What is Assessment and How Does it Support Standards-Based Learning?

Adapted from *Knowing What Students Know* by the National Research Council (2001)

A central purpose of any student learning system in Minnesota, whether it is a classroom, a school, or a district, is to support students in gaining the knowledge, skills, and abilities articulated in the Minnesota K–12 Academic Standards, the Minnesota Early Childhood Indicators of Progress (ECIPS), and the WIDA ELD Standards (herein referred to as the Minnesota state standards). The Minnesota state standards are the foundation for targeted learning goals and should guide the curriculum, instruction, and assessment used in the classroom. When curriculum, instruction, and assessment are aligned to and guided by the Minnesota state standards, then the conditions exist to conduct valid and reliable standards-based educational assessment. But what is the purpose of assessment? Simply put, educational assessment is the process of gathering and using evidence to understand student learning relative to learning goals defined by the Minnesota state standards.

Curriculum *is the program and plan for what should be taught.*

Instruction *is how teachers and students work together to engage in learning experiences.*

Assessment *is the process of gathering and using evidence to understand student learning relative to standards.*

Assessment plays a key role in learning, both for students and the adults who support them, by providing information about where students are in their learning progressions that can be used to inform educational decision-making, particularly with respect to curriculum and instruction.

Any quality assessment tool or strategy, whether it is a formative assessment process like questioning small groups of students about their thinking in a classroom or a state summative assessment like the Minnesota Comprehensive Assessment (MCA), is the result of **three factors:**

1. Model of Cognition

A **model of cognition** reflects the underlying assumptions about what it means to demonstrate competence in a subject domain. It should account for what learners should know and the ways in which students represent and engage with this knowledge through activities like metacognition, transfer of knowledge, and discourse. It serves as the driver for assessment design, guiding a clear understanding of what learning looks like in the subject area being assessed. In Minnesota, the model of cognition in an academic assessment should represent the ways that a student learns the knowledge and skills described in the Minnesota state standards.

2. Approach to Observation

The design of any assessment is shaped by decisions about how to make student thinking observable. Determining the specific ways to make student thinking observable is called the **approach to observation.** This entails decisions about which specific tasks, problems, questions, or situations will be used to elicit observable evidence from which to reason about student learning. Every assessment is designed with an approach to observation, and there are a wide variety of assessment tools and strategies that generate observable evidence of student learning in addition to the more traditional tests and quizzes.

3. Method for Interpretation

Any assessment design must include a **method for interpretation**, or the strategies used to analyze the evidence of student learning elicited by the approach to observation. The method for interpretation will determine how the evidence should be used to make inferences about student learning. In large-scale assessments, the method for interpretation may have been developed through extensive research by psychometricians, while a classroom assessment may use a scoring rubric or success criteria. In any case, the purpose of the method of interpretation is to support reasoning that can guide decision-making about student learning.

In a well-designed assessment tool or strategy that produces meaningful data about student learning, the approach to observation and method of interpretation are tightly aligned to the model of cognition.

For example, **Figure 1** shows a **model of cognition** in mathematics based on an understanding of how students learn how to apply mathematical processes and make sense of their results through mathematical discourse. This understanding should guide the **approach to observation**, which may ask students to use data for computation and draw conclusions about their results in writing. A **method of interpretation** may be a scoring guide that accounts for accuracy of the mathematical procedures and for drawing and articulating a reasonable conclusion based on the computed results.

