

Teachers today are under pressure from all sides. Everyone, it seems, is an expert on teaching and on what to teach. Advice, mandates, and legislation speak with authority, telling teachers what to do in classrooms. In a sense, everyone *is* an expert on teaching. After all, didn't everyone go to school for many years and leave with the full knowledge of how school should have been? What has changed is that the cacophony of voices has become louder and more distracting to individual teachers.

Over the last several years, schools have changed. The student population is more diverse, the curriculum is more standardized, there is increased emphasis on teacher and school accountability, and the importance of prior knowledge and experience in learning is more apparent. In addition, budgets at the local and state level are tight and resources are thin. This seventh edition has responded to these changes by providing the newest research on student learning, access to linked video and Web resources for each model, and easier access to specific knowledge for teaching with instructional models through the identification of basic and advanced models and a glossary. Since the first edition of this text, many experienced teachers and teachers in training have found it to be useful. In fact, many teachers have told us that this book has become part of their permanent professional collections. We have reorganized the text to provide targeted support for novice and experienced teachers by organizing the models into basic and advanced sections. Readers can determine their own needs and chart their own progress as they master the specific models that are described in the text. Whenever possible, we have incorporated into this edition the excellent ideas and valuable corrections we have received from classroom teachers who use the models daily. These changes and those detailed in the New to This Edition list allow more opportunities to construct new concepts and principles of instruction.

New to This Edition

The seventh edition includes a number of noteworthy changes:

- Infusion of recent literature on student learning and teacher behaviors
- Implementation charts detailing teacher behaviors and student responses
- Linked videos* and Web resources with all presented instructional models
- A new elementary case study that demonstrates the use of instructional models in a mathematics teaching unit
- Detailed explanation of the connections between instructional strategies and instructional models
- Correlations to the Common Core State Standards
- Addition of the 5E Learning Cycle approach to Chapter Twelve's coverage of the problem-based inquiry model
- Updated references throughout the text and a comprehensive list of references at the end of the text representing the most relevant new literature and research
- A major revision of the Chapter Two information on planning for instruction
- A stronger focus on moving from standards to classroom objectives, and directions for how to accomplish this
- Invigorate learning with the Enhanced Pearson eText

- The Enhanced Pearson eText provides a rich, interactive learning environment designed to improve student mastery of content with embedded videos. The Enhanced Pearson eText is also available without a print version of the textbook.
- Instructors, visit pearsonhighered.com/etextbooks to register for your digital examination copy.

*Video clips are accessible in the Enhanced Pearson eText only, and not other third-party eTexts such as CourseSmart and Kindle.

Instruction

There is a sense in which everyone is a teacher. The root meaning of the word *teach* is “to show, to tell, to point out.” Everyone teaches others, and so everyone is a teacher, at least in the amateur sense. This doesn’t mean that everyone can be an *effective* teacher, however. If we look at the word *teach* in its professional sense, in relation to the word *instruction*, a more complex picture emerges. The meaning of the word *instruct* derives from “to build” or “to structure.” Professional teachers not only *teach* in the usual sense of the word, they also instruct. They *structure* classroom environments and *build* experiences for a diverse group of students. Whereas parents, doctors, and others usually teach spontaneously by telling, pointing out, or showing, professional educators must carefully design and plan for their teaching. In fact, in our opinion, you are not teaching unless your instruction is helping students learn. There is a natural analogy between instruction and building based on the process of structuring environments. The teacher, as an instructor, is comparable to the builder in three ways:

1. *Planning for a specific audience.* Both builders and teachers must first figure out the needs of their clients or students. The house required for a single person with a large collection of automobiles should be different from that of a family of six with four dogs, three cats, two hamsters, and a rabbit. Similarly, the instructional design for a freshman conceptual physics class will be different from the design of the AP physics class. The background knowledge of the students and the challenge of the content require different approaches. Both the builder and the teacher must consider their clients, and they need to know how to formulate a plan that will be sound, original, and functional.

A good design for teaching grows out of a clear understanding of the needs of learners and the goals of education. Each design that a professional teacher creates is unique because different groups of learners have individual needs, and different types of learning require specific instructional approaches.

2. *Formulating objectives and evaluation procedures.* Both the builder and the teacher specify the intended outcome of their work as clearly as possible. No builder would think of starting a construction project without having a clear picture of how the final product should look. To get halfway through the project only to realize that what was emerging was not what the client wanted or needed would be professionally embarrassing and costly. The teacher who works without a careful design also leaves too much to chance, not providing appropriate supports that help students learn. As a professional, the teacher must plan how to achieve specific, intended learning outcomes. Otherwise, valuable instructional time can go to waste, and students will not have the appropriate experiences for success on the assessments for which they are accountable.

An essential part of setting objectives is determining effective assessment procedures to make certain that what was intended is taking place. Like the builder who must constantly check on the construction, the teacher must determine whether students are reaching the intended results. It would be foolish to wait until a building

has been completed to check on the quality of the work and to determine whether all is proceeding as planned. Likewise, a teacher must use effective formative and summative assessment procedures throughout the teaching process.

Evaluation is continual, forming the basis of all decisions at every step: determining needs, formulating objectives, designing aligned assessments and instructional methods, and selecting materials. Evaluation is the process of continually asking questions: Where are we going? How do we get there? How far along are we? The teacher must continually collect information from students to determine whether the instruction is appropriate and effective. Thus, evaluation showing the intermediate and ultimate effects of instruction (formative and summative assessment) must be used to reform the process of teaching. Continual evaluation makes this possible.

3. *Selecting materials and procedures.* The builder has available a variety of materials and techniques from which to choose and must decide which combination will produce the structure most nearly like the one intended. Each project must be analyzed to determine the appropriate combinations; for instance, not every house is built only of wood or brick. Likewise, each student is an individual with his or her own needs, strengths, and interests. Moreover, each class is unique in terms of the dynamics of a particular group. Therefore, the teacher needs to have at hand a variety of approaches and techniques to accomplish specific instructional objectives and to manage problems as they arise. Unfortunately, there are classrooms in which there is no instructional variety, leading to monotony and boredom. The teacher who uses the same instructional technique is like the builder who will build only one type of house. The builder may become expert at building that house, but the house will not meet the needs of a wide variety of clients. A repertoire of instructional and management strategies is necessary to meet the varied needs of learners.

A Models Approach

We believe that the process of instruction unites all teachers as professional educators. Our intended audience includes teachers of any subject who teach or plan to teach learners of any age. Teaching is challenging and complex. Models of instruction can help teachers deal with the demanding environment of the classroom.

This text is not a rule or recipe book but an invitation to consider the opportunities for professional educators as instructional decisions are made. Progress toward mastery teaching is a continuous process of learning and adapting, modifying, and changing. With each group of students, teachers must make different instructional decisions, solve different problems, and meet different needs. We offer information that will help teachers make more appropriate and effective choices as they plan and implement instruction.

We have divided this text into four parts. Part One, Planning for Instruction, describes the process of integrating standards into written objectives, assessment, and instruction. A teacher must first decide what is to be learned in the classroom before considering how to present the material through the instruction. A thorough discussion of moving from standards to focused objectives is presented in this section. Once objectives are identified and aligned, a variety of instructional models can be considered.

Part Two, Basic Instructional Models, presents a selected group of what we have termed basic instructional models along with illustrations of how they can be used in the design process. These basic instructional models are aligned with the types of objectives and assessments that are frequently used in classrooms and are supported by a preponderance of evidence as to their effectiveness. Direct instruction, concept attainment, concept development, cause and effect, and vocabulary acquisition meet a variety of content and skill needs in all classrooms and provide basic instructional skills to teachers on which they can build and integrate a number of instructional patterns.

Part Three, Teaching with Advanced Instructional Models, extends the models approach. These models (the integrative model, Socratic seminar, cooperative learning, inquiry, and synectics) provide a structure for student learning and help teachers meet many content and skill goals, but they also require a more sophisticated understanding of classroom processes. When implemented, these models make a larger ripple in the classroom—there are more ramifications and possible difficulties involved, so their use requires more practice and attention.

Part Four, Putting It All Together, contains four chapters. Three are case studies that describe how teachers match objectives, assessments, and instruction in the design process and use a variety of models in service of an instructional unit. Part Four concludes with a chapter that suggests ways of creating a positive environment for learning in the classroom.

The content of this text reflects a process of learning by doing. Thus, ample opportunity must be provided for practice and feedback, ideally including peers reviewing videos of practice sequences. No one can learn these models simply from reading about them or memorizing the steps, just as no one can learn to drive a car simply by reading an owner's manual.

We have each had the opportunity to interact with both preservice teachers and experienced teachers who are discovering the possibilities of growing professionally through the use of instructional models. We have seen how the models approach provides tools for professional decisions about instruction that can be shared among professional instructors through a common body of knowledge.

Retained Features

The following features of previous editions are retained:

- A comprehensive approach to organizing content and skills and developing aligned instruction in planning
- Specific instruction in developing classroom objectives from state standards
- In-depth discussion of the steps and benefits of more than 10 different instructional models
- Attention to how the models can be used to meet individual needs
- Suggestions as to how models can be used to assess student learning
- Associated instructional strategies that can be used within and across different instructional models

Acknowledgments

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1

Standards and Content in Schools



Chapter Objectives

You Will Know

- The importance of planning
- How learning happens
- Student characteristics that affect learning
- The relationship between standards and academic content
- How to analyze content
- How to order content
- The elements of instructional planning

You Will Understand That

- Standards are the basis of instructional decisions that result in student learning
- Planning increases the likelihood of student learning

You Will Be Able To

- Explain the role of standards in determining school content
- Describe what we know about how learners learn
- Discuss the relationship between unit and lesson planning and the need for instructional alignment

Teaching is challenging and difficult. Learners come into classrooms with unique knowledge and experiences, interests, and learning preferences, making each classroom diverse and increasing the difficulties and complexities of determining appropriate decisions in planning for student learning. All students deserve the opportunity to learn and be successful in school. This chapter will provide information that will serve as the foundation for designing good instruction in your classroom.



Josh Anderson, the 2011 Chief State School Officers Teacher of the Year, shares his views regarding the challenges of teaching, his reasons for being a teacher, and his vision for schools. This is an inspiring video, not to be missed.

The Importance of Planning

We begin with the story of Anna, a girl in her sophomore year of high school. This young woman's parents were concerned about her academic achievement. Life at home was marked by dinnertime discussions of wide-ranging topics, though Anna did not participate much in those conversations. She had little interest in current



events or anything that was even vaguely academic. This left Anna feeling like an outsider in her own family. She made up for this by having more friends than she could count, a fact that kept her in school for the sake of close personal associations. This is not uncommon. “Liking for school is aligned with social and emotional factors such as personality and social factors such as the number of friends the individual student has at the specific location” (Hattie & Yates, 2014, p. 4). School can be important to students beyond academics. Anna was strong in what Gardner termed “interpersonal intelligence” (Gardner, 2006). But where does this quality fit in the curriculum of school? How could a teacher capitalize on this capacity in teaching Anna anything? This is a question worth thinking about.

Seeking the help of the high school guidance counselor, Anna’s parents visited the school. They discussed Anna’s constant need to use her smart phone and how much time she spent fixing her hair. They wondered how these skills would help her be successful. The counselor’s response came as a surprise to the parents. For one thing, the counselor told them they were probably underestimating the skills that Anna possessed. She could be a beautician if she wished, but, if that were her choice, she would probably own the shop where she worked and would run a thriving business!

