Chapter 6

Instructional Goals and Objectives

Susan is preparing instruction for hospital employees. Everyone at the hospital must follow the hand-washing procedure that hospital administration has identified as most effective. A need for instruction has been identified, and Susan knows the learners well. "What I need to do now," thinks Susan, "is determine exactly the goals and objectives for this instruction so we can determine the right activities and assessments to ensure a healthy and safe work environment."

At a northern university, Brian has been given the task of developing instruction on how to protect human subjects involved in research studies. The university president feels that the faculty need more information about how study participants are to be treated and the processes involved in getting the institution's approval of the research procedures. Like Susan, Brian understands the need for the instruction and is knowledgeable about the learners. Brian tells his instructional media production team: "The instruction needs to begin with an explanation of its purpose. Faculty are going to want to know why they are doing this and what they are expected to accomplish."

Guiding Questions

- What is an instructional goal?
- What is an instructional objective?
- How do instructional goals and objectives differ?
- How does one begin writing or identifying instructional goals?
- How does one create instructional objectives?

Key Terms

"ABCD" approach (page 107)
affective knowledge (page 111)
Bloom's taxonomy (page 110)
cognitive, affective, and psychomotor domains (page 107)
declarative knowledge (page 111)
enabling objective (page 107)
functional analysis system technique (FAST) (page 109)
Gagne's hierarchy of intellectual skills (page 111)
performance objectives (page 106)
performance technology approach (page 107)
procedural knowledge (page 111)
subject matter expert (page 107)
subordinate skills analysis (page 107)
terminal objective (page 107)

Chapter Overview

Determining goals is an essential part of instructional design and development. Defining specific instructional objectives are also more often than not a critically important consideration. This chapter explains the differences between instructional goals and instructional objectives and examines a variety of approaches used to define and develop them. Approaches taken by a number of instructional design experts are presented and explained. Common methods of describing learning outcomes are presented, as are methods of evaluating the success of setting goals and objective specifications.

Instructional Goals and Objectives

We most often create specific instructional events that teach selected content to specific audiences. To do this, we have to determine and declare the goals and objectives for the instruction we design.

There is no point to creating any form of instruction without first setting goals for that instruction. The instructional intervention has to be designed to do something—to cause some change in the learner's knowledge, skill, or attitude. Otherwise, it is nothing more than a toy, a collection of artifacts, a meandering discussion, or an aimless presentation.

The Difference between Goals and Objectives

There is a difference between instructional goals and instructional objectives. An instructional goal can be a general statement about the intention of the instruction. For example, "Students will become better writers" is an instructional goal. However, an instructional objective is usually much more specific about how and to what degree the instruction will affect the learners. Based on the goal "Students will become better writers," one instructional objective might be: "Upon completing the lesson, students will produce a traditional five-point essay with a recognizable introductory paragraph that includes a thesis statement, three paragraphs supporting the thesis statement, and a concluding paragraph that restates the thesis."

An instructional goal can be used as an organizing topic for subordinate instructional objectives. For example, the instructional goal "Students will recognize and value the behaviors of a healthy lifestyle" might serve as the organizing topic for a number of specific instructional objectives (see Figure 6.1).

Goal	Students will recognize and value the behaviors of a healthy lifestyle
Objective	Students will describe the differences between complex and simple carbohydrates
Objective	Students will predict the consequences of including too many simple carbohydrates in one's diet
Objective	Students will create an appropriate exercise plan for themselves based on their personal requirements
Objective	Students will produce a personal daily schedule that includes sufficient time for rest and recreation

Figure 6.1 An Example of an Instructional Goal and Subordinate Objectives

Source: Author. Notice that all the objective statements include active verbs (*describe, predict, create, produce*)

The example goal and objectives used in Figure 6.1 all have one thing in common: they focus on what the learner will do upon completing the instruction. Keep in mind that this approach to designing instruction is a key component of instructional *systems* design. Other approaches to instructional design might not put as much emphasis on specific, observable learner outcomes and thus may not require objectives written in this manner.

