- Inability to pay attention and easily distracted
- Lack of follow-through on assignments
- High performing in one area and extremely weak in another

If their issue is reading, they will often lack reading fluency, reverse words, or lose their place. In writing, they form letters poorly, have trouble staying on a line, and are slow to complete their work. In math, they struggle to remember math facts, and they have a great deal of trouble with word problems.

Some of the characteristics of learning disabilities are typical of general learning problems or immaturity. Unlike developmental lags, however, problems associated with learning disabilities often increase over time. Achievement declines, management problems increase, and self-esteem decreases (Heward, 2009).

The other half of students with exceptionalities face a variety of issues that can affect learning, such as communication disorders, behavior disorders, and mild mental retardation. Since responding to them is similar to the responses that are effective with students having learning disabilities, we focus on that category in this book.

**Responding to Diversity**  
It is certain that you have, or will have, learners from different cultural backgrounds or students who speak a native language other than
English. Your students will also think at different levels of cognitive development, and you are likely to have some children with exceptionalities in your classes. Because teaching students from varying backgrounds has important implications for your teaching, we include a special section in each chapter titled “Exploring Diversity.” In this section we examine the implications of diversity for your successful implementation of the model and what modifications you might consider making in your use of the model. The goal in these sections is to help you use the model to better meet the needs of your students.

**Technology and Teaching: The Influence of Technology on Teaching and Learning**

To say that technology is now an integral part of our lives is an understatement. Technologies such as cell phones, and online social networks such as Facebook and Twitter, have revolutionized the way we communicate. Internet search engines such as Google, Dogpile, or Yahoo have also revolutionized the way we find information. A print encyclopedia has become an anachronism, and nearly the same is true for a print dictionary. We don’t look up places on a physical map anymore. We go to mapquest.com instead. Our vehicles are equipped with GPS systems that will send us straight to our desired destination. Technological literacy has become a basic skill, next in importance only to reading, writing, and math.

Earlier in the chapter you saw that standards have become part of teachers’ lives, and standards have been written for technology, as well—for both teachers and students (International Society for Technology in Education, 2007, 2008). These standards specify what teachers and students should know and be able to do with respect to the use of technology. The standards for teachers and students are outlined in Tables 1.4 and 1.5.

**Table 1.4 National Educational Technology Standards for Teachers**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Performance Indicators</th>
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<tbody>
<tr>
<td>1</td>
<td>Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments. Teachers:</td>
</tr>
<tr>
<td></td>
<td>a. promote, support, and model creative and innovative thinking and inventiveness.</td>
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<tr>
<td></td>
<td>b. engage students in exploring real-world issues and solving authentic problems using digital tools and resources.</td>
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<tr>
<td></td>
<td>c. promote student reflection using collaborative tools to reveal and clarify students’ conceptual understanding and thinking, planning, and creative processes.</td>
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<tr>
<td></td>
<td>d. model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments.</td>
</tr>
<tr>
<td>2</td>
<td>Teachers design, develop, and evaluate authentic learning experiences and assessment incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the NETS•S. Teachers:</td>
</tr>
<tr>
<td>Table 1.4 (continued)</td>
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</table>
| **3** Model Digital-Age Work and Learning | a. design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity.  
   b. develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress.  
   c. customize and personalize learning activities to address students’ diverse learning styles, working strategies, and abilities using digital tools and resources.  
   d. provide students with multiple and varied formative and summative assessments aligned with content and technology standards and use resulting data to inform learning and teaching. |
| **4** Promote and Model Digital Citizenship and Responsibility | Teachers exhibit knowledge, skills, and work processes representative of an innovative professional in a global and digital society. Teachers:  
   a. demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations.  
   b. collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation.  
   c. communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital-age media and formats.  
   d. model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information resources to support research and learning. |
| **5** Engage in Professional Growth and Leadership | Teachers understand local and global societal issues and responsibilities in an evolving digital culture and exhibit legal and ethical behavior in their professional practices. Teachers:  
   a. advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources.  
   b. address the diverse needs of all learners by using learner-centered strategies providing equitable access to appropriate digital tools and resources.  
   c. promote and model digital etiquette and responsible social interactions related to the use of technology and information.  
   d. develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital-age communication and collaboration tools. |
| **6** **5** Engage in Professional Growth and Leadership | Teachers continuously improve their professional practice, model lifelong learning, and exhibit leadership in their school and professional community by promoting and demonstrating the effective use of digital tools and resources. Teachers:  
   a. participate in local and global learning communities to explore creative applications of technology to improve student learning.  
   b. exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others.  
   c. evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning.  
   d. contribute to the effectiveness, vitality, and self-renewal of the teaching profession and of their school and community. |
### Table 1.5 National Educational Technology Standards for Students