A few years later, after graduating from college with no particular aim in sight, Anna applied for a job in a large mortgage company. This job, in mortgage origination—a type of job Anna had never heard of—required talking to strangers about how they could save money on their house payments by refinancing at a lower interest rate. It also required a great deal of study and test taking to obtain licensure, but neither problem proved the slightest barrier. Anna worked hard at her job, studied, and passed every test. A few years later, she decided that she could do this mortgage origination thing on her own rather than work for someone else. The process was simple in her mind: All she had to do was identify potential customers through public records, fill out some paperwork, and make “new friends” with the real promise of saving them a lot of money. Two years later, she ran her own mortgage brokerage business. She was qualified at the highest levels and suddenly making a lot of money doing something she loved to do.

So how did a mediocre student become such a great success? Here is one possibility we might want to pay attention to: Instruction in school often tends to focus narrowly on knowledge transmission—on teaching content without apparent purpose. Thus, too often the reason to learn is opaque to the learner, resulting in isolated knowledge and superficial understanding and very little transfer outside of school—the true purpose of schooling. When the reason to learn became clear to Anna, her study and instruction resulted in contextualized knowledge and deeper understanding. When Anna and countless others like her cannot see the point of learning what teachers are attempting to teach, learning is *not* visible but exists only in the abstract. Students are unlikely to engage in the work required of them if they see no reason to learn, and they often have little confidence they *can* learn even if they try. By contrast, when students and their teachers visualize and discuss the point of what they are asked to learn and they are engaged in thinking together about the possible effects or consequences of what occurs in school, the outcomes are likely to be much more positive (Hattie, 2012). When Anna finally got to the time and place in her life in which she could see the point of what she was required to learn, her learning problems disappeared. This may not be the answer for all students, but for many of our disengaged and struggling students, showing them the reasons for learning will be helpful. And for many others, there are several concrete and empirically supported strategies that will result in greater school success (Hattie & Yates, 2014).



It is very important to align instruction and assessment with standards, rather than the other way around, as Dr. James Popham describes in this video shot in the classroom of Janine Bright, a third grade teacher.

The planning process we describe will guide both teacher and student behavior in ways that provide students the opportunity to succeed in the classroom. When teachers and students collaborate continuously to align objectives, assessments, and instruction, students have many chances to process new information and skills and relate them to prior knowledge and future goals. Aligned instruction also allows teachers to plan a variety of instructional and assessment opportunities. Although there is no exact formula or recipe for good instruction, we do know that good instruction depends on good planning to ensure that learning is relevant and visible to students. It is unlikely that students will be successful in school without visible learning—understanding why they are learning, how it relates to what they know, and how it may be useful.

To ground our discussion in the larger picture of education in our society, this introductory chapter examines broad educational goals; the need for quality education for students from all income levels; the organization of instruction; and the alignment of objectives, assessment, and instruction in planning. Planning for instruction is a continual process, and the steps of planning overlap. It is each reader's responsibility to determine the ways in which he or she will implement these procedures. What is not optional is the incorporation of a serious planning process related to instruction aimed at ensuring students' learning. Keep in mind that you are likely to have many students like Anna in your classes. You will also have students who come to school with large gaps in knowledge, physical ailments, and hunger. Many will come from homes where English is not spoken and money is tight. All students' intelligences, skills, interests, and needs will determine their learning. The key to success is to keep students engaged in the process of learning and committed to its outcome; this cannot be done without careful, intentional, and skillful planning.

How Learning Happens

Much is known about how people learn and how the brain works to organize experiences. All teachers must understand these processes in order to design effective instruction. The following points summarize a few of the principles of how people learn.

1. *Learning changes the structure of intelligence.* Academic achievement at any level of schooling by learners at any level of verbal and quantitative ability will have the effect of improving thinking. But abilities of learners are not limited to the verbal and quantitative. Neuroscientists have yet to untangle all the intricacies of how we learn and what teachers can do to enhance classroom learning. We do know, however, that we are all capable of learning and that when we learn, our brains change. Because the brain's structure changes with new knowledge, we should be able to enhance academic outcomes for all students by providing them with opportunities for learning (Wilson & Conyers, 2013). Many of our students are living difficult lives. Tough (2012) has identified several qualities that make a difference in school *and* in life. These include persistence, self-control, curiosity, conscientiousness, grit, and self-confidence. Anna has demonstrated these character traits throughout her training and career, as have many successful people. Interestingly, it is believed that these non-cognitive skills can be taught explicitly.

2. *The brains of learners are continually being organized and reorganized.* Learning improves thinking so as to make future learning all the easier. How does this happen? Primarily, it is because changes occur in patterns of cognition as new understandings are woven into the fabric of prior knowledge. David Ausubel said this most clearly and directly (Ausubel, Novak, & Hanesian, 1968, p. 168): "If we had to reduce all of educational psychology to just one principle, we would say this: The most important single factor influencing new learning is what the learner already knows. Ascertain this and teach him accordingly." Teachers need to be skilled in helping students gain



This amazing video looks at how synapses and neural pathways are the basis of learning by comparing synapse connections to crossing a ravine.
www.youtube.com/watch?v=BEwg8TeipfQ



Transfer of learning is defined as using information learned in one context in a new context. This video emphasizes the importance of bridging academic content with everyday life.
www.youtube.com/watch?v=GAscBEDDiXg

access to new information that is logically linked to prior knowledge (Donovan & Bransford, 2005). Helping students make this connection is one of the most difficult professional tasks of teachers, but with appropriate planning and instructional options, knowledge gaps can be diminished.

3. *The typical pattern of brain development is one of starts and delays.* The synapses of the brain work at processing information from a variety of experiences, and synaptic connections develop at diverse rates. A student may have very rich synaptic connections for literature and more impoverished connections for mathematics. Teaching must reflect that there is not one growth rate for all parts of students' brains and abilities. One facet will inevitably be more developed than another. The result is that a child may be good at one part of the curriculum while struggling with a different discipline, at least for a time, until the weaker "muscles" of learning can be exercised to become stronger. Thus, teachers may need to scaffold learning more for some content and learners than for others.

4. *Memory has different functions.* Sensory memory is temporary and sends information to working memory. Sensory memory may be fleeting and unconscious; working memory requires constant attention. Learners process information in working memory. If that processing includes repetition, details, application, and elaboration, the information is more likely to move into permanent memory. Teachers must keep in mind that students need repetition of skills and information and that knowledge and skills must be detailed and related to other, more familiar skills and information (Willingham, 2009).

5. *Learning must be transferred beyond the narrow contexts of initial learning if it is to be useful.* The purpose of school is to help learners use the knowledge that they acquire in the real world (Bransford, Brown, & Cocking, 2000). Learners often perform well in the context of instruction but fail to evidence this knowledge in practice outside of a particular classroom or in the real world. Other learners may come to understand what they are learning only when they see it in practice. To guard against such disparities, teaching must be explicit, skills must be practiced, the use of the skills must be determined, and understandings must be applied. Most importantly, students must see what it is to be skilled and must be conversant in new knowledge across multiple contexts. Transfer of new learning must occur at a deep level of knowledge—beyond recall. Teachers need to help students see the way new knowledge and skills can be used to solve problems similar to those practiced in the instructional context. What finds no application is soon forgotten by learners (Marzano, 2003). This knowledge of "how to do" will be revisited in Chapter Two. It is the linchpin of knowledge. The importance of applying knowledge—particularly procedural knowledge—cannot be overstated.

6. *Conceptual knowledge is based on facts and helps learners transfer information and skills.* To become a competent learner in any discipline, students must have a deep foundation of information, which is then organized into concepts and generalizations. They must understand the conceptual framework in which facts and examples fit and be able to organize this information so that it can be retrieved when applicable (Willingham, 2009). Individual facts will likely be lost, but generalizations will have more staying power. At least a basic threshold of knowledge must be achieved to support transfer. It takes time and practice to understand complex subject matter, and a satisfactory level of understanding basic elements is essential for successful transfer of information and skills (Bransford et al., 2000).

7. *Students who monitor their own learning are more successful in academic environments.* Learning is enhanced by *metacognition*—a big word describing the act of thinking about thinking and about oneself as information processor and learner. Metacognitive strategies help students become responsible for their own learning and help them learn beyond recall. Metacognitive strategies (using mnemonics,



In this video, a distinction is made between instructional and learning strategies. Metacognitive strategies are classified as learning strategies, and specific examples are provided.

summarizing, etc.) are learned and can be explicitly taught in classrooms. To be metacognitive, students need to know the goals toward which they are working, and they must receive feedback on how they are progressing toward these goals. This feedback most often stems from diagnostic evaluation and formative evaluation. Formative evaluation should be woven into the process of teaching. Formative assessments are designed to monitor instruction so that students and the teacher receive feedback on how the lesson is going and on whether students are moving toward the lesson's objectives. These assessments help students identify their strengths and weaknesses and target areas that need work, and they help teachers recognize where students are struggling and address problems immediately. With formative information, students can become aware of which behaviors lead to success and which are not as effective for them.

8. *Learning is enhanced by challenge and inhibited by threat.* Although challenge is always accompanied by risk to one's self-esteem or success, the learner will thrive in what Caine and Caine (1994) call "relaxed alertness." Students should perceive no risk in what they are asked to learn. Errors are natural in the early stages of learning, and learners need to feel comfortable about making mistakes. Hattie summarizes this idea cogently:

Expert teachers create classroom climates that welcome admission of errors; they achieve this by developing a climate of trust between teacher and student, and between student and student. The climate is one in which "learning is cool" and worth engaging in, and everyone—teacher and students—is involved in the process of learning. It is a climate in which it is okay to acknowledge that the process of learning is rarely linear, requires commitment and investment of effort, and has many ups and downs in knowing, not knowing, and in building confidence that we can know. It is a climate in which error is welcomed, in which student questioning is high, in which engagement is the norm, and in which students can gain reputations as effective learners. (Hattie, 2012, p. 26)

9. *Each brain is unique.* Though virtually all children are born with the capacity to learn, the experiences they encounter actually shape and alter their brains as learning occurs (Bransford et al., 2000). "The single most powerful statement to come out of brain research in the last twenty-five years is this: We are as different from one another on the inside of our heads as we appear to be from one another on the outside of our heads" (Fulghum, 1989, p. 39). Teachers need to be completely open to infinite possibilities in learners; that is to say, they should expect that there will be great diversity in understandings of what they teach. There is reason to doubt the notion that everyone will have the same answer or that there is only one answer worth having. Teaching and learning activities should be varied, and learners should have multiple opportunities to learn whatever they are taught. The models in Part Two will provide many teaching options to accomplish these goals.

Taken together, these principles reaffirm that there is no one best way to teach, but there are principles of learning that good teaching must adhere to. The most important thing we know about learning is that teachers must use professional knowledge and adapt instruction to the needs of learners.

Student Characteristics That Affect Learning

In every classroom there are children with a variety of needs, including students with physical, mental, and emotional challenges; English language learners; students living in poverty; and gifted students. Some of these needs may shift and change daily. Teachers must respond to each of these students in a respectful and knowledgeable way, one that provides every child the opportunity for success. Our aim in this text is



All classroom teachers need to know the required components of an IEP. This video provides a brief overview of what must be included in an individual education plan.



This video offers an introduction to the philosophy of Nel Noddings, who has written a great deal about the ethics of care both in and outside of school.

www.youtube.com/watch?v=sVIZ_mt9l3g

to provide an assortment of general instructional models for classroom use, each of which can help to accommodate learners with special characteristics.

Because classrooms include students with a variety of special challenges, you may work with a collaborative teacher in your classroom. Each identified special education student will have an individual education plan (IEP) that will help inform classroom decisions.