The development of instructional goals and objectives depends on the type and purpose of the instruction one is creating. Creating instructions on how to fly a fighter jet requires specific objectives that have demonstrable outcomes. However, creating instruction about the history of flight may not require objectives written according to a systems approach.

Some designers feel that important outcomes of the instruction are difficult to define and measure (Morrison, Ross, Kalman, & Kemp, 2013); some would go as far as to say generating goals and objectives through traditional systems methods is not a useful pursuit. This would be in keeping with a postmodern philosophy that suggests that instruction should not necessarily be designed on the premise of a positivist worldview. The learner may deem the instruction successful because it accomplishes personal goals and objectives that the designer cannot determine in advance. We, however, agree with instructional designer and author Julie Dirksen's statement, "If you don't know where you are and where your learners need to be, you can't figure out how to get them there," (Dirksen, 2016, p. 59). We would argue that regardless of one's view, a design—by the very definition of the word—must have some goal defined at the outset, and instructional design is not an exception.

Susan considers how best to approach hand-washing instructions. The subject matter experts have provided her with a set of specific steps a person must follow to effectively wash one's hands. When she writes the goals and objectives for the instruction, Susan knows the objectives will have to describe how well the learners complete the steps involved in the hand-washing procedure because she will need to be able to point out specific actions taken by the learners that indicate they understand correct hand-washing methods.

Brian considers how best to explain the purpose of the instruction on treating human subjects. Because the instruction is a presentation of the reasoning behind creating safeguards for human subjects and the processes in place that protect people involved in research studies, he realizes that the goal will be relatively easy to state, but there will probably be few if any immediate and overt changes in the learners' behaviors as a result of this instruction.

Popular Approaches to Setting Goals and Objectives

The approach to developing learning objectives most often used by instructional designers was created by Robert Mager. Mager's approach is designed to generate *performance objectives* and is inextricably connected to behavioristic instructional design applications. Mager recommends using three components in writing learning objectives.

1. *Action*. Identify the action the learner will take when he or she has achieved the objective.
2. *Condition*. Describe the relevant conditions under which the learner will act.
3. *Criterion*. Specify how well the learner must perform the action.

According to Mager, a learning objective is "a description of a performance you want learners to be able to exhibit before you consider them competent" (1984, p. 3). Dick, Carey, and Carey (2015) and Smaldino, Lowther, and Russell (2012) take similar approaches, focusing on the actions, conditions, and criteria.

Dick, Carey, and Carey suggest that goals and objectives are determined through one of two approaches. They are either prescribed by a *subject matter expert* (SME) or they are determined by a *performance technology approach.* SMEs may be called on to work with the instructional designer to articulate the appropriate goals and objectives for an instructional design project. Instead of having an SME prescribe goals and objectives, a performance technology approach derives them from the data gathered during a needs analysis. According to Dick, Carey, and Carey, once the goals are established, a *subordinate skills analysis* should be conducted in order to determine the specific performance objectives for the instruction.

Smaldino et al. (2012) describe the "ABCDs" of well-stated objectives. ABCD stands for audience, behavior, conditions, and degree.

- *Audience*. Identify and describe the learners.
- *Behavior*. Describe what is expected of the learner after receiving instruction.
- *Conditions*. Describe the setting and circumstances in which the learners' performance will occur.
- *Degree*. Explain the standard for acceptable performance.

Smaldino et al. also classify learning as belonging to one of four domains: cognitive, affective, motor skill (psychomotor), and interpersonal. It is the interpersonal domain classification that is unusual about this scheme. Skills that are people-centered, such as teamwork, administration, and salesmanship, are separated from the more traditional *cognitive, affective*, and *psychomotor domains* and are given a place of their own.