<table>
<thead>
<tr>
<th></th>
<th>Creativity and Innovation</th>
<th>2 Communication and Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:</td>
<td>Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:</td>
</tr>
<tr>
<td></td>
<td>a. apply existing knowledge to generate new ideas, products, or processes.</td>
<td>a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments media.</td>
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<tr>
<td></td>
<td>b. create original works as a means of personal or group expression.</td>
<td>b. communicate information and ideas effectively to multiple audiences using a variety of media and formats.</td>
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<td></td>
<td>c. use models and simulations to explore complex systems and issues.</td>
<td>c. develop cultural understanding and global awareness by engaging with learners of other cultures.</td>
</tr>
<tr>
<td></td>
<td>d. identify trends and forecast possibilities.</td>
<td>d. contribute to project teams to produce original works or solve problems.</td>
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<tr>
<th>3</th>
<th>Research and Information Fluency</th>
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<tbody>
<tr>
<td></td>
<td>Students apply digital tools to gather, evaluate, and use information. Students:</td>
</tr>
<tr>
<td></td>
<td>a. plan strategies to guide inquiry.</td>
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<tr>
<td></td>
<td>b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.</td>
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<tr>
<td></td>
<td>c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks.</td>
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<tr>
<td></td>
<td>d. process data and report results.</td>
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<tr>
<th>4</th>
<th>Critical Thinking, Problem Solving, and Decision Making</th>
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<tbody>
<tr>
<td></td>
<td>Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students:</td>
</tr>
<tr>
<td></td>
<td>a. identify and define authentic problems and significant questions for investigation.</td>
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<td></td>
<td>b. plan and manage activities to develop a solution or complete a project.</td>
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<tr>
<td></td>
<td>c. collect and analyze data to identify solutions and/or make informed decisions.</td>
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<td></td>
<td>d. use multiple processes and diverse perspectives to explore alternative solutions.</td>
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<th>5</th>
<th>Digital Citizenship</th>
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<tbody>
<tr>
<td></td>
<td>Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:</td>
</tr>
<tr>
<td></td>
<td>a. advocate and practice safe, legal, and responsible use of information and technology.</td>
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<tr>
<td></td>
<td>b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.</td>
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<tr>
<td></td>
<td>c. demonstrate personal responsibility for lifelong learning.</td>
</tr>
<tr>
<td></td>
<td>d. exhibit leadership for digital citizenship.</td>
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<tr>
<th>6</th>
<th>Technology Operations and Concepts</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:</td>
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<tr>
<td></td>
<td>a. understand and use technology systems.</td>
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<tr>
<td></td>
<td>b. select and use applications effectively and productively.</td>
</tr>
<tr>
<td></td>
<td>c. troubleshoot systems and applications.</td>
</tr>
<tr>
<td></td>
<td>d. transfer current knowledge to learning of new technologies.</td>
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</tbody>
</table>
Because technology is such an integral part of our lives, both in and out of the classroom, in several chapters of this book we include special sections called “Technology and Teaching,” which discuss ways of integrating technology with the teaching models.

We present our discussions of technology grounded on an important assumption (Cenamo, Ross, & Ertmer, 2010). It is this: Technology is a tool used to help students reach learning goals; using technology is not the goal itself. What does this statement mean? Because using technology is so strongly emphasized in education today, teachers sometimes feel as if they should attempt to use it regardless of whether it increases student learning; using technology becomes the goal. This isn’t technology’s best use (Cenamo et al., 2010).

Technology is used appropriately when it can help students meet learning goals more effectively than some other tool can. If, for instance, a topic can be better represented with technology than with a more traditional representation, such as a demonstration or picture, then it should be utilized. For example, suppose you want your students to be able to observe the metamorphosis of a butterfly as it emerges from a chrysalis. Since this process takes time, it is difficult to observe directly. Using an inexpensive webcam, a video-capture device connected to a computer or computer network, often using a USB port, and video software that is often included with the webcam, pictures can be automatically taken at intervals, such as every 30 minutes, over the course of a week. As the chrysalis nears final development, the intervals are shortened to every few minutes. Using this technology, students can observe the complete metamorphosis in a few minutes and then discuss the results. This is an appropriate and effective use of technology.

On the other hand, if a traditional demonstration better represents the topic, it should be used, even if the technology might seem more up-to-date or “spiffy.” For instance, if you want to demonstrate that moving objects tend to continue moving in a straight line unless a force acts on them (Newton’s law of inertia), a simple demonstration, such as rolling a tennis ball across the floor, is better than a computer-generated simulation.