In addition, we are a diverse nation, and the population of English language learners (ELLs) is growing—in rural, suburban, and urban areas. Although English is the predominant language in America, Spanish is spoken by over 12 percent of the population (Gonzalez-Barrera & Hugo, 2013). This percentage varies greatly depending on the area of the country. English language learners can come from a wide range of ethnic backgrounds and many different background experiences. In all cases, however, schools and classroom teachers are responsible for teaching academic content and language skills alike.

All instruction is improved when there are respectful and caring relationships between students and teachers; when goals and directions are clear; when a variety of instructional strategies and models are used; and when teachers use students' prior experiences, culture, and, in the case of ELL students, language as a basis for presenting new knowledge and skills. Teachers of English language learners need to speak clearly, give attention to key vocabulary, scaffold through chunking and unpacking dense text, and be aware of the students' cultural heritage.

Poverty can also affect instruction. Poor children often have fewer positive academic experiences and thus arrive at school with a diminished set of references they can link with new knowledge. The more we learn, the greater our capacity is to learn, so it is important to enhance the experiences of children from poverty. Poor neighborhoods are often chaotic and unsafe, so children arrive at school fearful, which can make learning more difficult. Poor children may also lack sufficient food and health care, increasing the risk of school difficulties. A cooperative and safe classroom community in which good instruction is common can help children who are stressed by a lack of basic resources.

In addition, boys and girls of the same age have different patterns of development. In a sixth grade classroom, most males still look like little boys, while about half of the females look like young women. In their early teens, girls are usually taller, stronger, and more verbal than boys. As teachers set goals for teaching and learning, they need to be conscious of the many ways in which children differ from one another.

Standards and Academic Content

Standards have become a large part of the educational experience in the United States. All teachers must learn to use the standards to design instruction that meets the needs of diverse learners. Most states have accepted the Common Core State Standards (CCSS) and have developed (or are developing) aligned curriculum frameworks. New assessments that are aligned with the CCSS are in the process of being created as we write this text. It is important that you be familiar with either your

WEB RESOURCE

Common Core

Explore the Common Core State Initiative website at corestandards.org and learn more about the Common Core initiative and the standards that are being used in several states.

state's standards or the CCSS. As you read through those standards, ask yourself the following questions:



In this video, a principal discusses standards in education today and how these standards can improve instruction.

1. What would the behavior of a student who had accomplished this standard look like?
2. What are the specific activities and behaviors one might engage in to practice the standard?
3. What specific information and skills does each standard imply?
4. What are the skills and knowledge that should precede this standard?
5. What are the skills and knowledge that will come after students meet this standard?

Standards provide the basis for the instructional decisions you will make in your classroom. To begin unpacking standards for your own use, look carefully at the verbs that describe the standards of learning for each content area you are teaching. You will probably not see many verbs like *remember* or *recall*. On the contrary, you are very likely to see verbs such as *clarify*, *explain*, *use knowledge*, *question*, *describe*, *distinguish*, *evaluate*, and *compare and contrast*. The tests, especially the new assessments aligned with the CCSS, may include questions such as these: “What would happen if . . . ?” “What factors were most important?” “Which statement is best supported by the information given?”

To ensure students are not surprised by being asked to utilize this thinking, the instruction they receive needs to emphasize the same kind of reasoning. If your state's department of education provides sample tests or released test items, examine them carefully to see exactly what a student might need to know or be able to do in order to perform well on the test items. Think of these test items as discrete tasks, each of which can be practiced and mastered. Compare these items with the curriculum guides provided by your school district. With sufficient practice and eventual mastery of the knowledge required by the test, students can perform well on the tests precisely because they do understand what is being asked of them. That will require they be taught in the same way they are to be tested. This is not an appeal to teach to the tests. It is an appeal to teach what you know will be tested. This is referred to as “instructional design with the end in mind.” Of course, the tests are only one end. Your district and school will have additional goals that will guide your planning and instruction.



Grant Wiggins, president of Grant Wiggins and Associates, offers a succinct description of “backward design” in this brief video.

Analyzing Content

The connections between standards and instructional design may not always be apparent, but classroom instruction must be aligned with the state's standards, district curriculum, and associated high-stakes tests in order to provide students the opportunity to be successful. This does not imply that instructional decisions should be geared toward drilling students on anticipated content of the test. Each of the instructional models in this text is designed to help students build connections between what they know and what they are learning. Think of understandings as a complex network of concepts that instruction continuously builds on and reinforces. For example, young children can develop an understanding of city, state, and national governments and the responsibilities of community members by looking at the parallels in how their classroom and their school are organized; but they need the opportunity to reflect on their own role, their classroom, and their school before they can make the connections regarding these concepts. Always start with the known and most obvious, and then move incrementally to the new.

Willingham (2009) makes the case that factual knowledge precedes skill (also known as *procedural knowledge*) and is required for reading and memory has to

support the development of skills. However, having students memorize lists of unrelated facts in hopes of passing a high-stakes test is not a reasonable strategy. Unrelated facts are difficult to remember. Facts that are woven together into a rich, meaningful conceptual network of generalizations (statements of relationships) and principles will increase student performance. For example, knowing the names of the elements of the periodic table alone will not help in developing a deep understanding of the ways chemicals behave or the logic of the periodic table. It is the relationship of the elements that allows for deep understanding. Knowledge of the famous table is built on knowing the characteristics of the elements, pictured as “periods” and “groups” in the table’s rows and columns. All of the instructional models in this text support the development of generalizations in all disciplines and with students at all grade levels. How content should be analyzed will be discussed in greater detail in the next chapter.

Ordering Content



Prior knowledge is often the key to comprehension. In this video, you see a fourth grade teacher, Debra Jongebloed, coach her students in using what they already know to infer the likely meaning of a word with which they are not familiar.



Donna Ogle, professor of reading at National Louis University, first conceived and named the KWL strategy. Watch this video to meet her and hear her describe the strategy.

As we have mentioned previously, educators owe a great debt to David Ausubel, a founder of cognitive psychology. Modern ideas about ordering and presenting content are based on his work. Ausubel’s approach is rooted in two fundamental principles of the psychology of learning: (1) the single most important factor influencing new learning is what the learner already knows, and (2) any concept is explainable at many different levels of generality, with the highest or most general level most easily understood and the lowest or most specialized level the most difficult (Ausubel, 1968). These principles have had a major impact on both curriculum development and instructional practice (Marzano, 2001; Wiggins & McTighe, 2005) and must be guideposts in our instructional planning.

Prior learning is the foundation for all instruction. Every child comes to school with knowledge and experiences that must be acknowledged and respected as new understandings, information, and skills are taught. All teachers must develop procedures for identifying and using the knowledge that students bring with them to the classroom. Sometimes prior knowledge is academic content; other times teachers need to make purposeful connections to the cultural knowledge with which students are intimately familiar. If a student lacks academic knowledge of a concept, that does not mean he or she has no prior knowledge on which to base new learning. Students can be helped to organize their thinking about a topic or reading through the KWL strategy, as described in the Strategy Alert.

The implication of Ausubel’s second principle is that *any stage of learning and understanding builds on previous, more general levels*. It is useful to think of teaching in terms of what has been called the “given-new” strategy of successful communication (Haviland & Clark, 1974): In speaking or writing, people must assume that the



STRATEGY ALERT KWL

KWL, designed as a reading comprehension strategy (Ogle, 1986), can be used with a particular reading or as a strategy to engage students at the beginning of a unit of instruction. Students are asked what they know about the topic or skill (K), what they want to learn about the topic or skill (W), and, at the end of the instructional episode, what they learned about the topic or skill (L). The content may be narrow or broad—a short text excerpt or an entire text. The process may

be done individually, in small groups, or in a whole class setting. The power of the strategy lies in its elasticity. The KWL strategy is student centered because it encourages engagement and metacognition; students develop a purpose for instruction and a way to monitor instruction. Teachers have information to use in their instructional decision making. The strategy is flexible. It can be extended to additional columns and can be shared in small groups or with the whole class.

listener or reader is aware of certain information (the “given”) and that what he or she is communicating (the “new”) is logically attachable to what is already known. The logic of this strategy applies equally well to teaching and learning. Successful teaching of anything depends on the right balance between what the learner already knows and what the teacher wants that learner to learn.

Elements of Instructional Planning



Monica Sahlmark narrates this video, which demonstrates how to chunk content in defining a personal health plan. Watch the video, and think about how these ideas might apply to the content you will be teaching.
www.youtube.com/watch?v=84UKDHyQz1Q

Instructional planning can involve different periods of time and different amounts of instructional content. *Lesson planning* and *unit planning* are terms used to describe the chunking or grouping process teachers and curriculum developers go through. Chunking mainly takes place before instruction, because there is too much information at any grade level or in any content area to cover, and there has to be a way to organize these collected facts and data into bite-sized pieces. Chunking organizes large pieces of information into digestible chunks—a smaller number of information-rich items. Small chunks or parts allow for increased comprehension and help learners retrieve information quickly. Teachers determine what a meaningful unit of information is for their specific content and students. The specificity of these decisions is key—how information for lessons is organized and how long to spend on each lesson are important instructional decisions that are dependent on the classroom context. Chunking will usually be different from one group of students to another, even if they are learning the same material.

Chunking occurs within instructional periods. There are no absolute rules for how long a lesson should take. Although school days are divided into periods, a lesson may occur over any length of time. We know that planning is related to student achievement, but the amount of time for which you plan instruction may vary from short lessons to units that include several weeks of daily plans. Wiggins and McTighe (2005) have isolated important decisions about unit and lesson design, represented by the following questions:

- What is worthy of being taught?
- How will students demonstrate that they have learned what has been taught?
- What learning experiences will students need to have so that they can demonstrate this learning?

Thus, planning requires a look at the scope, focus, and sequence of what is going to be taught. Scope refers to the knowledge that is presented to the students, focus considers how the learning will be demonstrated, and sequence discusses the ways that instruction is organized.

SCOPE

There is too much information to cover in any single course, so teachers must make decisions about the breadth and depth of the content that will be addressed in the classroom. Some direction for deciding what to teach comes from standards. Kendall and Marzano (1997) reviewed national and state content standards and calculated that in order to meet these benchmarks, more than 15,000 hours of additional instruction would be required—an unattainable goal. Of course, no standard should be taught in isolation, and standards and benchmarks are not a curriculum. It is up to the teacher to decide on the scope of what is taught, and the choices should rest on two considerations:

1. The relative importance of factual, conceptual, procedural, and metacognitive knowledge that might be taught in terms of the continuum of the overall curriculum

2. The relative importance of the content to be taught with respect to the age, interests, and abilities of specific learners

Often, scope decisions are influenced by state or district pacing guides.

WEB RESOURCE

Pacing Guide

Go to any school district website and search for a pacing guide at the grade level or content area in which you want to teach. Examine the guide carefully and list any questions you may have about teaching using the guide. Discuss your questions with practicing teachers. The Mansfield, Ohio, school district has several pacing guides for you to study. Go to tygerpride.com/PacingGuides.aspx.

FOCUS

Units of instruction are blocks of lessons that are related by a concept or a big idea—they have a focus. Sometimes units are focused on a concept, like migration, change, or nutrition. The content of the unit is designed to explain the concept. Often, a question or set of questions is the focus of a unit. These essential questions require open-ended, messy, and divergent responses. Divergent questions may have many responses that are dependent on thinking about big ideas. They are frequently used in units to engage students and encourage study and reflection. What makes the United States great? What would happen if our country ran out of oil? Other unit questions may be more specific and more convergent—questions that have a right answer based on the content read or discussed in class. What can be done to help correct the problem of obesity in the United States? What are the differences between jazz and rock? Table 1.1 shows the difference between broad, essential questions and lesson-based questions whose answers can be found in the classroom lesson or text. The questions or concepts that frame the unit are intended to help students understand that knowledge is made up of answers. Too often, students leave school never realizing that knowledge is made up of answers to someone’s prior questions, produced and refined in response to puzzles, inquiry, testing, argument, and revision. Knowledge comes from curiosity.

