

## Planning Educational Outcomes

### CHAPTER OVERVIEW

Once upon a time a Sea Horse gathered up his seven pieces of eight and cantered out to find his fortune. Before he had traveled very far he met an Eel who said, "Psst, Hey bud. Where ya goin'?"

"I'm going out to find my fortune," replied the Sea Horse proudly.

"You're in luck," said the Eel. "For four pieces of eight you can have this speedy flipper, and then you'll be able to get there a lot faster."

"Gee, that's swell," said the Sea Horse, and paid the money and put on the flipper and slithered off at twice the speed.

Soon he came upon a Sponge, who said, "Psst. Hey bud. Where ya goin'?"

"I'm going out to find my fortune," replied the Sea Horse proudly.

"You're in luck," said the Sponge. "For a small fee I will let you have this jet-propelled scooter so that you will be able to travel a lot faster." So the Sea Horse bought the scooter with his remaining money and went zooming through the sea five times as fast.

Soon he came upon a Shark who said, "Psst. Hey bud. Where ya goin'?"

"I'm going out to find my fortune," replied the Sea Horse.

"You're in luck. If you take this short cut," said the Shark, pointing to his open mouth, "you'll save yourself a lot of time."

"Gee, thanks," said the Sea Horse, and zoomed off into the interior of the Shark, and was never heard from again.\*

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The moral of this fable is that if you're not sure where you're going, you may wind up someplace else, and if you have not clarified what it will look like when you get there, you might never know it when you do arrive!

"The Sea Horse Fable," which first appeared in *Preparing Instructional Objectives* by Robert Mager (1997), provides whimsical support to those who value clearly written instructional objectives. Furthermore, it introduces you to the content of Section 1 of this chapter: the transformation of curriculum goals into clearly stated instructional objectives. Whether you plan to develop your own educational goals or use the standards and benchmarks developed in state or national curriculum frameworks and assessment programs, the process of transforming goals into teachable objectives will enhance your effectiveness.

It is probably obvious that you will be most effective in helping students learn something if you know exactly what it will look like if they have learned it. Clearly stated learning objectives provide another bonus: they help you develop *assessments* that will provide concrete evidence of what students know and can do. You can then use this information before, during, and after lessons to tailor your activities for specific student needs. Without a clear vision of the desired learning, it will be almost impossible to design assessments to determine if that learning is present.

In Chapter 3 you learned how to select and analyze educational goals. In the first section of Chapter 4 you will learn how to write, classify, and evaluate clearly stated objectives for your students' learning. In Section 2 you will learn how to write clearly stated objectives at differing cognitive levels. Then, Chapter 5 will help you learn how to assess student learning.

### SECTION 1. WRITING CLEARLY STATED OBJECTIVES

#### Opening Activity

It's early October and time for family night at the Lincoln Middle School in the Landstown, Maryland, school district. The evening begins with remarks by school officials, who request parent participation on district committees and task forces. The principal closes the general session by reporting on school progress and the opportunities and challenges of the coming year. Finally, the parents disperse to follow their children's class schedule and meet with teachers.

As a result of their children's enthusiasm, many of the parents come expecting to be impressed; only a few anticipate being bored or irritated. Most parents have a "Give the teacher credit, it's a difficult job" attitude. A substantial number of parents seek guidance from teachers concerning the parents' role in reinforcing school goals and tasks.

Imagine yourself as an invisible observer, able to flit from room to room and listen to the teachers introducing their educational plans and programs for the coming year. Specifically, you attend the sessions in two eighth-grade classrooms where the focus of attention is on a new unit titled "Zimbabwe: A World's View from Africa."

#### Practice Point

The following partial transcript of the sessions in these classrooms is in the form of two case studies. Read the case studies and answer the questions that follow.

**Room 214: Mr. Abrams**

MR. ABRAMS: A school district curriculum group led by Mr. Cowan of Landstown Middle School developed this unit last year and we are expected to teach it at Lincoln Middle School. So that's what we will be doing in interdisciplinary studies this marking period.