Often, demonstrations can be combined with technology to make them even more effective. For instance, combining the simple demonstration using the tennis ball with a video simulation showing that a rock released from a sling travels in a straight line, such as in the famous biblical David and Goliath story, can be even more meaningful for students. Utilizing technology in this way is consistent with the technology standards for both teachers and students outlined in Tables 1.4 and 1.5.

**Decision Making and Reflective Practice**

We all know that teaching is a complex and ill-defined process and that rules don’t exist to guide every teacher action. Professionals thrive in teaching environments because they’re capable decision makers and they are comfortable with the uncertainty that often occurs in teaching. As one veteran commented, “There are few easy answers for what we do. . . . But then, that’s what makes it so challenging, . . . and rewarding when we succeed” (V. A. Barnhart, personal communication, November 16, 2009).

Teachers make a staggering number of decisions—some historical research suggests as many as 800 per day (Jackson, 1968). And no one helps you make the decisions; you’re essentially on your own. As you acquire knowledge and experience, however, you learn to make these decisions routinely and efficiently (Berliner, 1994, 2000).

Every professional decision you make is designed to increase learning and learner development. So the process of decision making centers on one simple question: “Did this decision increase learning as much as possible?” If it did, it was a good decision; if it didn’t, you need to make changes in the future.
The question, though simple, isn’t easy to answer, because you receive little feedback about the effectiveness of your work. You are observed a few times a year at most, and you receive only vague and sketchy feedback from students and parents. In addition, you get virtually no feedback from your colleagues. To improve, you must be able to answer the question by assessing your own classroom performance.

The ability to conduct this self-assessment can be developed, but it requires a willingness to critically examine your actions. This is the essence of a powerful idea called **reflective practice**, the process of conducting a critical self-examination of your teaching. The idea of reflective practice was introduced by D. A. Schön in his well-known book *The Reflective Practitioner*, published in 1983. Since that time the concept has been refined and popularized, and it is now an integral part of most teacher preparation programs at both the pre-service and in-service levels (Clark, 2006). Research suggests that reflective practice can help you become more sensitive to individual student differences and make you more aware of the impact of your instruction on learning (Gimbel, 2008). Vicki Barnhart, the teacher in the personal communication cited above, commented in reacting to a discussion she had with her students about one of the novels they were studying, “When I think about it, I realize that sometimes I jump in too soon . . . and at other times I let them stumble around too long . . . So, then I adapt for the next lesson.” This comment illustrates reflection and how it influences her instruction.

Her ability to improve her practice through reflection depends on both her experience and her professional knowledge (Helsing, 2007). Our goal in writing this book is to help you expand this knowledge for yourself by increasing your repertoire of approaches to teaching.

Reflective practice is also endorsed in the INTASC standards and the NBPTS propositions. For example, “The teacher is a reflective practitioner who continually evaluates the effects of his or her choices and actions on others and who actively seeks out opportunities to grow professionally” is stated in Table 1.2, and “They critically examine their practice on a regular basis to deepen knowledge, expand their repertoire of skills, and incorporate new findings into their practice” appears in Table 1.3. These organizations believe that reflective practice is an integral part of being a knowledgeable professional.

**Reflective Practice and Models of Teaching**

Earlier in the chapter we said that a teaching model is a blueprint for teaching, but it “cannot dictate all of the actions taken by a teacher” and that “a teaching model is not a substitute for basic teaching skills.” Specific steps are suggested for implementing each of the models discussed in this book, but no two teaching situations are identical. Within the context of any lesson, a number of necessary decisions lie beyond what the model can dictate. These include:

- How you will adapt the lesson to the developmental levels of your students
- How you adapt the lesson to accommodate the diversity in your students’ backgrounds
- If and how you will incorporate technology into your lesson
- Your specific learning goal(s)
- What specific steps you will take to increase your students’ motivation
- How you will represent the content
Models of Teaching and Developing as a Teacher

- What students you will call on, and when
- The specific questions you will ask
- How you will prompt students if they don’t respond or answer incorrectly
- How quickly you pace the lesson
- How you bring the lesson to closure

None of us ever teaches a perfect lesson, and reflective practice is a mechanism that we can use to examine what we’ve done and think about what we might do next time to improve our work. Questions we might ask during the process of reflection can include:

- Did I appropriately adapt the model to best meet the needs of my students?
- Was I clear about my teaching goals?
- Did I represent the content as effectively as possible?
- What could I have done to better maintain the students’ attention and interest?
- Was my assessment consistent with my goals and learning activity?
- Did I include extraneous information not pertinent to the lesson?
- Did the students learn as much as possible?