The scope and focus of units are determined, in part, by standards and standards-based assessments. Teachers must be intimately familiar with standards and related assessments so that units of instruction that will help students build strong neural networks for new learning can be developed.

In addition to analyzing the district curriculum, common benchmarks, and high-stakes tests so that they can design lessons and units to ensure student success,

TABLE 1.1 Essential and Lesson-Based Questions

Essential Questions	Lesson-Based Questions
Why do revolutions occur?	What were the direct causes of the American Revolution?
What makes a person revolutionary?	Who were the heroes of the Revolutionary War?
What does it mean to be brave?	What were the beliefs that the leaders of the American Revolution espoused?
From where do new ideas come?	

teachers must also take into account what is known about student learning. During the last two decades, there have been changes in our understanding of learning that also demand changes in teaching. Information about how students learn requires teachers to look at unit and lesson planning in a new way. Classrooms must be tailored to the needs of students through acknowledgment of students as learners, the standards and content that need to be taught, and how learning will be communicated, demonstrated, and evaluated—all aspects of unit planning. Since we know that new learning occurs when neural networks become more sophisticated—when there are more connections—units should be planned to take advantage of students' prior knowledge. A unit on weather taught in the Gulf Coast region, for example, would have references to Hurricane Katrina or a geography unit might begin with where the school is located and what other areas students have visited.

SEQUENCE

Chronology/Thematically

A third set of decisions to be made concerns the order of subject matter. Subjects may be ordered chronologically or thematically. In a unit on the American Revolution, for example, important events may be presented chronologically, from the prior events such as the Tea Act and the Boston Tea Party, to Patrick Henry's "Give me liberty or give me death" speech in March 1775, to April 1775, when war broke out. The stories of specific events may be shared in the order in which they happened. On the other hand, a unit on the same topic may include the theme of bravery, consisting of similar information from a different conceptual lens. Specific stories about the bravery of well known and lesser known people might be shared. For example, the well known ride of Paul Revere can be discussed in conjunction with the story of the ride of a lesser known hero, Jack Jouett, who saved Thomas Jefferson and other Virginia legislators from capture by the British.

Complexity

Basic skills, such as the fundamentals of reading or arithmetic, usually require that the sequence of skills proceeds from the simpler to the more complex. Learning trajectories are implied in both state standards and the Common Core State Standards, and most new curricula address these progressions. District pacing guides may dictate the order, but you can revisit themes and topics according to the interests of your students. In the unit on the American Revolution, the sequence of information might be ordered based on historical competencies. The unit might begin, for example, with the first historical thinking skill—making an historical argument from evidence—then move on to analyzing and evaluating the patterns that can be found in a chronological study of the Revolutionary War. Following that the teacher can prepare activities and information that allow students to compare and evaluate multiple perspectives of a specific Revolutionary experience. The unit can end with supporting the students in developing interpretations and synthesis of the information that was presented.

Prior Knowledge

Because new learning is based on previous learning, it is important to provide connections to help the learner identify how the new learning fits into what is already known. In short, there should be a logical order for the sequence and there must be obvious connections between the information to be learned and that already known by the students. The breadth and depth of content and how it is focused and sequenced are significant teacher decisions that directly affect instructional planning.

CHUNKING INSTRUCTION: UNITS AND LESSONS

Units are collections of lessons that have similar goals leading to broad understandings. They help teachers plan for large pieces of content and skills, and they help students make connections between individual teaching episodes. Units contain lessons that hang together and form an entity. Both units and lessons contain objectives addressing what students should understand, know, and be able to do (see Chapter Two). The unit objectives will be more general; the lesson objectives will be more specific. Individual lessons that comprise the unit will help students reach the detailed unit objectives.

DEVELOPING LESSON PLANS

Lesson plans are the component parts of a unit design. Just as a course is divided into units, units are divided into lessons. A lesson may span several days, or it may take only one day. The time a lesson takes is not determined by the school's bell schedule. It is determined by the best way to chunk information for a specific group of students.

In deciding how many lessons are necessary to accomplish the unit objectives, it is necessary to be flexible. You may need to rethink and modify the unit objectives because they may prove too ambitious or too limited. The design process is always circular in that prior decisions may be modified as the teaching progresses. Each lesson should be a logical part of the unit plan. Once there is a clear chart of the main factual, conceptual, procedural, and metacognitive knowledge to be studied, lesson planning flows easily.

Here are four guidelines for the development of effective lessons:

1. Limit the concepts and content to be covered in a lesson to allow time for the students to review, practice, and get feedback on what they have learned. This is formative assessment that occurs during instruction and allows both the teacher and student to make mid-lesson correction toward student learning.
2. Be sure that new material is connected to what has been learned previously and that the connections are clear.
3. Check frequently with students to ensure that they are acquiring the intended knowledge, attitudes, and skills. Continue to gather formative information; be prepared to alter your plans or reteach if the learning is not taking place or if the students seem to be disengaged.
4. Never accept students' failure to learn as inevitable or unavoidable. Keep in mind that error is inevitable in learning and merely points the way in teaching.

Remember that good lesson plans have common emphases—appropriate objectives, opportunity for practice and feedback, and flexibility.

SUMMARY

It is essential to understand the standards governing the content of what students are expected to learn, but it is equally important to have a firm grasp on how students learn anything as a consequence of teaching. Students and teachers must share a commitment to specific learning outcomes and have a clear sense of why knowing what is taught might make a difference to one who learns it. Learning needs to be relevant and visible to students; part of the art of teaching is to ensure that happens. Teachers must understand learners as well as they understand what is to be learned.

EXTENSIONS

ACTIVITIES

1. Many states post standards documents on their department of education websites. Look at the standards on your state's department of education website. Review the standards and the supporting materials available to you.
2. If you will be using a textbook in your teaching, compare the text with the state standards you have examined. What are the similarities and differences?
3. Ask a variety of people who they think should determine what is taught in schools. Probe by asking who should determine what knowledge is worthy of being taught. Think about the answers you receive. Did any of the responses clarify your thinking?
4. Look at a textbook you might be using in the near future. Identify some essential questions you might use in one of the units designed from the text.
5. Look carefully at a state standard in a content area that you will be teaching. What are the transferable big ideas in the standard? How are these big ideas related to other disciplines? Did you uncover any personal misconceptions as you read the standard and thought about your own thinking? Are there common misconceptions associated with this standard? How might you help students become more interested and excited about learning the knowledge presented in the standard?
6. For links to a variety of examples of formative assessments, search the Web with the terms *formative assessment examples*, *formative assessments*, and *instructional assessments*.
7. For an elaborated discussion of KWL, along with downloadable materials, see readingquest.org.

REFLECTIVE QUESTIONS

1. With what ideas presented in this chapter did you disagree? Why?
2. How will the idea of metacognition affect you as a learner and as a teacher?
3. Which content that you will be teaching is the subject with which you are least familiar? How will you go about becoming more familiar with the content? How will the lack of knowledge affect your teaching?
4. Did any of the principles of learning discussed in this chapter change your thinking about your own educational experiences? Which of the principles do you believe will be the most difficult to apply to your classroom?
5. What are your beliefs about how intelligence affects how students learn? What do you still want to know about theories of intelligence?
6. Think about the context in which you are teaching or will teach. What can you do as a teacher to decrease barriers to student learning in this context?
7. How can you organize your classroom to maximize student learning? What would your ideal classroom look like?

2

Objectives, Assessment, and Instruction



Chapter Objectives

You Will Know

- The purpose of instructional objectives
- The KUD format for instructional objectives
- How to move from standards to objectives
- The importance of instructional alignment
- How to assess instructional objectives

You Will Understand That

- Effective instructional decisions are planned and intentional

You Will Be Able To

- Explain the role of standards in determining school content
- Describe the planning process for aligned instruction
- Distinguish between types of school knowledge
- Design aligned KUD objectives
- Vary the cognitive impact of *able to do* objectives
- Discuss the relationship between unit and lesson planning and the need for instructional alignment

Let us introduce Emily and Jeremy. Jeremy is a third grade teacher in an urban school, and Emily is a 10th grade English teacher in a suburban school. Both are certified teachers in their first year of teaching. Novice teachers are frequently unsure of where to begin planning for teaching. Jeremy and Emily are no exception. Should they simply follow the textbook, stick to the pacing guide, or use the methods that were practiced in their teacher education program? Remembering that one of her field instructors told her that instructional objectives are a waste of time, Emily is totally confused about how and why to plan. Jeremy isn't far behind. We have some advice to share with these new teachers.

This chapter addresses instructional objectives—their purpose and design. Instructional objectives are vibrant goals required for good teaching and student learning. Without clearly articulated targets, teachers and students will have difficulty traversing the road to student learning. The instructional objectives must represent the culmination of a process for the teacher—a process that includes prioritizing subject matter content and skills. Good instructional objectives cannot be legislated. Although they can and should be derived and adapted from state and district curriculum standards, they must be determined by careful consideration of

disciplinary content, student prior knowledge, what is known about how people learn, and available materials and resources. Good instructional objectives illustrate an understanding of pedagogy. They allow teachers to adhere purposefully to the principles of learning that all good teaching must reflect.

The Purpose of Instructional Objectives

Instructional objectives represent key decision points in teaching in which goals are articulated and shared. Clearly defined intentions allow lessons to be focused and challenging rather than haphazard and shallow. Teachers and students alike require targets toward which to progress. Why are we learning about the Civil War? Can I just learn what interests me? Are there any ideas about the Civil War that will help me understand other conflicts? What is it my teacher wants me to learn? What do historians know and understand about the Civil War? What will be on the test? Questions like these, asked or implicit, should be reflected in instructional objectives.