MR. VASQUEZ (PARENT): Mr. Abrams, what are the goals you hope to achieve as you teach the unit to our children?

MR. ABRAMS: I would have to reexamine the teacher's guide that came with the unit to describe the specific goals, but in general, I expect to teach my social studies students about the history and peoples of Zimbabwe.

MRS. WASHINGTON (PARENT): That sounds OK to me, but can you tell me a little more about what my daughter will know when she completes this unit?

MR. ABRAMS: I really am not prepared to do that at this time. Remember, some of the responsibility for learning rests with the student and also with the parents. My responsibility is to provide general direction for the students and give them the materials from which they will learn.

MR. LASSIVER (PARENT): I would like to know what's expected of my child so I can encourage and help him study at home. Under your approach, though, it will be difficult for me to do that.

MR. ABRAMS: Possibly we should discuss that at the parent-teacher conference. Thank you all for coming tonight, and I look forward to meeting with you individually on conference day in November to discuss your children's progress.

**Practice Point**

**Room 212: Mrs. Calzone**

MRS. CALZONE: One of the highlights of this year's social studies course of study is the interdisciplinary unit "Zimbabwe: A World's View from Africa," developed last year by a school district curriculum group. I have examined the unit and am prepared to teach it along with some features I have added that make it especially useful for my students.

MR. SARASON (PARENT): Mrs. Calzone, what are the goals you hope to achieve as you teach the unit to our children?

MRS. CALZONE: That's a good question. This handout includes the goals as well as some recommended activities that you can do at home to assist your youngster in achieving the goals.

MRS. RODRIGUEZ (PARENT): I'm glad these are written clearly and specify student learning. The goal to "compare and contrast traditional life with life in modern urban Zimbabwe" is of special interest to me. I was born on a farm, and the nearest town of any size was 75 miles away. We live in a suburb next to a big city, and my children have never understood the differences between our lifestyle today compared to when I was their age. I hope you succeed in getting my son, Tony, to recognize the differences.

MRS. CALZONE: Thanks for the expression of support, Mrs. Rodriguez. I am hoping that the adults and the older siblings will be involved in some of the activities in the unit.

You might ask your son or daughter about two instructional objectives. Students will be creating tribal masks that include representations of African culture and history, and they will be writing original stories of life in the capital city of King Monopatama, a powerful king who ruled Zimbabwean Africa at the beginning of the 16th century. I hope you will all show interest in those projects. In fact, we will begin the writing project in two weeks. May I have your participation?

ALL PARENTS IN UNISON: Yes. (enthusiastic applause)

MRS. CALZONE: Thank you all for coming tonight, and I look forward to meeting individually with you on conference day in November to discuss each student's progress.

**Practice Point**

Consider the interactions that occurred in this scenario. Which teacher do you think was more effective in developing a positive relationship with parents? Why? Think about the relationship between "The Sea Horse Fable" and the two case studies. This chapter will consider what it means to "know where you are going" in planning for instruction and how that will be reflected in your activities as a teacher.

### Section 1 Objectives

After you have completed this section, you will be able to:

1. defend or reject the position that teachers who use instructional objectives are more successful in generating student learning than those who do not;
2. explain the advantages and disadvantages of using instructional objectives and make decisions accordingly;
3. analyze the argument for the use of understanding performances;
4. define the A, B, C, and D characteristics of a clearly stated objective; and
5. classify examples of educational statements as clearly stated objectives.

### Objectives and Understanding Performances

Few people will argue that one of the most important decisions a teacher makes involves the intended learning of students—the outcomes or results of teaching. Although there has long been a controversy about the value of instructional objectives, those who support them argue that if teachers expect to achieve success, they must be able to define success and then assess students' progress in reaching it.

