



Making
Standards
Useful IN THE
CLASSROOM

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Making Standards Useful

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Unpacking Standards and Designing Measurement Topics

The first step in reconstituting standards documents is to unpack the benchmarks with the intent of designing measurement topics. Unpacking benchmarks simply involves identifying the unique elements of information and skill in each benchmark statement. We have found that subject matter specialists are quite skilled and efficient at doing this task. Consequently, a district need only assemble its expert mathematics teachers and curriculum specialists to unpack the mathematics standards, assemble the expert science teachers and curriculum specialists to unpack the science standards, and so on.

To illustrate, consider the following 5th grade benchmark for the Measurement standard from the Ohio state standards document titled *Academic Content Standards: K–12 Mathematics* (Ohio Department of Education, 2001):

1. Identify and select appropriate units to measure angles; i.e., degrees.
2. Identify paths between points on a grid or coordinate plane and compare the lengths of the paths; e.g., shortest path, paths of equal length.
3. Demonstrate and describe the differences between covering the faces (surface area) and filling the interior (volume) of three-dimensional objects.
4. Demonstrate understanding of the differences among linear units, square units and cubic units.
5. Make conversions within the same measurement system while performing computations.
6. Use strategies to develop formulas for determining perimeter and area of triangles, rectangles and parallelograms, and volume of rectangular prisms.
7. Use benchmark angles (e.g., 45° , 90° , 120°) to estimate the measure of angles, and use a tool to measure and draw angles. (pp. 72–73)

This single benchmark includes seven statements. One might assume, then, that this benchmark contains seven unique dimensions. Although a case might be made for this assumption, unpacking benchmarks provides subject matter experts with an opportunity to delete content that is not considered

essential, delete content that is not amenable to classroom assessment, and combine content that is highly related. Following these guidelines, a district's mathematics teachers and curriculum specialists might restate the seven elements as follows:

1. Demonstrate a basic understanding of degrees and use of benchmark angles (i.e., 45° , 90° , and 120°) to estimate and draw angles.
2. Demonstrate an understanding of various types of units of measure (e.g., linear units, square units) and convert between units within the same measurement.
3. Identify and compare paths between points on a grid or a coordinate plane.
4. Demonstrate an understanding of the difference between covering the faces (surface area) and filling the interior (volume) of three-dimensional objects.
5. Develop formulas for determining perimeter and area of triangles, rectangles, and parallelograms, and volume of rectangular prisms.

This listing of benchmark elements is somewhat more condensed than the previous listing. The original Statements 1 and 7 have been combined (see new Statement 1) because they both address degrees and angles—concepts that would probably be taught together. Original Statements 4 and 5 have been combined (see new Statement 2) because they both address units of measure. As we shall see in subsequent chapters, these new statements can be pared further when levels of complexity are considered.

One common convention not illustrated in this example is that often statements are dropped when benchmarks are reconstituted. To illustrate, consider the following examples, which are representative of statements found in state and national documents:

- Explore the use of mathematical patterns.
- Demonstrate an interest in reading a variety of genres.
- Make observations of scientific interest.
- Participate in discussions regarding issues of social interest.

These statements are simply too general to be amenable to effective measurement or instruction. In effect, we have found that the process of rewriting benchmark statements commonly results in trimming the amount of content in standards documents considerably.

Finally, we should note that many times curriculum specialists and subject matter teachers find benchmark statements perfectly useful as stated. To illustrate, consider the following 8th grade science statements regarding motions and forces from the Oklahoma state standards:

1. The motion of an object can be measured. The position of an object, its speed and direction can be represented on a graph.
2. An object that is not being subject to a net force will continue to move at a constant velocity (in a straight line and a constant speed). (Oklahoma State Department of Education, 2005, p. 34)

Format

Grade 8	
Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught.
	Score 3.5 In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications with partial success.
Score 3.0	<p>While engaged in grade-appropriate writing tasks, the student demonstrates competence in a variety of formats by . . .</p> <ul style="list-style-type: none"> • writing complex persuasive compositions (<i>e.g., writing persuasive compositions that use clear claims, backing, warrants, and qualifiers</i>); and • writing letters of response and letters of request (<i>e.g., writing business letters of request and response</i>). <p>The student exhibits no major errors or omissions.</p>
	Score 2.5 The student exhibits no major errors or omissions regarding the score 2.0 elements and partial knowledge of the score 3.0 elements.
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as . . .</p> <ul style="list-style-type: none"> • recognizing and recalling specific terminology (<i>e.g., claim, qualifier, persuasive technique, formal letter</i>); and • recognizing and recalling isolated details, such as . . . <ul style="list-style-type: none"> ○ the defining features of persuasive compositions; and ○ the defining features of business letters. <p>However, the student exhibits major errors or omissions with score 3.0 elements.</p>
	Score 1.5 The student demonstrates partial knowledge of the score 2.0 elements but major errors or omissions regarding the score 3.0 elements.
Score 1.0	With help, the student demonstrates partial understanding of some of the score 2.0 elements and some of the score 3.0 elements.
	Score 0.5 With help, the student demonstrates partial understanding of some of the score 2.0 elements but not the score 3.0 elements.
Score 0.0	Even with help, the student demonstrates no understanding or skill.
Grade 7	
Score 3.0	<p>While engaged in grade-appropriate writing tasks, the student demonstrates competence in a variety of formats by . . .</p> <ul style="list-style-type: none"> • writing narrative stories that focus on tone and mood (<i>e.g., using setting to create tone and mood</i>); • writing basic persuasive compositions (<i>e.g., writing a clear claim with supporting details</i>); and • writing letters of response and letters of request (<i>e.g., writing personal letters of request and response</i>). <p>The student exhibits no major errors or omissions.</p>
Score 2.0	<p>The student exhibits no major errors or omissions regarding the simpler details and processes, such as . . .</p> <ul style="list-style-type: none"> • recognizing and recalling specific terminology (<i>e.g., tone, mood, persuade, respond</i>); and • recognizing and recalling isolated details, such as . . . <ul style="list-style-type: none"> ○ specific characteristics of setting;