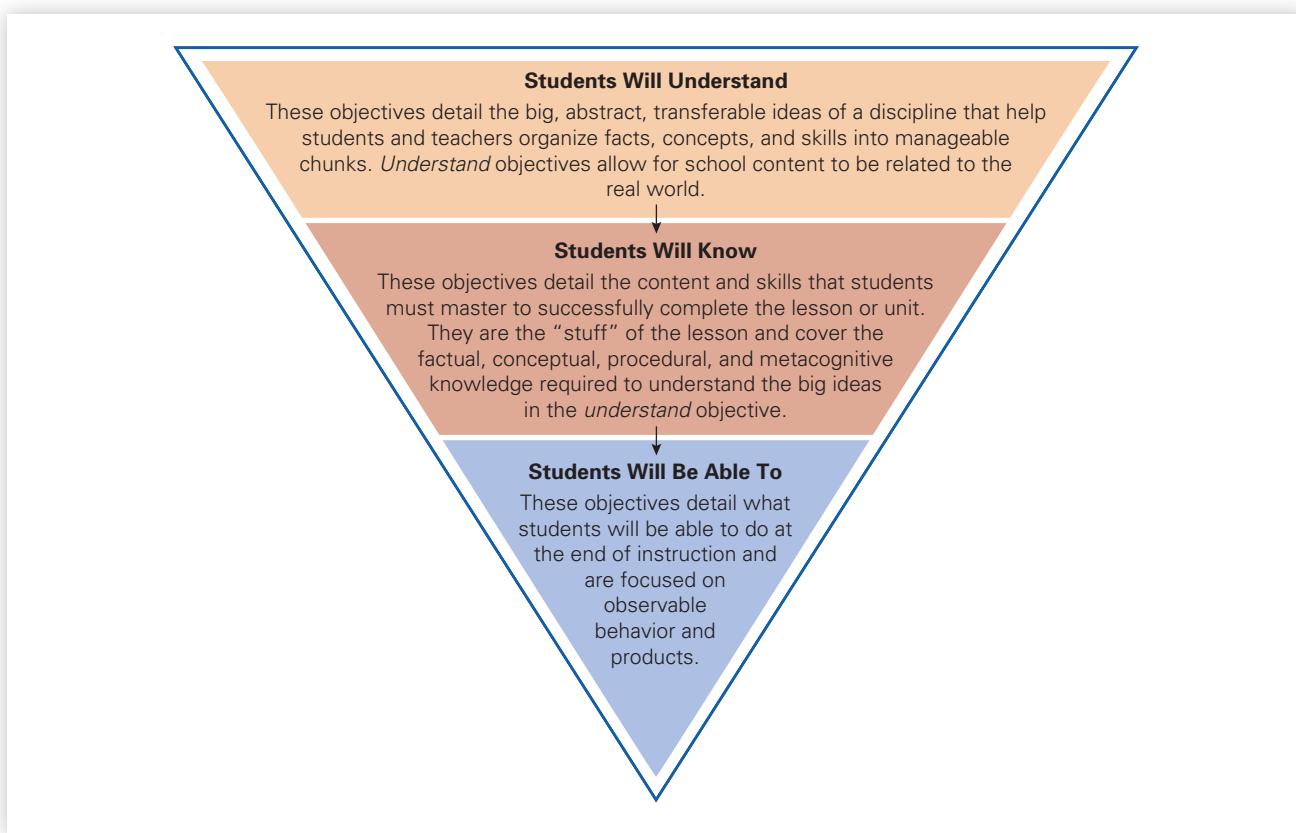
Instructional objectives can be stated as what students will *know, understand, and be able to do* (KUD), a format that provides a foundation for all curricular, instructional, and assessment decisions made in classrooms. This approach to designing instructional objectives helps ensure the alignment of instructional objectives with assessment and teaching strategies. Clearly articulated instructional objectives are easier to assess, and they provide boundaries for what will occur in a lesson or unit. Thus, instructional objectives imply what will happen in classrooms. A list of instructional objectives also gives a preview of the subsequent instruction and assessments whose content will follow directly from the objectives. This approach to curriculum is called backward design (Wiggins & McTighe, 2005). Beginning with the end in mind, instructional objectives detail what we want students to know, understand, and be able to do at the end of an instructional period.

Research shows that students need learning experiences that are well organized, related to prior knowledge, and assessment focused. Because instructional objectives guide teacher and student behaviors, they allow teachers to present information in ways that are congruent with student needs while simultaneously meeting state curriculum standards (Hattie, 2012; Hattie & Yates, 2014). Figure 2.1 shows the relationship between the three different forms of instructional objectives or learning targets. The broad *understanding* target is the most abstract, the *able to do* objectives are the most concrete. Figures 2.2 and 2.3 show the relationships between the three types of objectives in two different content areas.

Backward design is not a new concept. As early as 1962, Gilbert suggested that instruction should begin with the end in mind (Cohen, 1987). Mastery learning, an educational reform popular in the early 1970s and currently seeing some resurgence, supports instructional alignment and backward design in that the assessments are planned before the instruction occurs, allowing teachers and students to focus on specific goals, rather than face uncertainty about tests or quizzes. The importance of this approach to instructional planning is supported by recent research on learning



Kristine Kershaw in this [video](#) (www.youtube.com/watch?v=3Xzi2cm9WTg) provides a humorous illustration of the importance of backward design. Grant Wiggins, an author of *Understanding by Design*, explains backward design in this [video](#) (www.youtube.com/watch?v=4isSHf3SBuQ) and this [video](#) (www.youtube.com/watch?v=vgNODvsgxM).

FIGURE 2.1 Instructional Objectives

and by the current accountability movement that mandates end-of-course high-stakes testing (Bloom, 1983; Bransford, Brow, & Cockling, 2000; Hattie, 2012). Figure 2.4 shows the steps involved in backward design related to *know*, *understand*, and *do* instructional objectives.

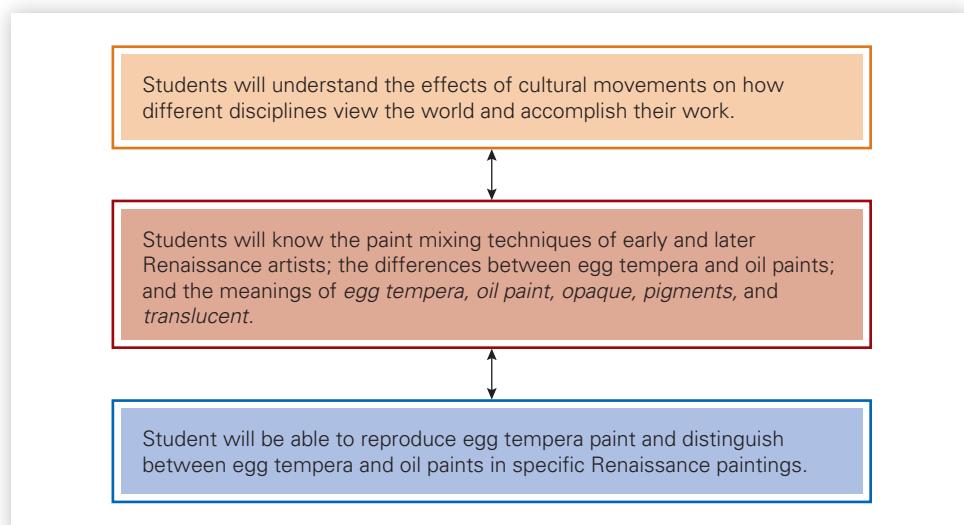
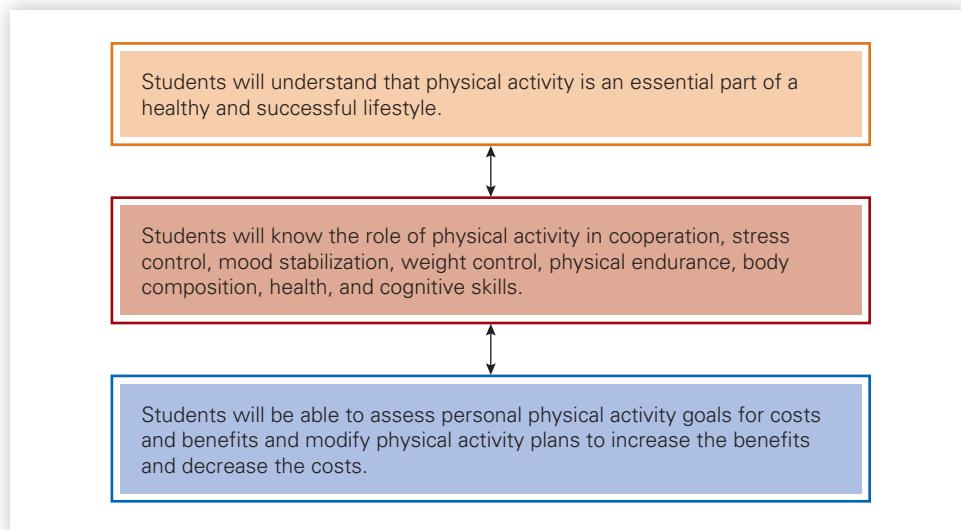
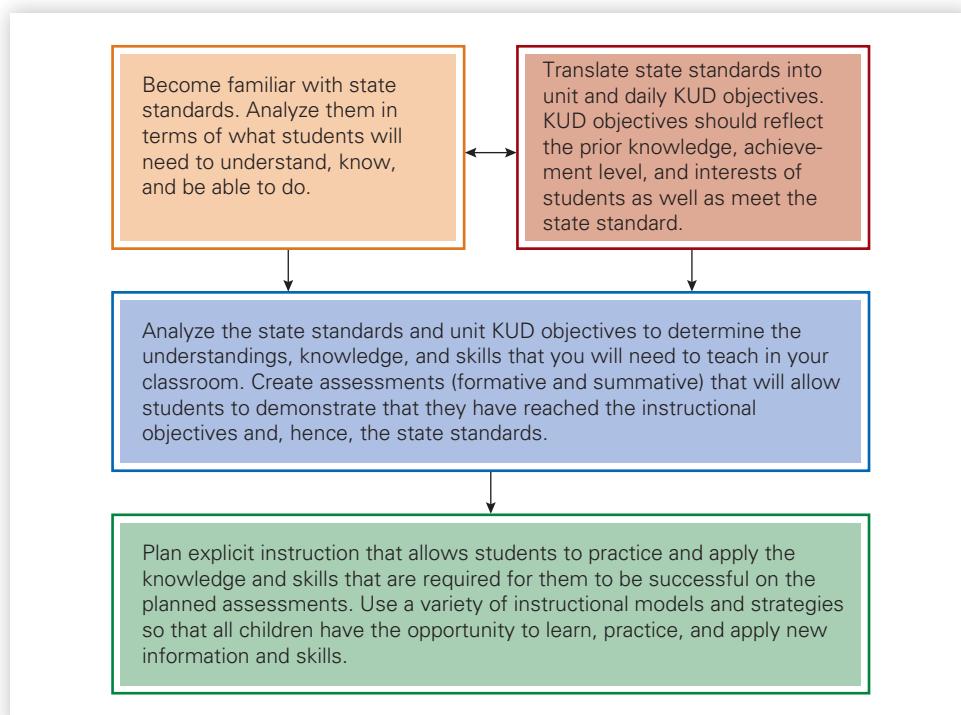
FIGURE 2.2 KUD Objectives for a Lesson on Changes in Painting during the Renaissance

FIGURE 2.3 KUD Objectives for a Lesson on the Costs and Benefits of Physical Activity



Teaching comprises many decisions made in the complex, multidimensional, fast-paced world of the classroom. Teachers may not be consciously aware of all of the decisions that are made and the impact that these decisions have on teaching and student learning. Careful planning makes allowances for the unforeseen—such things as snow days, fire drills, and various interruptions that must be accommodated within the “routine” of instruction.

FIGURE 2.4 Backward Design



Successful teaching implies student learning. Research on teaching and learning indicates that there are clear paths to better instruction—a road to follow to increase student learning. Thus, not all decisions are equal. Those based on the knowledge of how students learn and how education can be organized to promote learning will result in greater student achievement. Writing good instructional objectives and aligning assessments and instruction with these objectives can increase the likelihood of successful student learning. Knowing how to nurture student learning is knowing how to teach. This is a key understanding on which both Emily and Jeremy need to focus.

Instruction can be designed to address the needs of learners if teachers are purposeful in constructing instructional objectives. For example, in considering the learner need for meaningful engagement, teachers can identify the knowledge, big ideas, and skills that will be meaningful and motivating to a particular group of students. Intentional planning helps teachers organize student experiences along a reasonable trajectory of student learning. Knowing what students should know, understand, and be able to do at the end of instruction means that teachers can continually monitor a student's progress toward specific objectives.

Lucid instructional objectives also provide targets for scaffolding instruction. Figure 2.5 shows teacher behaviors that can scaffold student learning. Scaffolding provides support for students as they are learning new and challenging materials. Scaffolding is not possible without clear learning targets, because the scaffold must help the student or students reach specific goals. Unambiguous instructional targets also provide a framework for the remediation of student learning. Instructional objectives will help in the selection of different, supporting instructional models for reteaching. Without these predetermined ends, student progress is difficult to ascertain, explain, and support, and thus opportunity is wasted. Remember that instructional objectives provide a focus for teaching and learning that allows for assessments and instructional strategies to follow. The alignment of objectives, assessments, and instruction improves the chances for successful student learning.