Asking ourselves these questions and others can help us continually improve and develop as teachers.

Further, as you study the models in this book you will have the opportunity to view videos of lessons taken from actual classroom practice. Several of the case studies used to illustrate the models in the book are based on these video episodes, and, as with our own teaching, these lessons are not perfect. Rather, they are authentic teaching episodes conducted by teachers in the real world. The process of reflective practice can also be used to analyze these episodes, to examine the strengths and weaknesses of the lessons, and to consider what the teachers might have done to make them more effective. Reflective practice in general, and this type of analysis in particular, can serve as a valuable mechanism to help us develop as professionals.

Summary

Teachers Make a Difference

- A long history of research indicates that, second only to students themselves, teachers are the most important influence on student learning.
- Expert teachers thoroughly understand the content they teach, and they are able to represent this content in ways that are understandable to students.
- Expert teachers have a repertoire of teaching strategies that they can use to help students meet different learning goals.

The Need for Instructional Alternatives

- Teaching strategies are general approaches to instruction that apply to all content areas, topics, and student developmental levels.
- Teaching models are specific approaches to instruction that include a specific set of steps designed to help students develop their critical-thinking abilities and acquire a deep understanding of specific forms of content.
- The cognitive domain is the learning domain that focuses on knowledge and intellectual
skills. Cognitive components also exist in the affective, psychomotor, and interpersonal domains.

**Learning and Teaching in Today’s World**

- Standards are an important source of goals in today’s classrooms, and helping students meet the wide variety of standards that exist requires different approaches to teaching.
- Professional organizations, such as INTASC and the NBPTS, recognize the need for instructional alternatives and specify this need in their standards and propositions.
- Students in today’s world come from cultural and linguistic backgrounds that are more diverse than they have ever been in the past.
- In virtually all classrooms, teachers will have some students with learning exceptionalities.
- Responding to cultural and linguistic diversity, together with meeting the needs of learners with exceptionalities, requires adaptations in approaches to instruction.
- Today’s world is strongly influenced by technology, and technology can be a powerful tool for increasing student learning. It is only a tool, however, and it should not be used for its own sake.

**Decision Making and Reflective Practice**

- Making decisions in ill-defined situations is an integral part of teaching, and no teaching strategy or model can dictate all of the decisions teachers must make.
- The process of reflective practice can help teachers examine their decisions and consider changes that can increase learning for all their students.
- Reflective practice can also help teachers adapt teaching strategies and models to best meet their students’ needs.

**Important Concepts**

<table>
<thead>
<tr>
<th>Affective domain (p. 7)</th>
<th>Interstate New Teacher Assessment and Support Consortium (INTASC) (p. 13)</th>
<th>Psychomotor domain (p. 7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive development (p. 19)</td>
<td>Learning disabilities (p. 19)</td>
<td>Reflective practice (p. 24)</td>
</tr>
<tr>
<td>Cognitive domain (p. 7)</td>
<td>Models (p. 5)</td>
<td>Standards (p. 10)</td>
</tr>
<tr>
<td>Common Core State Standards Initiative (p. 16)</td>
<td>National Board for Professional Teaching Standards (NBPTS) (p. 14)</td>
<td>Strategies (p. 5)</td>
</tr>
<tr>
<td>Development (p. 19)</td>
<td></td>
<td>Webcam (p. 23)</td>
</tr>
<tr>
<td>English language learners (p. 18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal domain (p. 7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Discussion Questions**

1. Both the INTASC standards and the propositions of the National Board for Professional Teaching Standards emphasize the need for different approaches to teaching. Why do you suppose these professional organizations place so much emphasis on instructional alternatives?
2. Does the fact that teachers now work in standards-based professional environments increase or decrease the need for different approaches to instruction? Explain your position.
3. Choose two different content areas of the curriculum, such as science and language arts, or math and social studies. How might the content in each area influence your choice of teaching method?
4. Describe your own personal goals for teaching, and discuss how these might influence your choice of teaching methods.
5. How does the age or ability of a student influence the selection of a teaching strategy? Imagine that you are responsible for teaching the same basic
content to three different classes ranging from remedial to accelerated. How would your teaching methods differ?

6. Identify three different learning goals for the class you are teaching now. Classify the goals into one of the cells of the taxonomy table discussed in the chapter.

7. The process of reflective practice is somewhat controversial, with critics arguing that teacher-development programs emphasize reflective practice at the expense of professional knowledge. Do you agree or disagree with these criticisms? Explain your position.