Although many believe that all learning outcomes can be measured in some useful way, other, more pragmatic proponents are willing to concede that some outcomes are beyond easy measurement by the teacher. However, all advocates agree that *teachers who use clearly stated instructional objectives are likely to be more successful in enhancing the learning of their students than are teachers who do not use them*. Opponents of instructional objectives voice concern that the focus on measurable outcomes may



cause educators to emphasize objectives that are easy to measure rather than those that are important, leading to fragmented or shallow instruction.

The authors of this text believe that the argument for and against the use of instructional objectives is a false one. Consider the benefits of planning instruction that includes both the use of higher-level cognitive objectives and the use of meaningful, open-ended, creative activities. When teachers teach for understanding they structure learning to engage students in “understanding performances,” authentic tasks that enable students to achieve powerful learning outcomes (Gardner, 1999).

This view of **understanding performances** requires that students continuously apply specific knowledge and skills within a meaningful context—an authentic task, project, performance, or exhibit. That is, students do something that demonstrates their understanding. It is important to clarify that an understanding performance is meaningful only if it has been carefully designed to meet important higher level learning objectives. Some hands-on activities may not address central concepts and generalizations or build important skills. Wiske (1998) makes this point clear when summarizing the characteristics of an understanding performance. An understanding performance:

- relates directly to important learning goals;
- allows students to develop and apply understanding through practice;
- engages students’ multiple learning styles and encourages diverse forms of expression;
- promotes reflective engagement in challenging, approachable tasks; and
- requires students to perform in ways that others—peers, parents, or community members—can view and to which they can respond.

What do these criteria look like when enacted within the classroom setting? Imagine a classroom in which cooperative learning groups are engaged in understanding performances. In one area, huddled around a computer, four students use a search engine to find information on a research topic. In another area, students sit in clusters designing maps, using an atlas as a reference. The teacher is meeting with another group to assist them with the organization of their report. Out of the class in the library another group has pulled some books from the shelves and sits at a table reading in pairs.

By posing questions, asking for clarification, and offering suggestions, the teacher guides the groups from the sidelines. Charts, graphs, and reference materials signal a room where students have opportunities to learn according to their needs and interests. In this learning environment teachers view mistakes as opportunities for growth in understanding. The environment is analogous to a laboratory, where students explore, analyze, draw conclusions, and present their ideas in creative and meaningful ways.

In the above scenario, the teacher recognizes the rich possibilities for learning inherent in research activities. The main instructional objectives include teaching students to access multiple resources; to efficiently and effectively gather, organize, and present information; and to analyze and evaluate a body of content in order to draw important conclusions. In this classroom the conflict over the use of instructional objectives has been resolved. Clear instructional objectives guide the open-ended and generative activities and lead to diverse and complex learning outcomes and understanding performances.

In unit planning teachers must consider which aspects of the unit are important enough to merit demonstration in an understanding performance. They must decide

which content can be taught for understanding and which can be taught in less depth or not taught at all. Wiggins and McTighe (1998) offer four guidelines for making such decisions. They believe such material should:

- represent a big idea having enduring value beyond the classroom;
- reside at the heart of the discipline (involve “doing the subject”);
- require uncoverage (of abstract or often misunderstood ideas); and
- offer potential for engaging students. (p. 23)

Notice how the analysis of key generalizations and concepts and your understanding of authentic learning provide the keys for choosing content to be demonstrated in understanding performances.

As discussed in Chapter 3, an educational *goal or outcome* provides general direction to the teacher in making crucial decisions about instruction. Although both goals and objectives describe student (rather than teacher) behavior, a goal generally covers more content than an objective and thus is phrased more broadly. Goals are related to standards, and instructional objectives are related more closely to benchmarks (although many benchmarks are too broad to be used as objectives). For example, a national, state, or district goal or standard might encompass the content that will be taught in a semester or even a long unit, whereas an instructional objective (and some benchmarks) might cover the content for a week-long unit or for a single day’s lesson plan.