FIGURE 2.5 Scaffolding



For Jeremy and Emily to develop aligned instruction, they will need to develop clear *know*, *understand*, and *able to do* objectives.

The KUD Format for Instructional Objectives

KNOW OBJECTIVES

Instructional objectives can be written in many forms (Gronlund & Brookhart, 2008; Marzano, 2009). We prefer the KUD format—*students will know*, *students will understand*, and *students will be able to do*. This format allows for the articulation of specific understandings, knowledge, skills, and performances that can help guide teaching behaviors and make teaching transparent and equitable. Each of the chapters in this text has objectives that follow the KUD format.

The decision of where to begin planning for instruction is somewhat arbitrary. Instructional objectives that define what teachers want students to know (*students will know*) is as good a place as any to start. However, in other circumstances, there may be reasons to begin with an *understand* or an *able to do* objective. It depends on the teacher, the context, the standards, and the pupils with whom a teacher is working. Writing instructional objectives is not a linear process; it is possible to begin anywhere and move around as the exact targets of a unit or a lesson emerge.

Know instructional objectives detail the content and skills a student must master to complete the lesson or unit successfully. The “stuff” of the lesson is listed in the *know* instructional objectives and is determined by the teacher from standards, pacing guides, curriculum blueprints, past experiences, and personal knowledge. With the glut of information available, teachers must be careful to prioritize and organize what is taught. With an approach that ranks and chunks information, students can have the opportunity to learn the important knowledge and skills. As a consequence, they will be able to transfer this critical knowledge to novel situations both in and beyond school. The *students will know* objective forces teachers to choose and focus on particular types of knowledge during instruction. Again, the knowledge and skills that students need to know are articulated in state standards, and an analysis of each will provide information for the specific content needs to be conveyed to students. To analyze each standard, it is important to understand the different kinds of content and skills that are represented in standards.

Know instructional objectives remind teachers of the essential disciplinary information worthy of teaching. These instructional objectives insure against digressions and help keep a healthy flow to classroom discourse. If the teaching target is for students to remember the characteristics of each of the geologic time eras, the lesson will focus on this information but not on, for example, the accuracy of the movie *Jurassic Park*.

Factual Knowledge

Facts are discrete bits of information that provide building blocks for concepts and generalizations. A fact can be a definition or a verifiable observation. It is often singular in occurrence. Here is a fact that students can determine: “On Wednesday of last week, we had half an inch of rain.” (See Figure 2.6 for additional examples of facts.) Facts can also be defined as the elements that students must know in a discipline to understand concepts or to solve problems. For example, students learning to read music must be able to identify or *know* musical symbols; students studying current events must *know* the names of political figures, events, and geographical features of different places in the world. Anderson and Krathwohl (2001) posit that factual knowledge encompasses knowledge of vocabulary and knowledge of specific details. This sense of facts is useful to the classroom teacher and is the definition on

FIGURE 2.6 Examples of Facts, Concepts, and Generalizations: Impressionism

Facts	<ul style="list-style-type: none"> In the middle of the 19th century, photography was becoming more popular, and the Romantic movement was ebbing. Monet, Renoir, Sisley, Bazille, Cezanne, Pissarro, and Guillaumin became friends and often painted together. They and others used a different approach to painting than was seen at the Salon de Paris. Their paintings were of outside scenes, used visible short and thick brushstrokes, and had an emphasis on light and the reflection of color while often focusing on movement. In 1863, the Salon de Paris rejected a painting by Manet. The artists using these new techniques organized their own art shows.
Concepts	<p>Impressionism Art of spontaneity Collective Art techniques</p>
Generalizations	<p>Impressionism was a reaction to more formal art techniques. Art is influenced by and influences the context in which it is created.</p>

which we will base our discussion of instructional models. All of the models presented in this text rely on academic content and the foundation of academic content is facts. Many facts can be linked into an understanding of concepts and many concepts can be linked together to form generalizations.

It is the teacher who chooses the facts that support the predetermined concepts and generalizations. This choice comes from the teacher's understanding of the standards, students, and resources, and from the teacher's experiences. There are many facts from which to choose to make a lesson meaningful to a class of learners. In Emily's classroom, she teaches many skills that are dependent on factual building blocks. In one case, she wants her students to know that word origins can help them read unfamiliar words. Emily needs to make certain that the examples she uses to support this understanding are accurate and familiar to her students through past experiences or prior knowledge. So, the factual examples that she uses may be specific loan words from other languages with which students are familiar (taco, kayak, liberty) or with blended words (brunch, smog, simulcast).

Conceptual Knowledge

Concepts are the names given to categories formed as a result of classifying factual data. To make sense of stimuli in the world, learners of all ages form concepts and give them names. Imagine the cognitive overload if all things in the world were seen as separate and unrelated entities. To form concepts, learners pay attention to likenesses, ignore differences, and place similar objects in the same category. A pussycat asleep by the fire and a tiger in the jungle have many differences, but by attending to similarities and ignoring those differences, young people form the concept of *cat*.

Statements that link two or more concepts are generalizations. Unlike facts, generalizations are predictive. Consider the following. "Pat has just finished two novels that are on the current best seller list. Her brother, Owen, has completed a long, nonfiction work about World War I. In the evening, the siblings and their parents spend time in the living room reading." These are factual statements formed on the basis of observation. They do not tell us whether the books were enjoyable or whether Pat and Owen would recommend the books. They are simply

statements of what was observed. “The Smith family buys a lot of books.” This is a generalization based on the observation and on our understanding of concepts such as “books,” “novels,” “nonfiction,” and “living room.” We have inferred from our observations that the Smith family reads a lot, and we may predict that they buy a lot of books to read. Of course, this statement is not necessarily true. The family may use the public library and borrow books for free, or they may be in a cooperative that shares books, or they may borrow ebooks online. However, based on our observations, we formed a generalization and made a prediction. Only data from additional observations would determine the accuracy of the generalization. Conceptual knowledge subsumes and organizes discrete bits of information as these bits are related to one another and function together. For conceptual knowledge, students must have bits of factual information to categorize and classify. In Parts Two and Parts Three, we will delve into the issues of concepts and their relationships to facts and generalizations. Figure 2.6 shows an example of academic facts, concepts, and generalizations.

Procedural Knowledge

Not all knowledge is factual or conceptual. Procedural knowledge is the knowledge of how and when to do something—it is what we need to know in order to perform various tasks. Learning how to do something requires that we know (1) the steps for completing the task (*know that*), (2) how to complete the steps (*know how*), and (3) when to implement the procedure (*know when*). For example, a student in Jeremy’s class learns that single-syllable words ending in a silent *e* often have the long sound of the vowel. The student learns *how* to make the long vowel sound. Then by examining exceptions to the rule in words such as *circle*, *since*, and *house*, the student learns when the rule does or does not apply. Thus, Jeremy’s lesson about single-syllable words requires a procedural *know* objective.

Procedural knowledge includes methods of inquiry and the criteria for using subject-specific skills that are explicitly taught in classrooms through demonstrations and definitions. By defining and demonstrating a skill and its importance, students can learn to determine when it is appropriate to implement the skill. Skills such as summarizing, identifying similarities and differences, and brainstorming are a few of the skills discussed in this text. These strategies represent general procedural knowledge and are supplemented with subject-specific skills such as identifying word origins by examining prefixes, roots, and suffixes.

Metacognitive Knowledge

Metacognitive knowledge is the ability of learners to analyze, reflect, and understand their own cognitive and learning processes. Students who identify appropriate learning strategies in the right context are using metacognition. For example, a student may know that she has trouble picking out the main idea in a reading passage. If she has been taught to use a simple graphic organizer to identify a main idea, and then chooses on her own to map out a passage in a web, then that student has used metacognition to complete the task. Procedural knowledge is the knowledge that is accumulated about how to do something and when to use specific strategies and procedures; metacognitive knowledge encompasses information about learning, in general, and awareness of one’s own learning, in particular.

Each of these four knowledge types is critical in learning a discipline. Each offers the “stuff” of what we teach—the focus of *students will know* instructional objectives. Table 2.1 demonstrates the different types of knowledge as taught in a science class (with content based on Common Core English/language arts standard RST 6-8.1 [corestandards.org]). It also demonstrates related *students will know* examples.

TABLE 2.1 Examples of Knowledge for Use in Geologic Time

Type of Knowledge	Example of <i>Students Will Know</i> Instructional Objectives
Factual	
Geologic time is the age of earth according to the record of rock strata.	Students will know the definition of <i>geologic time</i> .
Conceptual	
Geologists have divided earth's history into eras—spans of time that are based on the general characteristics of living things during that time. The time periods are relative and not absolute.	Students will know the critical attributes of fossils.
Procedural	
Geologists are able to determine the age of a rock through the natural radioactivity of chemical elements.	Students will know the procedures used for determining the age of rocks.
Metacognitive	
Students studying geologic time must remember the various divisions of relative geologic time in chronological order.	Students will know a variety of mnemonics for relative geologic time.

UNDERSTAND OBJECTIVES

Students will know instructional objectives can be seen as the foundation of lesson and unit content. *Students will understand* instructional objectives, on the other hand, move beyond bits of “stuff.” *Understand* objectives are the pinnacle toward which all information and tasks in school are aimed—abstract, big ideas that students may remember over a long period of time.

The *students will understand* instructional objectives help teachers and students make sense of the knowledge on which lessons are based by forming big ideas or generalizations that serve as umbrellas for the *know* objectives. These big ideas are critical in getting the meaning of the discrete pieces of information represented in the *students will know* instructional objectives. Because there are simply too many bits of material to learn, *understand* instructional objectives help teachers to organize facts, concepts, and skills into manageable chunks. The developmental level of the learner, available resources, and the teacher’s background dictate the level of content specificity in lessons and in determining objectives. Knowing the “stuff” of a discipline is not enough. “Stuff” needs to be interwoven into abstract, transferable ideas. Global goals for schooling demand that school content translate into real-world ideas and skills. Wiggins and McTighe (2005) call these transferable ideas “big ideas.” Helping learners prioritize and frame important knowledge, big ideas are the linchpins or central, cohesive elements of a discipline and are essential for understanding a subject area. Big ideas answer the important questions in a field of study. Lynn Erickson (2007) defines big ideas as statements that are broad and abstract, universally applied, and represented by different examples that share common characteristics. They are the ideas toward which we teach. Because knowledge is constantly accumulating and changing, big ideas must be continually validated by contemporary factual examples. New information may change the emphasis of a strong generalization, and a big idea is a generalization. Thus, the relationship between *students will know* instructional objectives and *students will understand* instructional objectives takes on importance.

TABLE 2.2 Characteristics of a Key Generalization (Big Idea)

- Ties concepts together
- Organizes facts into broader understandings
- Requires instruction because the idea is not always obvious
- Represents persistent challenges in a discipline or in life
- Can help us understand new ideas in the future
- Transfers to different settings, times, and cultural traditions
- Is insightful, beyond vague notions familiar to students

Without the demarcation of a broad, abstract understanding, teachers and curriculum developers may choose less important, insignificant bits of information to support a big idea; without an interrelated set of factual, conceptual, procedural, and metacognitive information, it is difficult to understand the abstractions toward which teaching is directed. Jeremy and Emily must think about the big transferable ideas that are supported by the identified instructional strategies and assessments in their units.

