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## What Are *Standards*?

**A**lthough many education programs today are said to be *standards based*, few describe just what that really means. According to *Merriam-Webster*, a standard is defined as, “something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality” (standard, 2012). In education, we have standards covering a wide range of areas. For example, we have *Standards for Professional Preparation and Licensing* (Council for Exceptional Children, 2009), *Professional Teaching Standards* (National Board for Professional Teaching Standards, 2002), and *Standards for Professional Learning* (Learning Forward, 2011). Most conversations about standards in education today, however, involve standards for student learning.

Student learning standards are statements that describe what educators want students to learn and be able to do as a result of their experiences in school. They define the learning expectations or goals that educators strive to have students attain. As such, standards provide the foundation for every school’s curriculum and instructional program.

Most academic standards include two parts. The first part describes what we want students to learn, or the *content*. This part identifies the particular knowledge, concepts, or skills that students are expected to learn. Because most elements of

content are specific to a subject area, standards are generally organized by subject area. So we have standards in mathematics, language arts, science, social studies, music, art, physical education, and so forth.

In addition, because the content *within* each subject area includes a broad range of elements, documents that describe standards generally divide content elements into subtopics or “strands.” The *Common Core State Standards Initiative* (National Governors Association [NGA] & Council of Chief State School Officers [CCSSO], 2010) in the United States, for example, divides the content in mathematics into six strands, shown in Figure 1.1. Individual standards are organized by grade level and grouped within each strand in order to “provide a consistent, clear understanding of what students are expected to learn, so teachers and parents know what they need to do to help them” (see <http://www.corestandards.org/>, p. 1).

The second part of a standard describes what we want students to be able to do, or student *behavior* in relation to the content. These behaviors can range from very simple to complex, high-level mental processes. We might, for example, want students to know specific mathematics facts related to addition and subtraction. To show they achieved this standard would require students simply to recall factual information. But we also might want students to be able to apply addition and

**Figure 1.1** Content Strands in Mathematics (see <http://www.corestandards.org/>)

Mathematics Standards
Operations and Algebraic Thinking
Number and Operations—Base 10
Number and Operations—Fractions
Measurement and Data
Geometry
Mathematical Practices

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subtraction facts in mathematics to solve complex problems in real-world situations. To show they achieved this standard would require students not only to know addition and subtraction facts, but also to use that knowledge in practical, problem-solving situations they may encounter in daily life.

Many strategies have been developed over the years to categorize different levels of student cognitive behaviors in relation to the content. One of the earliest and still widely used is Bloom's Taxonomy of Educational Objectives (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956). Although other systems have been developed (e.g., Anderson & Krathwohl, 2001; Gagne, 1985; Webb, 1997), none seems as elegant or as clear. Bloom's categorization system divides student cognitive behaviors into six broad categories, ranging from simple to highly complex, as shown in Figure 1.2.

A common misunderstanding when considering these levels of behavior is to equate *complexity* with *difficulty*. Sometimes a task that requires only recall of information can be far more difficult than one that requires students to

**Figure 1.2** Categories of Student Cognitive Behavior and Related Verbs (Bloom et al., 1956)

Levels of Behavior From Bloom's Taxonomy	
<i>Behavior</i>	<i>Related Verbs</i>
Knowledge	Tell, list, define, relate, locate, write, find, state, name
Comprehension	Explain, describe, interpret, discuss, restate, translate
Application	Solve, use, illustrate, construct, complete, examine, classify
Analysis	Analyze, examine, compare, contrast, investigate, categorize
Synthesis	Create, invent, compose, predict, plan, construct, design, devise
Evaluation	Judge, justify, debate, verify, recommend, assess, rate, prioritize

engage in higher-level reasoning. For example, asking elementary students to determine what coins they might receive in return after paying for an apple that costs 75 cents with a dollar, might prove less difficult than asking the same students to identify which term in a subtraction problem is the “subtrahend” and which is the “minuend.” The first task requires the complex skill of applying mathematics facts and knowledge of currency in a practical, real-world situation. The second task requires only knowledge of a definition. Still, the second task is likely to prove more difficult for most students. Although tasks requiring more complex cognitive behaviors are generally more difficult, that is not always the case.

As expectations for student learning, most standards contain descriptions of both content and behaviors. The *Common Core State Standards for Mathematics*, for instance, includes the following standard for Grade 2 within the strand for Measurement and Data:

5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. (See [http://www.corestandards.org/assets/CCSSI\\_Math%20Standards.pdf](http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf), p. 20)

This standard depicts one part of what students in Grade 2 are expected to learn and be able to do in the area of measurement and data in mathematics.

A third aspect of standards that is sometimes considered describes how well students are expected to do those things. In other words, how good is good enough? These levels of performance often include an established level of proficiency for meeting the standard, one or two levels below proficiency, and an advanced or exemplary level considered above proficiency. Setting these levels of performance can prove to be a tricky process, however.

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An error frequently made in this process is to equate *level of performance* with *percent correct*. If, for example, *Proficient* is defined as answering 80% of the questions correctly on an assessment designed to measure a standard, *Advanced* or *Exemplary* should *not* mean simply answering 90% to 100% correctly or completing 100% of the tasks. If all questions relate to the same standard (e.g., solving single-digit addition problems), answering more questions correctly shows only greater accuracy. It does *not* show students' ability to work at a more advanced level or on a more advanced standard (e.g., solving double-digit addition problems). Similarly, students should not necessarily be considered less than proficient simply because they answered correctly only 70% of the questions written at the proficient level (Brookhart, 2011).

Although extremely important, these complications regarding students' level of performance relate more to how achievement of the standards is measured or assessed, rather than to the standards themselves. Note in the mathematics standard from the *Common Core* listed above that no mention is made of how well students are expected to "use addition and subtraction within 100 to solve word problems . . ." For this reason, statements about specific levels of student performance are usually absent in descriptions of standards and related curriculum documents. Instead, that becomes the focus in developing assessments to measure how well students have achieved the standards.

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