Figure 1. Example of How a Model of Cognition Guides Assessment

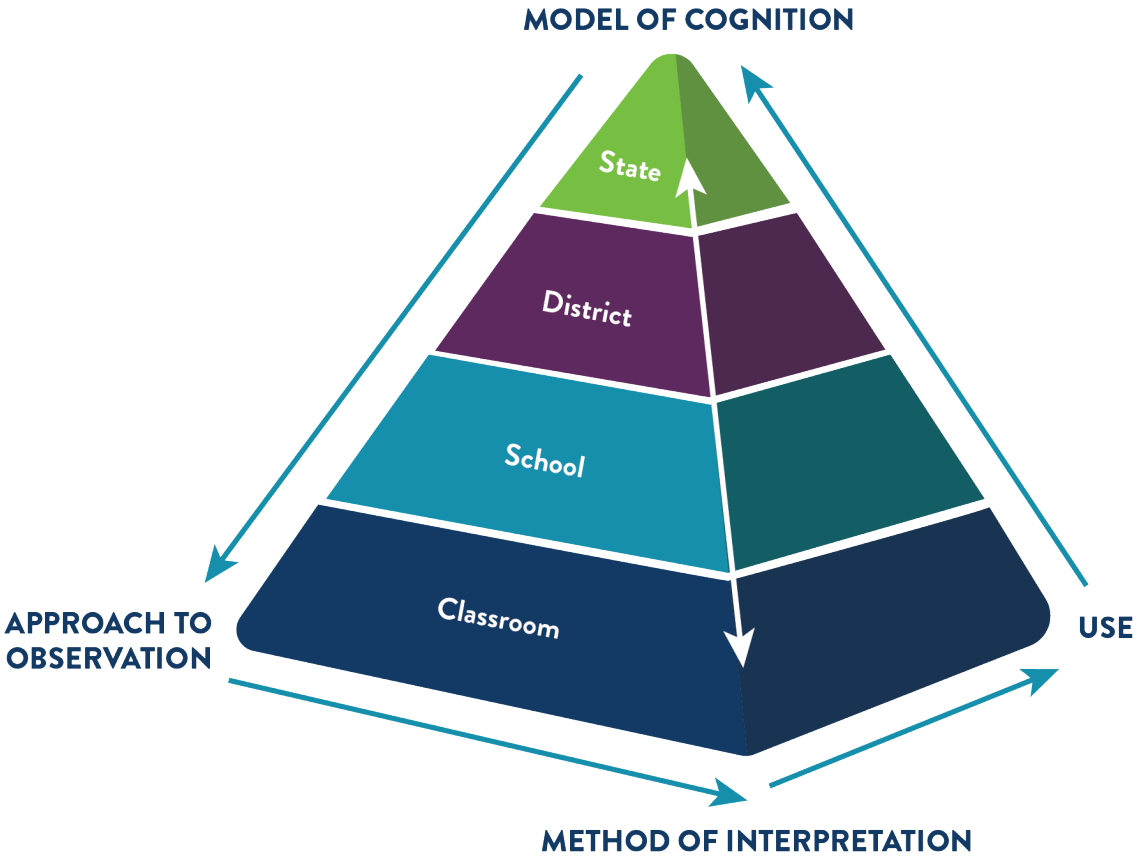
Model of Cognition	Approach to Observation	Method of Interpretation
What do I hope student learning will look like? Students apply their understanding of mathematical processes to determine results to a multi-step word problem and explain how their computational results support their answer.	**How will my students demonstrate mastery of concepts and/or skills?** Students will work in pairs to solve a multi-step word problem and then develop a written explanation of how their computations support their answer.	**How will I analyze student work?** Scoring guide shows the correct computations and includes a points-based rubric to score the written explanation.

As noted in *Knowing What Students Know*, it is important to recognize "that even very well-designed assessments cannot by themselves improve learning. Improvements in learning will depend on how well assessment, curriculum, and instruction are aligned and reinforce a common set of learning goals, and on whether instruction shifts in response to the information gained from assessments" (*Knowing What Students Know*, p. 25).

The model represented in **Figure 2** (adapted from Joan Herman, 2010) reflects how the three factors described play out in a coherent assessment system, when all assessments are aligned to a common model of cognition. The figure represents the extent to which a system of assessment must serve decision-makers at all levels in the educational system from the classroom to the school, district, and state.

A coherent assessment system must provide meaningful data about student learning to inform decisions about instruction, policy, and practice at each of the levels shown. The figure also introduces the concept of *use* as a critical component. An assessment system is only effective if data elicited is *used* by students, teachers, school and district leaders, and state policymakers to make changes that will actually improve learning.

Figure 2. Vertical Coherence



We will return to the three core ideas presented in this document throughout the MnDAL professional learning modules:

- The alignment of curriculum, instruction, and assessment to the common set of learning goals identified in the Minnesota state standards is foundational to the learning that follows in this module series.

- Quality assessment tools and strategies are designed based on a model of cognition that shapes decisions about the approach to observation and the method for interpretation.
- Assessment tools and strategies can only improve student learning when the information yielded is used appropriately and is useful to inform educators how to shift their own instructional practices in response to student performance.

References

National Research Council. (2001). *Knowing what students know: The science and design of educational assessment.* The National Academies Press.

Herman, J. L. (2010). *Coherence: Key to next generation assessment success (AACC report)*. University of California.