We know that big ideas are important generalizations that require guided instruction for student attainment. Table 2.2 identifies the critical characteristics of these important understandings. Whether they are called *big ideas* (Erickson & Lanning, 2014; Wiggins & McTighe, 2005), *main ideas* (Taba, 1962), or *key generalizations*, the critical characteristic of a big idea is that it has “pedagogical power”—it provides for understanding the core foundation of a discipline by making sense of the discrete facts and skills that are important to those who practice the discipline. Students need to move beyond pieces of information to understand the important ideas of a discipline. Content knowledge is only a means to an end. Deep understanding of the discipline is the goal, and big understandings help to get there. With deep understanding, students are more likely to apply knowledge to new problems and situations. Transferring to new settings, to different times, or to different cultures requires conceptual understanding (Erickson & Lanning, 2014). Big ideas can extend beyond specific disciplines.

Students will understand instructional objectives are broad and abstract; they work to tie together a number of conceptually linked lessons. Consider an instructional objective like the following: “Students will understand that many individual decisions and behaviors contribute to a healthy life.” Several lessons may need to be taught using this *understand* goal to help students gain information and skills necessary for demonstrating understanding of this big idea. For example, one lesson in the unit may focus on how to determine a healthy diet while another lesson may provide steps in conflict resolution. Each of these skills is supported by facts (calorie counts, how to manage emotions, etc.) and can be connected to the big idea of the unit.

Understand instructional objectives aid in the articulation of what teachers and curriculum designers mean when they say they want students to “understand.” What does it mean to understand? Wiggins and McTighe (2005) believe that when students understand, they can explain, interpret, apply, identify critical perspectives, and empathize. A *students will understand* instructional objective can also indicate, more generally, that students are able to construct meaning from instruction—to think about the concepts and generalizations that are important for the discipline they are studying. In any case, *understand* objectives are assessed through student performance, which requires knowledge and skill. Therefore, the *students will understand* objective is clearly associated with what we want students to *know* (the *understand* instructional objective is an abstraction of the *know* instructional objectives) and what we want students to be *able to do* (the performance aspect).

TABLE 2.3 Examples of *Students Will Know* and *Students Will Understand* Instructional Objectives

<i>Students Will Know</i>	<i>Students Will Understand That</i>
The definitions of <i>beginning, middle, and end</i> (of a story)	Reading helps us to write well
How to plan and write a story	
English derivatives of Latin	Languages evolve over time
The definition of <i>perspective</i>	Multiple perspectives deepen understanding of a story
How to identify multiple perspectives in a story	
A circle can be described by an equation	Curved shapes can model objects and events
The definition of <i>main idea and supporting details</i>	Texts convey important ideas

The relationship between *know*, *understand*, and *able to do* instructional objectives is critical. The three are closely linked, and a change in one may shift emphasis on one of the others. This connection allows teachers to organize instruction for individual classes while still teaching to the important and transferable ideas in each discipline. KUD objectives provide clear and robust learning targets that are specific, and they provide design boundaries for teachers in planning lessons.

Examples of *students will understand* instructional objectives, and the *students will know* instructional objectives to which they are related, can be found in Table 2.3. Notice that *understand* instructional objectives are written in the form “*Students will understand that*.” By using this sentence stem, a generalization rather than a topic will follow. The statement will be a better signpost than one or two words. “*Students will understand that* all organisms need energy and matter to live and grow” provides more guidance to teachers as they plan instruction (and to students as they learn) than would “*students will understand* basic principles of life science.” *Understand* objectives constitute what students remember years after the discrete facts and skills have faded from memory. The *students will understand* instructional objective makes sense of the articulated content in the *students will know* instructional objective. The *understand* statement opens the file drawer of facts and skills that are needed to make sense of the big ideas.

ABLE TO DO OBJECTIVES

Students will be able to instructional objectives are statements of the learning that will occur as the result of instruction. Both of our young teachers, Jeremy and Emily, are comfortable with these types of objectives although, as we discuss later on, they often make the common error of writing learning activity goals rather than instructional goals that focus on student behaviors. Goals focused on student behaviors are observable and measurable and can involve cognitive, affective, and psychomotor instructional objectives (Airasian, 2005; Anderson & Krathwohl, 2001). This text focuses on the cognitive skills that are the foundation of classroom instruction because the authors are devoted to cognitive instructional strategies and models that are based on what is known about how people learn. There are other types of objectives—*affective* (feelings, attitudes, and emotions) and *psychomotor* (physical and manipulative skills). These are also important classroom considerations. Discussions of the relationship between *affective* (social and emotional) and *psychomotor* objectives and academic achievement can be found in other resources (Elias, 2005).

Students will be able to instructional strategies have also been called *behavioral objectives* because they focus on student behaviors. Some instructional objectives only use the *students will be able to* format. The focus on objectives has seen several iterations in the last 50 years, always with a focus on clearly articulated targets for student learning (Anderson & Krathwohl, 2001).

Able to do instructional objectives can be written at different levels of specificity. Instructional objectives for a course are stated in more general terms than instructional objectives for a unit of study, which are more general than instructional objectives for a lesson to be completed in a class period. But whatever the level of generality, *students will be able to* instructional objectives must be in agreement with *students will know* and *students will understand* instructional objectives, and together all of the instructional objectives must allow for the congruence of objectives, assessment, and instruction.

Bloom's taxonomy is often used to identify the behaviors that teachers are targeting in their lessons (Bloom, 1956). Bloom's taxonomy is a classification system of the cognitive, affective, and psychomotor domains. The cognitive domain is used frequently in the development of classroom learning objectives. The processes identified in *A Taxonomy for Learning, Teaching, and Assessing* (also known as *Bloom's revised taxonomy* [Anderson & Krathwohl, 2001]) allow for careful construction of instructional objectives that target specific student thinking behaviors. Objectives should not be confused with activities—a common error new teachers frequently make. Instructional objectives are not activities. They do not describe how students will spend their time. It is necessary to clearly identify the behaviors that students will demonstrate after successful instruction and not to confuse these end performances with classroom pursuits. The construction “*students will be able to*” is important for the distinction between activities and instructional objectives, because the objectives detail the behaviors that are expected as a result of teaching. Instructional objectives define the purposes of instruction and help to limit the kinds of assessments and instructional strategies that will be used to help students reach the instructional targets.

Bloom's revised taxonomy (Anderson & Krathwohl, 2001) provides six categories of student behavior that describe student learning. These distinct cognitive processes form one basis for developing *students will be able to* instructional objectives.

- Remembering
- Understanding
- Applying
- Analyzing
- Evaluating
- Creating

Note that *understanding* in this list refers to comprehension, not to understanding big ideas.



This video introduces the elements of Bloom's revised taxonomy of cognitive objectives.
www.youtube.com/watch?v=g1lc-GWtGII

WEB RESOURCE

Bloom's Taxonomy

The Vanderbilt University Center for Teaching has a web page on Bloom's taxonomy that provides information on the background of the taxonomy, the original and revised versions, reasons for using it, and additional resources. Go to cft.vanderbilt.edu.

Webb's depth of knowledge (DOK) (Webb, 2011) is another tool that can help teachers design *able to do* instructional objectives. DOK focuses on the outcome measure that is determined by a standard. The DOK framework is frequently linked with the Common Core State Standards (CCSS). The ultimate goal of the DOK is to ensure that instruction matches the intent of the academic standard. The DOK does not use a verb as the focus of objective design as Bloom's taxonomy does—it examines the cognitive demand of the task described in the standard and the associated assessment. For example, DOK level 2 requires students to summarize, estimate, organize, classify, and infer. The focus, however, is not on these verbs, but on the complex tasks students are asked to perform to demonstrate their depth of knowledge. For level 2, students may be asked to classify a series of procedural steps, explain the meaning of a concept or how to perform a task, or make a map. The intended learning outcome determines the complexity of the task.

Learners need repetition and elaboration in lessons so that information can be readily stored in permanent memory. *Students will be able to* instructional objectives allow teachers to specify the knowledge and skills that must make up instruction. Specifically articulating the types of cognition students will be developing and practicing ensures specific opportunities for student learning. When we combine the types of cognition with academic concepts and generalizations, we can be very clear about what our instructional objectives are. For example, "students will identify the characteristics of rational numbers" is a target toward which students can progress. We know that the cognitive behavior is at the lower level of Bloom's revised taxonomy. We can then design instruction to meet this goal. Table 2.4 describes each of the cognitive behaviors that students can exhibit, as defined and adapted from Anderson and Krathwohl's revised taxonomy (Anderson & Krathwohl, 2001). The table also includes a definition of the behavior and associated verbs that can be used to describe the behavior.

Able to do instructional objectives should incorporate core disciplinary tasks (as well as the core disciplinary processes referred to in Table 2.4), which are the

TABLE 2.4 Possible Student Cognitive Behaviors

Behavior	Definition	Associated Verbs
Remembering	Retrieve relevant knowledge from long-term memory	Identify, recognize, recall, retrieve
Understanding	Construct meaning from instructional materials	Interpret, paraphrase, illustrate, classify, categorize, summarize, generalize, infer, conclude, predict, compare, explain
Applying	Carry out or use a procedure in a novel situation	Execute, implement
Analyzing	Break material into parts and determine how parts relate to one another and to whole	Discriminate, select, organize, integrate, outline, structure, attribute
Evaluating	Make judgments based on criteria and standards	Check, critique, judge
Creating	Put elements together to form a coherent whole or new structure	Hypothesize, design, construct

realistic tasks accomplished in a subject area—experiments in science, analysis of historical documents in social studies, critique of peer work in language arts, and the like. It is important that learning outcomes—the lesson’s instructional objectives—be worthwhile and representative of important disciplinary knowledge and skills. Time in school is short. It must be used wisely.

Moving from Standards to Objectives

Standards are written at many different levels of specificity and clarity. Once you become familiar with the standards in your state, you will need to mold the standards for which you are responsible to align with instructional objectives. Standards are the mandated curriculum framework, but standards are not an instructional curriculum. They are the foundation for the development of a curriculum that can be enacted in instruction. Standards cannot be swallowed whole for classroom use. Nor can textbook objectives be used unchanged. It is a teacher’s professional responsibility to design objectives specific to each class based on state standards. Each classroom context brings different background information, achievement levels, resources, and interests to bear on the standards.

Excellent classroom teachers take all of these responsibilities into consideration when developing KUD objectives. Two skills are required for designing good instructional objectives from standards. First, you will need to be able to construct *know*, *understand*, and *do* objectives from the given standards by reading them carefully and deconstructing them. Sometimes standards are written as *understand* objectives. They are abstract and broad. From the standard, you will need to identify the aligned *know* and *able to do* objectives. If the standard is written as a student behavior (an *able to* objective), you will need to construct an aligned *understand* objective and a list of items students will need to know in order to do successfully what the standard requires. Second, you will need to write the standard into student-friendly language—language that reflects the developmental level of the students with whom you are working. This allows students the opportunity to take responsibility for their progress toward the targets you have set. Table 2.5 shows aligned *know*, *understand*, and *able to do* objectives that are derived from standards. For standards written to align more closely to one of the three forms of objectives, teachers must be able to move from one form to another in order to provide quality instruction.

Instructional Alignment

Instructional alignment represents more than congruence between the three types of instructional objectives; it also reflects unity in the lesson or unit objectives, assessments, and instruction. This alignment allows for efficient and effective student learning.

Instruction is the building of knowledge and the teaching of skills. Teachers instruct in the classroom—they teach. But the decisions they make about what and how to teach are also part of instruction. To complicate matters, instruction is often linked with the word *curriculum*. Curriculum is what is taught, and what is taught is associated with standardized testing. If a high-stakes test is curricularly aligned, it tests what students have had the opportunity to learn. Providing the opportunity to learn involves more than presenting information to pupils. It requires that students have had the scaffolding and extensions necessary to process the knowledge and skills they are acquiring. This is an important distinction. Students must have the opportunity to prepare for high-stakes assessments; it is not enough to tell students what they have to know. You can see that effective teaching is a complex and demanding endeavor.