Morrison, Ross, and Kemp (2007) discuss the idea of terminal and *enabling objectives*. A *terminal objective* is the major objective for an instructional intervention. The terminal objective explains the overall learning outcome. The enabling objectives are supporting descriptions of observable behaviors or actions that indicate the terminal objective has been achieved (see Figure 6.2).

Topic	Magnetic attraction
General Purpose	To acquire knowledge and understanding of the properties of magnetic materials
Terminal Objective	To describe the general properties of magnetic materials
Enabling Objective	To discriminate between magnetic and non-magnetic materials

Figure 6.2 An Example of Terminal and Enabling Objectives

Source: Author

Setting Goals

Goals describe the intention of the instruction. According to Mager, "A goal is a statement describing a broad or abstract intent, state or condition" (1984, p. 33). In general, goals cannot be directly perceived. For example, the statement "students will appreciate classical music" is a very reasonable instructional goal, but it does not have specific, observable features. The students may be listening, but how does one determine if they are appreciative?

Regardless of any lack of visible evidence, setting goals for instruction is a critically important part of the instructional design process. It is often relatively easy to write goals if one is starting with a "clean slate" situation—

one in which no instructional interventions have been attempted and no past practices have been established. However, one is rarely offered a completely clean slate when designing instruction. Often, a number of established instructional interventions are in place, and people may have lost sight of the original goals for this instruction. Instructional designers almost always work within an organizational structure with its own idiosyncratic demands. More than likely, tradition, politics, and the predilections of decision-makers will be critical factors in determining the goals for any instructional design project (Dick et al., 2015).

Professionals in Practice

When I taught eighth-grade English, I traditionally ended the year by having my classes read Shakespeare's As You Like It. The goal was to build students' confidence with a difficult text (we did this through activities that included "translating" passages into modern language and acting out and illustrating scenes from the play). One year, I had a particularly difficult group of students; I decided not to read As You Like It with the group because I felt the goal of building their confidence would not be met—I felt that trying to do something this ambitious with this particular group might actually have the opposite effect.

When the students found out I was not planning to read Shakespeare with them in the spring, they expressed deep disappointment. I learned from them that reading a Shakespeare play in eighth grade was now considered a rite of passage by the students who had me as a teacher before. Regardless of the fact that I did not feel this activity was an appropriate way to address one of my goals for this particular group of students, I wound up doing it anyway because the students would have felt "cheated" if I had not. I realized that one goal for this activity was not something that I had created but that had grown out of the student community.

—Abbie Brown former teacher at George Washington Middle School Ridgewood, New Jersey

In order to gain some sense of what the goals are for an instructional situation, one may have to begin by working backward by using the established practices as a foundation for articulating the larger goals. One method of determining instructional goals in this manner is to apply the *functional analysis system technique* (FAST) to create a FAST chart (Thornburg, 1998).

FAST charting was developed within the field of value engineering, where it is used to decrease costs, increase profits, and improve quality (for more on this, visit the Society of American Value Engineers (SAVE) International website at www.value-eng.org).

Using a FAST chart to determine the goals for instruction, one generates verb/noun pairs to describe the specific activities that apply directly to the outcome of the instruction (e.g., "write poem," "fix sink"). Increasing the abstraction of the verb/noun pairs with each successive description of the activity (putting the verb/noun pairs on sticky notes makes it particularly easy to rearrange things if and when the need arises). A simple example can be seen in Figure 6.3.

Figure 6.3 A Simple FAST Chart

Source: Author

In the example FAST chart in Figure 6.3, "Maintain Health" would be the goal derived from the action of brushing one's teeth. To some, this may be obvious, but to many, the fact that children are taught to brush their teeth is so ingrained as a given activity that they lose sight of the fact that the larger goal is maintaining a healthy body. The FAST chart technique is particularly helpful when there is an established or expected set of instructional activities that are part of standard practice, where you as the instructional designer are trying to determine why those activities are important.