An **instructional objective** is defined as a specific statement of what the student will know or be able to do after the unit or lesson ends. Instructional objectives can be developed for all types of content (affective, psychomotor, or cognitive), in all subject areas, and across all grade levels. They can be conceived and written at all levels of subject matter, from facts to concepts to generalizations, and at all levels of learning process, from knowledge to evaluation. When prepared properly, instructional objectives can be used to plan learning activities and develop assessments of student learning.

## Recognizing Clearly Stated Instructional Objectives

To help you assess what you know already about clearly stated instructional objectives, read the following examples and be ready to explain which ones are complete instructional objectives.

Students will be able to:

1. recall facts about the people, history, environment, government, resources, and culture of Zimbabwe;
2. compare and contrast different views of the European colonization of southern Africa in the 1800s;
3. listen to the musical and literary traditions of southern Africa;
4. develop a description of life in Great Zimbabwe in the 14th century by writing an original short story that accurately reflects the history and culture of the Shona people who lived there at the time;
5. read some English literature from the 1850–1900 colonial tradition;

6. create an animal figure from soap that is similar in style to the soapstone figures so prominent in Zimbabwean culture;
7. participate in the singing of a European hymn of the colonial age and an African hymn;
8. examine the role of the Christian missionary in the colonization of Africa by the Europeans;
9. describe the meaning expressed in the design of the flag of Zimbabwe;
10. calculate, in a homework assignment, the perimeter enclosed by Great Zimbabwe and modern-day Harare to the nearest foot.

Items 4, 6, and 10 are the most complete instructional objectives. They are classified as such because, using the language of instructional designers, they pass the “behavior test” that distinguishes an educational goal from an instructional objective. That is, both the content to be learned and the expected learning process and level are specifically described. Let’s examine item 4 and determine why it is an acceptable instructional objective:

Students will be able to develop a description of life in Great Zimbabwe in the 14th century by writing an original short story that accurately reflects the history and culture of the Shona people who lived there at the time.

**Element 1.** *What is to be learned?* The information to be learned is the history and culture of the Shona people who lived in proximity to Great Zimbabwe in the 14th century (clear content description).

**Element 2.** *What is the learning process?* The learning process is to write a short story (clearly described process using the “by clause”).

An instructional objective also must describe specifically how the student is to demonstrate achievement of the objective. In item 4 it is by writing an original short story. In item 6 it is by creating an animal figure from soap. In item 10 it is by calculating the perimeter. These examples illustrate the “by clause” of an instructional objective. Sometimes the by clause adds clarity to the verb that identifies the learning process. In item 4, the learning process is to “develop,” and the by clause is “by writing an original short story.” Another approach is illustrated in item 6, in which the by clause “create an animal figure from soap” contains the action verb *create*.

## CHECK YOUR UNDERSTANDING

Why are items 1 and 3 not complete instructional objectives?

**Item 1.** Students will be able to recall facts about the people, history, environment, government, resources, and culture of Zimbabwe.

**Item 3.** Students will be able to listen to the musical and literary traditions of southern Africa.

First, consider item 1:

**Element 1.** *What is to be learned?* What is to be learned are unidentified facts about the people, history, environment, government, resources, and culture of Zimbabwe (unclear content description, too broad a set of facts to learn).

**Element 2.** *What is the learning process?* The learning process is to recall. Students could demonstrate that recall through a written exam, in a paper, or in an oral exam (unclear process).

An example of a rewritten item 1 that conforms to the behavior requirement of an instructional objective follows:

When given a list of facts about the people, history, environment, government, resources, and culture of Zimbabwe, students will be able to identify them on an exam, by matching each fact with an identifying statement.

In what other items is the behavior vague and in need of a by clause to clarify exactly how the student will demonstrate proficiency? (They are items 2, 8, and 9. Do you agree?)

The second unacceptable example of an instructional objective is item 3. This item is actually a classroom activity, not an instructional objective (the expected outcome from an activity).

**Element 1.** *What is to be learned?* The topic (the musical and literary traditions of southern Africa) is somewhat broad. Can these traditions be identified?

