

# RIGOR

## INTRODUCTION AND PURPOSE

By the end of this module, you should be able to (1) define what rigor means for the purpose of these modules; (2) use the verbs in standards and tools that teachers have available to identify the cognitive complexity in the relevant standards; (3) explain why assessments with an appropriate level of rigor also measure for a range of student thinking and understanding; and (4) use the assessment blueprint to document the level of rigor of each skill you are measuring in assessments you write or select.

## KEY CONCEPTS

### Rigor

For the purpose of this series of modules, rigor is the cognitive complexity of a skill within a standard or of an assessment item. An assessment has “an appropriate level of rigor” if it includes items that match the level of rigor of the skill or skills you intend students to master. It also has an appropriate level of rigor if it measures a range of student thinking and understanding so that it measures what all students know and can do.<sup>1</sup>

### How to Match the Rigor of Assessment Items to the Rigor of Skills

To ensure that the rigor or cognitive complexity of each assessment item matches the rigor or cognitive complexity of the skill you intend it to assess, you can study the standard to determine the complexity of each skill embedded within it.

### How to Use Verbs to Determine a Skill’s Level of Rigor

It is easy to misjudge the rigor in a standard. One common pitfall is to use important words found in the standards to simplify complicated standards. A helpful tip that we will explore in this module is how to use the *verbs*, in the context of the standard as a whole, to determine a skill’s level of cognitive complexity.

### Tools to Help You Think About Rigor

You may be familiar with the different tools experts have developed to help you think about rigor. For example, Bloom’s Taxonomy categorizes cognitive skills into six levels. Lower-order thinking skills appear at the bottom of Bloom’s Taxonomy. Higher-order thinking skills appear at the top of the taxonomy. You can find online several resources to help you categorize verbs according to Bloom’s Taxonomy. For the sake of example, this chart lists a few verbs representative of each level of rigor.<sup>2</sup>

1. Remember	2. Understand	3. Apply	4. Analyze	5. Evaluate	6. Create
<b>Remember Information</b>	<b>Explain Ideas or Concepts</b>	<b>Use Information in a New Way</b>	<b>Distinguish Between Parts</b>	<b>Justify a Position or Decision</b>	<b>Create a New Product or Point of View</b>
Choose Define Find Identify Label List Match Name Recognize Recall Select Tabulate	Classify Compare Describe Estimate Explain Illustrate Infer Interpret Measure Outline Report Summarize	Apply Build Calculate Construct Demonstrate Develop Graph Model Organize Practice Solve Use	Analyze Attribute Break down Categorize Determine the relationship Differentiate Examine Group Organize Separate Simplify	Argue Assess Conclude Create Criticize Decide Deduct Defend Judge Predict Prioritize Support	Adapt Build Combine Design Develop Generate Integrate Modify Plan Produce Theorize Validate

### How to Measure a Range of Student Thinking and Understanding

An assessment with an appropriate level of rigor measures a range of student thinking and understanding so that it measures what all students know and can do. If assessments are too easy, some students may not have the opportunity to demonstrate the upper bounds of what they know and can do. Assessments should include items that challenge all students. You may refer to these questions as “stretch” questions because they require students to push themselves to the upper bounds of what they know and can do. On the other hand, if assessments are too complex, some students may not be able to showcase their knowledge and skills at all. Assessments should include items that require lower-level thinking to reveal where learning breaks down among students struggling to master a standard. You can organize items sequentially in order of difficulty so that students can feel successful early in the assessment and more challenged as they progress. You might include the most difficult questions in a separate bonus section to motivate more advanced students and not discourage others.

## CHECK FOR UNDERSTANDING

### Assessment Items

1. Using Bloom's Taxonomy, identify the level or levels of rigor in this standard from Iowa. Remember to pay close attention to the verbs.

*Understand the use of geographic tools to locate and analyze information about people, places, and environments.*<sup>3</sup>

2. Explain in your own words why well-designed assessments should measure a range of student thinking and understanding.

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### Answers

1. Using Bloom's Taxonomy, identify the level or levels of rigor in this standard from Iowa. Remember to pay close attention to the verbs.

*Understand the use of geographic tools to locate and analyze information about people, places, and environments.*<sup>4</sup>

*The key verbs in the skills in this standard are "use" and "analyze," which are associated with lower- and higher-order skills. "Understand" is a level 1 skill, and "analyze" is a level 4 skill.*

2. Explain in your own words why well-designed assessments should measure a range of student thinking and understanding.

*Well-designed assessments include items with various levels of rigor to ensure that they measure what all students know and can do. If assessments are too easy, some students may not have the opportunity to demonstrate the upper bounds of what they know and can do. I should include items in my assessment that challenge all of my students. On the other hand, if assessments are too complex, some students may not be able to showcase their knowledge and skills at all. I can include items that require lower-level thinking to reveal where learning breaks down among students struggling to master a standard.*

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<sup>11</sup> Kansas State Department of Education, "Assessment Literacy Project"; Ohio Department of Education, "Assessment Literacy: Identifying and Developing Valid and Reliable Assessments" (2013); Relay Graduate School of Education, *Designing and Evaluating Assessments* (2014); and Rhode Island Department of Education, "Deeping Assessment Literacy."

<sup>2</sup> Moody, Michael, and Jason Stricker, *Strategic Design for Student Achievement* (2008).

<sup>3</sup> Iowa Department of Education, "Iowa Core K-12 Social Studies" (2010).

<sup>4</sup> Ibid.