Professionals in Practice

In the past few years, we have offered a web application firewall certification program, which can help ensure that users are qualified to use our solution. Training is still a big part of the equation. The first instructional design question still seeks to identify a training goal: what do customers need to know to be successful with our

solution? The second question is how do customers define success? There are multiple answers to both questions, which depend on variables such as the size and complexity of the application, the number of applications, the level of desired security, and the amount of time the user has to devote to managing our web application firewall.

—Erik M. Novak Technical Training Developer F5 Networks

Translating Goals into Objectives

Just as a goal is the intention of the instruction, an objective is the intended outcome of each instructional activity. The intended outcome can be described as what the learner will be able to do upon completing the instruction. Determining the intended outcome in advance is an important step in the design process if student success will ultimately be measured against some standard or specific evaluation criteria. Clearly stated instructional objectives also make it easier for a design team to produce instruction that meets with the approval of everyone involved. Smith and Ragan write:

> Objectives are valuable to all members of the learning system. They aid the designer since they provide a focus of the instruction, guiding the designer in making decisions about what content should be included, what strategy should be used, and how students should be evaluated. The specification of clear objectives is especially critical when a number of individuals—such as designers, content experts, graphic artists, and programmers—are working together to produce instruction. In these situations, learning objectives serve as a concrete focus of communication.
>
> (2005, p. 97)

It is critically important to keep in mind that a well-stated instructional objective describes an observable or measurable action performed by the learner. The objective should describe what the learner might be observed doing that he or she could not do prior to the instruction. A typical "rookie mistake" is to write an objective that is actually a description of the instructional activity. "Students will view a 30-minute videotape on the basics of photography" is *not* a well-written instructional objective; a better objective would be: "At the end of viewing a 30-minute videotape on the basics of photography, students will demonstrate their ability to choose the correct f-stop setting for a variety of lighting conditions." Notice also that the verb used in the better objective is "demonstrate," which is an observable action. In writing descriptions of what students will do after receiving instruction, verbs like "demonstrate," "describe," and "explain" are preferable to verbs like "understand" because one can create an assessment based on observing demonstration, description, and explanation; it is difficult to create an accurate assessment of understanding, which is an internal state and not directly observable.

It would be difficult to discuss creating instructional objectives without making reference to *Bloom's taxonomy* (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956). For 50 years, Bloom's taxonomy has been used by educators as a common point of reference for setting instructional objectives:

> Perhaps the taxonomy's greatest contribution has been in the development of a professional language. Teachers and administrators who describe and analyze instruction know that terms such as *knowledge level* and *higher levels of learning* will be understood by educators everywhere.
>
> (Orlich, Harder, Trevisan, Brown, & Miller, 2018, p. 88)

Bloom's taxonomy is divided into three domains: cognitive, affective, and psychomotor (each of the domains is described in greater detail in Chapter 2). It is the cognitive domain (Figure 6.4) that is most often used by educators —no doubt because cognition is most often the focus of formal education.