**Element 2.** *What is the learning process?* The learning process is to listen, which is a learning activity, not the result or outcome of the activity. Also, it is unclear whether the process is affective, cognitive, or psychomotor. Thus, an appropriate by clause is needed to accompany the verb (unclear learning process).

An example of a rewritten item 3 that conforms to the behavior requirement of an instructional objective follows:

After listening to examples of Ndebele and Shona musical melodies, both from contemporary sources and from the distant past, students will be able to express an emotional reaction to them.

Look at the list and find the other items that list an activity and not an outcome (items 5 and 7). Be careful of this trap when writing objectives. Many teachers are more comfortable writing the activity the student will engage in rather than the learning that will result from the activity and how it will be demonstrated in an assessment.

## Writing Clearly Stated Objectives

A clearly stated instructional objective must contain a behavior statement as well as three other characteristics. A helpful way to remember the four characteristics is to use the A, B, C, and D mnemonic aid, or memory device (See Table 4.1).

TABLE 4.1 *The A, B, C, and D of Clearly Stated Objectives.*

A = Audience	Who?	The student will. . .
B = Behavior expected at the end (clear, observable)	Will do what?	Be able to (do x). . .
C = Conditions	Under what conditions?	When given (conditions) or by memory
D = Degree	How well? [at the end of the lesson(s)]	At a _____% performance level (or specify criteria for "proficient" in a rubric)

Clearly stated instructional objectives contain an *audience (A)* statement that specifies the particular student or students who will be learning. The following examples are acceptable audience statements:

- Eighth-grade students will demonstrate the ability to:
- Art students will be able to:
- Students who complete their other assignments will show they can:
- Students in Algebra I will:

Often the audience statement becomes the stem for a set of instructional objectives, as in the following example for a unit:

After completing this unit, eighth-grade students will be able to:

The *behavior (B)* requirement must be a concrete, observable action that illustrates the nature of the learning. Therefore, statements such as "Students will learn to count in Spanish" and "Students will know how to design an experiment" are not observable specific behaviors. The objectives need to specify what it will look like if the students have "learned," or if they "know." Similarly, statements that describe activities designed to produce learning (e.g., "Students will watch a movie") are not clearly stated instructional objectives.

A *conditions (C)* statement is included when special circumstances may affect student performance during assessment. Conditions may be equipment or material to be used by the student, a time requirement, or some other limitations within which the student is expected to perform. If there are no special circumstances, the conditions statement may be omitted from the objective. The following are four examples of conditions statements:

- Using the outline map provided
- Given a set of data never seen before and class notes
- Given a protractor and calculator
- As a volunteer

Conditions often describe the materials that may be used by the student when producing the product or performance to be used as evidence of learning, for example, the outline, data, notes, protractor and calculator. The fourth example is used with an affective objective that aims to increase student participation in voluntary social improvement projects.

A *degree (D)* statement describes the criteria (or standards) that will be used by the instructor to determine whether the student has achieved the instructional objective being tested. The degree statement explains how the student product (i.e., written exam, model, painting, essay, research paper) or performance (i.e., speech, demonstration, poster, sprint, debate) will be graded. A degree statement can be expressed in two ways. *Quantitative degree statements* are typically associated with lessons in which the subject matter yields "right" answers rather than "best" answers. Quantitative degree statements usually are associated with the lower-level learning processes of knowledge and application rather than the higher-level processes of synthesis and evaluation. The following five examples are quantitative degree statements:

- Achieving 7 out of 10 correct
- With 75% accuracy
- Listing at least 3 reasons
- Using 10 of the unit's vocabulary words
- Making 5 of 10 free throws

*Qualitative degree statements* refer to the teacher's assessment of a complex student behavior. Qualitative degree statements can be difficult to construct. They require teachers to determine the form and substance of the minimally acceptable student product or performance. These criteria, when used to assess a complex task, are often referred to as *rubrics*. Four examples of qualitative degree statements follow:

- Essays will be judged on the accuracy of factual statements, relevance to the topic, logic of the argument, and mechanics (sentence structure, spelling, word usage, organization, and coherence).
- Radio commercials will be judged on the use of persuasive techniques studied in class, on clarity, and on proper use of language.
- Art projects will be graded on whether they show three or more colors and use perspective to present a street scene as described in the assignment.
- Travel brochures will be graded according to the following criteria: (1) accurate information on costs, mileage, and other details, (2) use of cultural information studied in class, (3) interest and appeal for the potential customer, (4) correct use of Spanish.

For additional examples of clearly stated objectives, look in Appendix A at the objectives for the interdisciplinary unit "Zimbabwe: A World's View from Africa."

### **Practice Activity A**

#### **Identifying Audience, Behavior, Conditions, and Degree Elements of a Clearly Stated Objective**

Write *A* for audience, *B* for behavior, *C* for conditions, and *D* for degree above the words that illustrate those elements in the following clearly stated objectives.



After completing this unit, eighth-grade students will be able to:

1. given the facts about Zimbabwe described in objective 1, create a tribal mask out of materials provided that reflects at least five of the ideas represented by the facts.
2. create a description of life in Great Zimbabwe in the 14th century or in the capital of King Monomatapa's empire at the beginning of the 16th century by writing an original short story (between 1,000 and 2,000 words) that accurately reflects the history and culture of the Shona people who lived there at the time.
3. graph the population density, area, and perimeter enclosed by Great Zimbabwe and modern-day Harare in a homework assignment. Label all work and make your answers accurate to the nearest whole number.

#### *Practice Activity A: Answer Key*

After completing this unit, eighth-grade students will be able to:

##### *Conditions*

1. given the facts about Zimbabwe described in objective 1,

##### *Behavior*

create a tribal mask

##### *Conditions*

out of materials provided

#### **Practice Point**

##### *Degree*

that reflects at least five of the ideas represented by the facts.

##### *Behavior*

2. create a description of life in Great Zimbabwe in the 14th century or in the capital of King Monomatapa's empire at the beginning of the 16th century by writing an original short story

##### *Conditions*

(between 1,000 and 2,000 words)

##### *Degree*

that accurately reflects the history and culture of the Shona people who lived there at the time.

##### *Behavior*

3. graph the population density, area, and perimeter enclosed by Great Zimbabwe and modern-day Harare

##### *Conditions*

in a homework assignment.

##### *Behavior*

Label all work

##### *Degree*

and make your answers accurate to the nearest whole number.

### **Practice Activity B**

#### **Writing Clearly Stated Instructional Objectives**

Write three clearly stated instructional objectives for a lesson or unit of your choice: one psychomotor, one cognitive, and one affective. Each objective should include the behavior requirement and the conditions or degree requirements. Label the behavior, conditions, and degree elements of the objectives.

#### **Practice Point**



#### **REFLECTING ON THE IDEAS**

Objectives can give important focus to your teaching, but there may be times when the wisest course is to alter your planned objective or abandon it entirely. When might this occur?

## **SECTION 2. WRITING AND CLASSIFYING COGNITIVE OBJECTIVES**

### **Section 2 Objectives**

After completing this section, you will be able to demonstrate the ability to:

1. identify the six levels of Bloom's taxonomy;
2. correctly label an unfamiliar objective using the taxonomy;
3. use the taxonomy to put objectives into a logical teaching order; and
4. create clearly stated objectives for lessons and units at the knowledge, comprehension, application, analysis, synthesis, and evaluation levels of the cognitive domain.

### **Teaching for Understanding**

As you consider ways to help students understand key content, one of your most important decisions is what students will *do* with the content to demonstrate their understanding. What type of understanding performance will you require? You know that demonstrating understanding requires that students do more than just recall information. Wiggins and McTighe (1998) list six facets of mature understanding. Consider what these facets might look like when demonstrated by young people.

