
# From Performance Expectations to Assessments

## NSTA Professional Development Institute

## Wednesday, April 2, 2014

# An Approach for Designing NGSS Tasks

Collaborative Research: Designing Assessments in Physical Science across Three Dimensions

Unpacking → Specifying → Designing

# What is “unpacking” and why is it important?

- We need consensus about what Performance Expectations are calling for in terms of the practice, core idea, and cross-cutting concepts.

- Performance expectations provide a lot of detail, but not everything you need to consider for assessment design.

# Unpacking Performance Expectations

*MS-PS1-1 Develop models to describe the atomic composition of simple molecules and extended structures*

- Clarification Statement: Emphasis is on developing models of molecules that vary in complexity. Examples of simple molecules could include ammonia and methanol. Examples of extended structures could include sodium chloride or diamonds. Examples of molecular-level models could include drawing, 3D ball and stick structures, or computer representations showing different molecules with different types of atoms.

- Assessment Boundary: Assessment does not include valence electrons and bonding energy, discussing the ionic nature of subunits of complex structures, or a complete description of all individual atoms in a complex molecules or extended structure is not required.

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# Unpacking Science Practices

*MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.*

*MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.*

*4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.*

*5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.*

- What aspects of modeling are called for?
- What kinds of models might students produce as evidence?
- What will a complete model include?

# Specifying an Assessment Argument

- Given a performance expectation, we ask:
  - What evidence are we looking for in students' responses that tells us that they have achieved the performance expectation?
  - What additional background knowledge, skills and experiences are required/expected?
  - What features will tasks that assess this performance expectation have (e.g., what contexts/phenomena are appropriate, what scaffolds or supports might be needed)?

Create an "Assessment Argument" (design specification) to develop tasks aligned to performance expectations

# Designing Tasks and Rubrics

- We use our Assessment Argument to
  - generate new tasks
  - evaluate and revise old tasks
  - produce rubrics for scoring student work