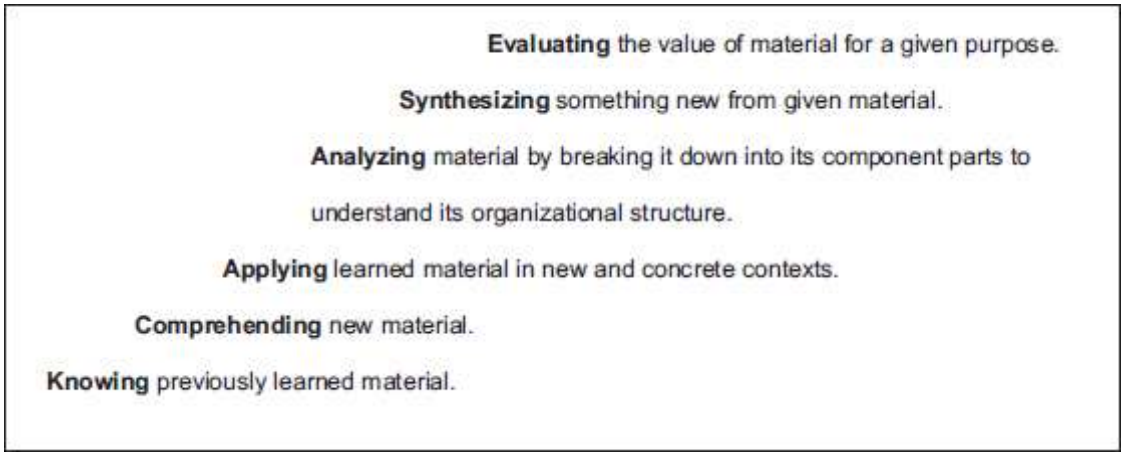

Figure 6.4 Bloom's Taxonomy of Educational Objectives: Cognitive Domain
Source: Author

The headings of Bloom's taxonomy can be used to write performance objectives. Objectives that begin with phrases such as "students will *know* …"; "students will *apply* …"; or "students will *evaluate* …" are reasonably well-understood by educators because the taxonomy's description of the active verbs in these phrases creates a common understanding among those who are familiar with the taxonomy. The levels of the three domains are very good places to start when writing objectives. The headings for the levels of the cognitive and affective domains (words such as organize, value, respond, characterize, apply, know, evaluate, and analyze) are well-understood by most educators and make excellent verbs in written objectives.

Another theoretical construct popular among instructional designers and useful for determining instructional objectives is *Gagne's hierarchy of intellectual skills* (Gagne, 1985; Zook, 2001). Gagne takes an approach to the domains of instruction similar to that of Bloom's taxonomy, but there are important differences. Gagne divides what can be learned into three categories: *declarative knowledge* (verbal information), *procedural knowledge* (motor skills, intellectual skills, and cognitive strategies), and *affective knowledge* (attitudes). Gagne states that there are five possible types of learning outcome: intellectual skill, cognitive strategy, verbal information, motor skill, and attitude. Gagne's hierarchy of intellectual skills (the skills most often addressed through instruction) states that there is a progression that can be followed to bring a student to the point of being able to solve problems on his or her own. The four steps in this progression are discrimination, defined concept, rule or principle, and problem-solving (see Figure 6.5).

Problem-Solving	Students are asked to determine if the platypus is a mammal or a bird
Rule or Principle	The defined concepts are restated into general rules about how to decide if an animal is a mammal or a bird
Defined Concept	Students use their observations of mammals and birds to determine the differences between mammals and birds
Discrimination	Students look at various mammals and birds

Figure 6.5 Gagne's Hierarchy of Intellectual Skills
Source: Author. One starts at the bottom (Discrimination) and works up to Problem-Solving

Traditionally in instructional design, a goal is a general statement of the educator's intentions, and an objective is a specific instance of the goal in action. If the goal is "students will develop social skills," specific objectives may include: "students will say 'please' and 'thank you' at the appropriate times" or "students will hold the door for each other as they enter and exit the building."

Articulating instructional goals is important; they are the written embodiment of the intention behind the instructional intervention. Using instructional goals to create instructional objectives can be equally important,

particularly if the effectiveness of the instruction and the achievement of the learners will be tested by measuring them against a set of standards or a list of specific evaluation criteria. Well-stated objectives help everyone involved in creating and supporting the instructional event by providing focus for the instructional activities.

Professionals in Practice

I personally do not like setting strict instructional goals and objectives. Since each learner is different from others, we cannot make something that is "one-size-fits-all." As Prensky (2001) stated, such an approach was the old paradigm. Since learning is an active process, it shows an adaptive nature. For me, setting strict objectives does not seem realistic. Instead, I like to define more general goals and objectives. Moreover, strict goals and objectives put learners in a passive mode. While talking about the instructional system-building process, Prensky (2001) stated, "The words 'objective,' 'learn,' and 'know how to' were banned, replaced with imperative action verbs like 'build,' 'get through,' 'repair,' and 'rescue.'" (p. 14). I can't be that radical, but I like this approach. Moreover, while defining them, the focus must not be put only on individuals—organizational structure and culture must also be considered. This is necessary because individuals live in this social setting, so the issues about individuals should not be isolated from their environments.