TABLE 2.5 Examples of Aligned *Understand*, *Know*, and *Able to Do* Instructional Objectives

Standard	Students Will Know	Students Will Understand	Students Will Be Able To
CCSS English/Language Arts W.1.3: Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.	The definitions of <i>beginning</i> , <i>middle</i> , and <i>end</i> How to plan and write a story	Reading can help us to write well	Plan and write a short story about elephants
<i>Students compare the language being studied with their own language.</i>	English derivations of Latin	Languages evolve over time	Analyze their own vocabulary for derivatives of Latin
CCSS English/Language Arts RL.6.6: Explain how an author develops the point of view of the narrator or speaker in a text.	The definition of <i>perspective</i> How to identify multiple perspectives in a story	Multiple perspectives deepen understanding of a story	Describe and provide examples of perspective in a children's book
CCSS Math HSG.GPE.B.4: Use coordinates to prove simple geometric theorems algebraically.	A circle can be described by an equation	Curved shapes can model objects and events	Rearrange an equation in order to determine whether it describes a circle
CCSS English/Language Arts RI.5.2: Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.	The definitions of <i>main idea</i> and <i>supporting details</i>	Texts convey important ideas	Identify the main idea and supporting details in a speech

Instructional alignment in the classroom is similar to curricular alignment, but it does not focus on decisions based on high-stakes tests. Instead, the emphasis centers on the opportunity for student learning on a day-to-day basis. Decisions at the classroom level focus on how to translate state standards into instructional objectives and, in this manner, describe what students need to know, understand, and be able to do. This alignment of the three elements of teaching—objectives, assessments, and instructional strategies—increases student learning. When instruction is not representative of the established targets or the assessments on which the targets will be demonstrated, the likelihood of success will diminish. This means that Jeremy and Emily will need to make certain that their *understand* objectives are supported by aligned instruction and assessment and that *able to do* objectives are represented in assessments.

Let's look at two world history standards: "Understands civilizations around the Aegean Sea and how they emerged." and "How various geographic areas developed relationships during the Bronze Age." The standards provide guidance for instruction and, consequently, instruction must include the knowledge and skills that support the standards. The curriculum can be supported with the following knowledge:

1. There was assimilation, conquest, migration, and trade among the Aegean world, the Near East, and Egypt, but each citizenry kept its own cultural identity.

2. Military conquests supported cultural benefits as well as cost.
3. Cultural mixing and exchanges to all of the geographic areas were extensive.

An *understand* objective associated with these standards might read, “Students will understand that cultural diffusion is a consequence of assimilation, conquest, migration, and trade.” The supporting *know* objectives would provide specific details about conquests (especially those of Alexander), their impact on other cultures, and the consequences that followed. Taking students’ interest, achievement levels, and prior knowledge into consideration, *students will be able to* objectives can be written for a particular class. For this standard, there are many options for *able to do* objectives, such as the following. “Students will be able to draw a map of Alexander’s conquests and subsequent trade routes.” “Students will be able to write a journal of an immigrant to Greece from Egypt during this time.” Instructional objectives form the intersection between the curriculum (the state standards) and what happens in classrooms.

Moving from the standards to actual classroom instruction, teachers deconstruct or pull apart the mandated standards; the knowledge, understandings, and skills that compose the standard; the prior experiences of their students; the way people learn; and the available resources in the school and the community. From this mix of content knowledge, pedagogical knowledge, and knowledge of student learning, classroom instructional objectives and assessments are determined and instruction is designed. The big idea of instructional alignment is the congruence between objectives, assessment, and instruction. This strategy promotes effective and efficient student learning.

Assessing Instructional Objectives

As you can see in Figure 2.4, which describes the backward design process, once instructional objectives have been written—but before instructional procedures have been considered—assessments are designed. These assessments will provide information about whether students have attained the objectives. This is the key to backward design. Making certain that your instructional objectives and assessments clearly align provides an equitable way to prepare students for both formative and summative assessments. Instead of deciding on assessments during and after instruction, assessments are planned as soon as the instructional objectives are identified, thus allowing instruction to be designed so that students will get the support they need to show they have reached the objectives. Knowing the instructional targets and how these targets will be assessed focuses teacher and student behaviors during instruction. A clear path makes the ride more comfortable and successful.

Assessments are the basis for making judgments. Most decisions teachers make in the classroom reflect judgments, and many of these judgments are based on assessments. Some assessments lead to judgments about student learning in the form of grades. Other assessments provide information to students and teachers about what has been learned and what knowledge and skills still need to be addressed and practiced so that learning targets can be achieved.

FORMATIVE ASSESSMENTS

Assessments are designed in relation to instructional objectives that have been planned by the classroom teacher, the curriculum developer, the school district, and/or the state. Assessments can be either formative or summative. Both types of assessments should be used to support student learning. Formative assessments provide students and teachers with information about how students are progressing toward stated goals, but they are typically not for the purposes of grading. They take place

during instruction. Formative assessments allow both the students and the teacher to make mid-lesson or mid-unit corrections so that they can meet objectives. Formative assessments use instructional objectives to provide feedback on practice that is clear, accurate, and aimed at informing students of their progress. Black and Wiliam (2009) state:

Practice in a classroom is formative to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers to make decisions about the next steps in instruction that are likely to be better founded than the decisions they would have taken in the absence of the evidence that was elicited. (p. 9)

Thus, formative assessment informs a teacher's instructional decision making and allows learners to adjust their behaviors toward explicit learning targets.

The feedback that students receive on formative assessments allows the teacher and student to close the gap between the instructional objectives and the understandings and performances that the student has demonstrated. Black, Harrison, Lee, Marshall, and Wiliam (2003) have shown that formative assessment information increases achievement for all students, with the largest gains for lower-achieving students and students with learning disabilities. Formative assessments work best when teachers and students act on the information provided to adjust teaching and learning—to help students move closer to the targets. A formative assessment quiz helps students only if the items are clearly related to instructional goals, if the feedback on student performance is clear and timely, and if both students and teachers have the opportunity to change instruction and learning opportunities in ways that help ensure future success in meeting the instructional targets. Formative assessments, because of the power they give students over their own learning, have been shown to increase student motivation and efficacy (Stiggins, 2005). Jeremy and Emily will need to carefully consider when to use formative assessments and will need to make certain that the formative assessments are congruent with instructional goals.

WEB RESOURCE

Formative Assessment Techniques

Go to wvde.state.wv.us for more information about specific formative assessment techniques.

SUMMATIVE ASSESSMENTS

Summative assessments are designed to occur at the end of a chunk of instruction in which students have had the opportunity for formative assessment feedback. Summative assessments provide information about student learning that is frequently translated into a grade. Formative and summative assessments must be clearly coupled. It is unfair to students to assign practice tasks during class that are substantially different from the upcoming summative assessment. All students should have the opportunity to practice and receive feedback (formative assessment) before they are tested and graded (summative assessment). This does not mean that the summative assessment and the instructional activities leading to the assessment must be identical, but the instruction preceding the assessment should be similar and contain all the important elements of the assessment. How similar will depend on the instructional objectives. If the goal is for students to recognize and identify specific bits of content, the assessment will be very familiar. If the assessment is designed to evaluate understanding, there will be some novelty in the assigned tasks to ensure practice in knowledge transfer.

Each of the instructional models in Parts Two and Three of this text incorporates assessment strategies and instructional objectives that are a good fit—they are congruent and form a coherent whole. For example, constructed response assessments (short-answer, essay) work well with instructional objectives that ask students to apply, analyze, and evaluate knowledge. The cause-and-effect instructional model is congruent with these instructional objectives. Parts Two and Three will describe several instructional models in terms of objectives, procedures, assessments, and ways to personalize instruction.

SUMMARY

This chapter has examined instructional objectives and instructional alignment. Good teaching is built on clearly articulated instructional objectives that provide a clear road to student success. Formative assessments furnish information to students and teachers during instruction while there is still time to adapt and scaffold student learning. Summative assessments evaluate student learning at the end of an instructional episode, frequently for a grade. Instructional objectives and assessments determine the kinds of instructional strategies a teacher will use to help students reach learning targets.

EXTENSIONS

ACTIVITIES

1. Read the following health standard and the associated benchmarks carefully and list as many factual, conceptual, procedural, and metacognitive pieces of knowledge as you can, using the matrix that follows.

The student knows positive personal health habits.

Benchmarks: The student

- Understands the influence of healthy habits on a person's well-being and what the risks are for not having healthy habits
- Knows signs of common health problems and understands the differences between being proactive and reactive
- Sets a personal health goal and can chart progress toward its achievement.
- Knows the structure and functions of human body systems

What types of knowledge are represented in the standard and benchmarks? Fill in at least two examples for each knowledge type.

Factual Knowledge	
Conceptual Knowledge	
Procedural Knowledge	
Metacognitive Knowledge	

2. Write an *able to do* objective for each of the provided *know* and *understand* objectives.

Students will understand that political, economic, and religious interests contributed to the resistance of colonials to English rule.

Students will know the significance of the First and Second Continental Congresses.

Students will know the moral and political ideas of the Great Awakening and how these ideas are associated with the American Revolution.

Students will know the views and impact of key individuals from the revolutionary time period.

3. Read the following short case and determine whether the instructional objectives, assessment, and instructional strategies are aligned.

Case: Mrs. Jones teaches sixth grade world history. She has just finished a unit on ancient Mesopotamia, Egypt, and Kush based on the following instructional objectives:

- *Students will understand* that civilizations develop in a particular place to meet the physical needs of a society and that there is a strong relationship between religion and social and political order in Ancient Egypt and Mesopotamia.
- *Students will know* the geography of the early civilizations in the Near East and Africa, Hammurabi's Code, features of Egyptian art and architecture, Egyptian trade routes, and the political, commercial, and cultural ties between Kush and Egypt.
- *Students will be able to* analyze the geographic, political, economic, religious, and social structures of the early civilizations of Mesopotamia, Egypt, and Kush.

Mrs. Jones used cooperative learning, lecture, and discussion as her primary instructional strategies.

The formative assessment she used was individual student conferences in which one two-part question was asked: "In which civilization would you have liked to live? Why?"

Her summative assessment required students to make a diorama for each of the three civilizations.

Is Mrs. Jones's instruction aligned? Explain.

REFLECTIVE QUESTIONS

1. How would you explain the purpose of instructional objectives to someone interested in becoming a teacher?
2. What role do factual, procedural, conceptual, and metacognitive knowledge play in the construction and implementation of instructional objectives?
3. What are the difficulties in implementing formative assessments into instruction?

PART ONE SUMMARY

The two chapters in Part One have looked broadly at student learning, standards, and instruction. The first chapter, “Standards and Content in Schools,” examined what we know about student learning and the role that standards play in organizing content in schools. Generalizations about the role of standards in organizing classrooms were considered. The chapter continued with a focus on the relationship between unit and lesson planning and the need for instructional alignment to support student learning.

The second chapter, “Objectives, Assessment, and Instruction,” parsed the role of instructional planning and organization in making learning visible in classrooms (Hattie, 2012). The purpose of the KUD format and how to use standards to develop these aligned objectives were introduced. These skills are foundational for student learning in the classroom. Aligning instruction, developing strong and demanding learning objectives, and planning intentionally with student learning in mind contributes to your readiness to learn about the instructional models presented in the next sections of the text. With a strong understanding of the role of instruction, you will be able to develop the knowledge and skills to vary instruction to meet the learning needs of your diverse students.