When we truly understand, we:

- can *explain*: provide thorough, supported, and justifiable accounts of phenomena, facts, and data.



*How Will You Ask Students to Demonstrate Understanding?*

- can *interpret*: tell meaningful stories; offer personal dimension to ideas and events; make it personal or accessible through images, anecdotes, analogies, and models.
- can *apply*: effectively use and adapt what we know in diverse contexts.
- have *perspective*: see and hear points of view through critical eyes and ears; see the big picture.
- can *empathize*: find value in what others might find odd, alien, or implausible; perceive sensitively on the basis of prior direct experience.
- have *self-knowledge*: perceive the personal style, prejudices, projections, and habits of mind that both shape and impede our own understanding; we are aware of what we do not understand and why understanding is so hard. (p. 44)

As you plan for understanding performances, you will want to design activities and assessments that require students to explain, interpret, and apply information; to view ideas from differing perspectives; and to consider their own thought processes.

### Bloom's Taxonomy of Educational Objectives

In this section, you will learn to break down a complex intellectual task (e.g., design an experiment using the scientific method) into a list of objectives and place them in order. The most widely used process to order cognitive learning tasks is the taxonomy of educational objectives, first conceived by educational psychologist Benjamin

Bloom and his colleagues in the 1950s. Separate taxonomies occur for each of the three domains of learning objectives: one for cognitive tasks, a second for affective tasks, and a third for psychomotor tasks. This section concentrates on the cognitive domain, first presented in *Taxonomy of Educational Objectives: Handbook I. Cognitive Domain* (1956).

The cognitive domain taxonomy includes six categories of intellectual objectives: knowledge, comprehension, application, analysis, synthesis, and evaluation. These categories are also considered to be hierarchical. The levels range from the lowest cognitive learning tasks (knowledge) to the most complex tasks (evaluation). It is assumed that higher level tasks subsume tasks at a lower level. Thus, an application-level task obligates students to demonstrate knowledge, and an evaluation-level task requires students to perform successfully at the levels below it.

The taxonomy can assist teachers as they create instructional goals and objectives, plan instructional tasks and activities, and design assessment procedures. Over the years, thousands of teachers have derived benefit by using Bloom's taxonomy. For example, as teachers define tasks for each of the six levels, they develop lessons that provide variety and more complex thought for students. Furthermore, the higher level tasks (synthesis and evaluation) can be found only within complex activities with generous amounts of student participation. As teachers attempt to include these tasks, they implement activities that otherwise might be overlooked.

As useful as the taxonomy is, two caveats must be issued. First, the boundaries between some category levels are not sharply defined (e.g., between application and analysis). Second, many complex tasks include a bundle of behaviors. Thus it may be difficult to classify the task into only one of the six levels. Reasonable people can argue over the decision to classify an objective into a particular level. Although these arguments may be interesting, the precise placement of an objective into a particular level is usually not of fundamental importance.

It is fundamental, however, that the instructional tasks planned, implemented, and assessed by the teacher include the higher levels of the taxonomy. Students will then have the opportunity to manipulate information (apply, analyze, synthesize, and evaluate), rather than simply repeat it back to the teacher. When students do something new and meaningful with information, learning is more likely to be enhanced. Each level of the taxonomy is described in the paragraphs that follow.

### Knowledge (Memory)

The first level of the taxonomy is knowledge. Tasks at the knowledge level oblige the student to recall, recognize, or reproduce what has been previously learned. Usually, the teacher prompts the recall in the same or similar manner as it was originally learned. Answers are predictable and tend to be either right or wrong. For example, a teacher writes *Shona* and *Ndebele*, the two largest ethnic groups in Zimbabwe, on the chalkboard and then the next day asks the class to recall them from memory and to write them on a sheet of paper. If the teacher had asked for an oral recitation of the names, the task would remain at the knowledge level. Regardless of the nature of the content that must be recalled—