Based on my experience, I can say that the results of learner, task, and needs analyses almost always give the general goals and objectives of the instruction.

Kursat Cagiltay Professor at Turkey's Middle East Technical University in Ankara Department of Computer Education and Instructional Technology

Evaluating the Success of Setting Goals and Objectives

The specified instructional goals and objectives should be supported by the data gathered during learner and task analysis. The question to answer about the goals and objectives is, "Do these goals and objectives direct us to create instruction that supports the identified population of learners in gaining skill with the tasks that have been identified?" In traditional instructional design, it is important to take some time to consider whether the goals and objectives developed have truly grown out of the learner and task analyses.

Another approach to evaluating the success of the specified goals and objectives is to compare them against each other. As the project takes shape, the designer continues to ask themself if the objectives support the goals to determine whether the objectives are appropriate. At the same time, the designer asks themself whether the goals realistically reflect the objectives to determine whether the instructional goals are appropriately articulated.

After careful consideration, Susan uses the FAST approach to help articulate her instructional goal, which is, "hospital employees will help maintain a healthy environment for patients and staff by keeping their hands clean." Susan takes the ABCD approach to writing a performance objective for the instruction: "After viewing a demonstration on the correct method for washing one's hands, hospital employees will perform the procedure correctly by washing for at least 20 seconds and using a separate paper towel to turn off the water faucet."

Brian decides his instruction on treating people humanely when conducting research does not have specific performance objectives. His goal statement is, "university faculty will increase their understanding of the need for institutional approval of research that includes people as part of the study." His instructional objectives include: "after completing the instruction, faculty will seek institutional approval for using human subjects as part of their research" and "after completing the instruction, faculty will know the reasons why institutions require approval for studies that include human subjects."

Goals and Objectives and the Instructional Design Process

Setting goals and objectives is a critically important part of the instructional design process. No matter which approach you take, setting goals and objectives should help you answer the following questions.

- What is the overall purpose of the instructional activity?
- Is the intention of the instruction accurately reflected in the goals and objectives?
- Have the traditions, politics, and predilections of the organization been accounted for when developing the instructional goals? Do the goals and objectives match the instructional intent regardless of the organization's influence?

- Are there any specific, observable behaviors the learners should exhibit after they have completed the instruction?
- What evaluation strategies will be used to determine if the instructional goals and objectives are appropriate?

Summary

Goals and objectives define the intention of the instruction. An instructional goal is a general statement about the ultimate intention of the instruction. An instructional objective is a more specific statement about how and to what degree the instruction will affect the learners. The objective should describe an action taken by the learner at the conclusion of the instructional event that can be empirically measured by an observer.

Goals must be articulated in order to create instruction. However, objectives are subordinate to goals and may not be necessary to an instructional design. Objectives are critically important if the learners are to be evaluated based on standards or specific criteria. If learners will not be evaluated in this manner—for example, if the instruction is intended to foster creativity or critical thinking—then writing specific instructional objectives may actually be an inappropriate step for the instructional designer.

Popular approaches to writing goals and objectives include Mager's (1984) development of performance objectives (determining the action, condition, and criterion); Dick et al.'s (2015) dual approaches of determining goals and objectives by either consulting subject matter experts or taking a performance technology approach (deriving goals and objectives from the data gathered during needs and task analysis); Bean's approach of working with subject matter experts and stakeholders (Bean, 2014); Heinich et al.'s (2002) ABCD approach (audience, behavior, conditions, degree); and Morrison et al.'s (2007) terminal and enabling objectives.

It is important for novice instructional designers to realize that they will most often be creating instruction for organizations that have their own traditions and political necessities; instructional objectives may be well-articulated, while the instructional goals may not be written down. Missing or poorly articulated instructional goals may be determined by using a FAST chart, working from a specific instructional objective back to a general goal.

Writing instructional objectives can be facilitated through the use of hierarchies or taxonomies that define the types and levels of instructional outcomes. Bloom's taxonomy and Gagne's hierarchy of intellectual skills are reference tools popular among educators.

In evaluating the success in writing instructional goals and objectives, one critically important question to consider is whether the goals and objectives lead to the creation of instruction that is appropriate and effective for the learners. Constant comparison of the goals to the objectives (and vice versa) can help make the final instructional product one that is truly useful.

Chapter Comprehension Questions

1. There is no point to creating any form of instruction without first setting _____ for the instruction
    a. Objectives.
    b. Goals.
    c. Analyses.
    d. Assessments.
2. The development of instructional goals and objectives depends on the _____ of the instruction one is creating.
    a. Action and condition.
    b. Performance technology approach.
    c. Necessary subordinate skills.
    d. Type and purpose.
3. According to Mager, a learning objective is
    a. "The combination of an effective goal and a well stated performance standard."
    b. "The most important part of any instructional design."
    c. "A description of a performance you want learners to be able to exhibit before you consider them competent."
    d. "Less important than a goal."

4. One way to write instructional objectives is the ABCD method, in which one includes the audience, behavior, conditions, and degree. Degree refers to _____.

    a. The setting and circumstances.
    b. The learner expectations.
    c. The standard for acceptable performance.
    d. The learners' previous experiences.

5. In general, goals cannot be directly perceived.

    a. True.
    b. False.

6. Using a FAST chart to determine instructional goals, one starts with very specific verb/noun pairs that describe what the learner will do at the outcome of instruction, increasing the _____ of the verb/noun pairs with each successive description of the activity.

    a. Specificity.
    b. Abstraction.
    c. Connection.
    d. Diversion.

7. "Students will view a 30-minute videotape on the basics of photography" is a well-written instructional objective.

    a. True.
    b. False.

8. Which of the following is not one of Gagne's five possible types of learning outcome?

    a. Intellectual skill.
    b. Cognitive strategy.
    c. Evaluation.
    d. Attitude.

9. Which of the following is an example of a performance objective that uses one of the headings from Bloom's taxonomy?

    a. After seeing a short historical video, fourth-grade students will know the capital city of Texas.
    b. After seeing a short historical video, fourth-grade students will understand that Texas has a capital city.
    c. After seeing a short historical video, fourth-grade students will sympathize with citizens in the capital city of Texas.
    d. After seeing a short historical video, fourth-grade students will remember the capital city of Texas.

10. Traditionally in instructional design, a goal is _____.

    a. A specific instance of the educator's objective.
    b. A general statement of the educator's intentions.
    c. A quantifiable measure of the educator's objective.
    d. A general measure of the educator's intentions.

Connecting Process to Practice Activities

1. After reading about Brian's instructional design challenge, do you think he did the right thing by creating objectives that are not performance objectives? Could Brian have written performance objectives for the instruction on human subjects?
2. You have been asked to create a six-week unit on writing poetry for a high-school English class. How would you go about determining the appropriate goals and objectives for this?
3. Using the ABCD approach, write two performance objectives for this goal: "students will understand the importance of making healthy snack choices."
4. You are the instructional designer in the human resources department of a mid-sized corporation. You have been assigned the task of creating instruction that addresses the appropriate use of corporate expense accounts. What factors may affect the goals you set for this instruction?

5. Your employer wants to be sure that everyone in the organization knows CPR. What goals might you derive for instruction that supports this?
6. You are teaching a group of 10-year-olds how to play soccer. You want them to improve their ball-passing skills. What goals and objectives might you set for your instruction?
7. Create a set of flashcards that teach and reinforce the four essential elements of a performance objective: audience, behavior, condition, and degree.
8. Design an infographic that defines "goals" and "objectives" noting the key differences in these terms and how they relate to each other.

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