Assessment in the classroom: Formative Uses of Assessment

NSTA Professional Development Institute

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What makes assessment formative?

**Assessment designed to support instruction:**

Enables you to **make decisions about the next steps in instruction that are likely to be better** than if you had simply proceeded ahead without the benefit of knowing how students were thinking (Wiliam, 2009).

**Making tasks more in-formative**

- Establishing where learners are in their learning
- Establishing where they are going (i.e., are they on the pathway for achieving the learning goals?)
- Working out next steps for getting there
Key considerations

• How can tasks be used during instruction to gauge students’ progress toward achieving PEs?

• When might this fit within a unit of instruction (e.g., early on in instruction or mid-way through instruction to check in on their learning)?

• To what extent is your task “diagnostic”? What student problematic ideas or misconceptions might your task reveal?

• How can you adjust your task to elicit additional student ideas (e.g., what follow-up prompts could you use)?

• How might you orchestrate a whole-class and/or small group discussion of student responses to a task?
Moving toward NGSS Formative Assessment: Beyond Right and Wrong

Support student participation/engagement by:

① *Taking an interpretive stance toward student thinking*

- go beyond just “right” and “wrong” to diagnose how students are thinking and reasoning
- Find out why students think what they think (look for patterns in student difficulties)
- decide “what’s next” for a class, small group, or individual
Moving toward NGSS Formative Assessment: Building Classrooms Norms

Support student participation/engagement by:

② **Building a scientific culture in the classroom**

- Establish *epistemic* norms: Who or what has *authority* in this classroom? How do we support claims?
- Establish *social* norms: How do we build/contest claims, knowledge, models in this classroom?
- Align norms to specific science practices, grounded in particular core ideas.
- Encourage students to talk about their ideas
Some Potentially Helpful Norms for the NGSS Classroom

• Everyone participates
• Support claims with evidence
• Challenge ideas but respect the person
• Revise and rethink often

Four norms that can help bring instruction and assessment closer together.
Some Potentially Helpful Norms for the NGSS Classroom

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

• **Everyone participates**
  – Students working in groups, not the teacher, will construct a model from observations and simulations that describes how light allows objects to be seen.

• **Support claims with evidence**
  – Evidence should link observations from experiments or simulations to cause and effect, such as light reflecting from an object (cause) and traveling to the eye allowing the object to be seen (effect).
  – Models should account for all the evidence.

• **Challenge ideas but respect the person**
  – Students present and defend their models to the class.
  – Students evaluate models for what each shows and hides, helps to explain.

• **Revise and rethink often**
  – Students will revise their models based on feedback and further investigation and re-present them to the class.
Some Helpful Strategies for Supporting 3-Dimensional Learning

- Scaffolding of practices
- Teacher talk moves to support an interpretive stance
- Student talk moves

Three strategies that entail small changes in teaching but have a big payoff in student learning.
# Talk Moves for Teachers

| Eliciting reasoning       | • Why do you think that? What evidence helped you make this claim?  
|                          | • Can you say more about what you know or have observed that leads you to conclude that...? |
| Adding on                | • Can anyone add to this idea? |
| Weighing perspectives    | • Who would like to agree/disagree with the idea that...?  
|                          | • Let’s start our responses to ____’s idea by saying, “I agree because...” or “I disagree because...” |
| Restating/Revoicing      | • Can you restate ____’s idea in your own words?  
|                          | • Who can clarify for us what ____ just said?  
|                          | • So, when you said..., did you mean....? |
| Moving to consensus      | • Can someone summarize what the class understands now about ...?  
|                          | • How do we know that we now about ...?  
|                          | • How did we decide this was our understanding?  
|                          | • Can someone summarize what the class is still struggling to understand about...? |
# Talk Moves for Students

| **Prior Experience** | • This question reminds me of....  
|                      | • I have seen that when....  
|                      | • My experience with...makes me think... |
| **Challenging or Supporting Ideas** | • I agree/disagree with ---- *(person’s idea or claim)* because...  
|                                  | • I would like to add on to what ______ is saying.... |
| **Asking for more Information** | • Are you saying that....?  
|                                | • Did you mean...?  
|                                | • Can you repeat that?  
|                                | • I don’t understand....can someone explain....? |
| **Supporting Claims with Evidence** | • My evidence is...  
|                                      | • I think....because.... |
Bringing a 3-Dimensional Perspective to Assessment
NGSS is an Opportunity

Since the first generation of science standards...

• Science has changed
• Our understanding of how to teach and learn science has changed
• Society has changed to a knowledge driven society

We need to equip our children with the conceptual tools to use knowledge to solve problems, innovate, make decisions, and learn and apply new information.
It will not be feasible to assess all of the performance expectations for a given grade level with any one assessment.

Developing Assessments of Next Generation Science Standards (NRC 2013)
Main Points

• NGSS “performance expectations” can be a powerful guide in developing your classroom assessments
• Task analysis can help identify criteria for 3-dimensional tasks
• Unpacking practices ensures that the essential components of practices will be consistent across assessment tasks
• Assessment tasks & rubrics should integrate all 3 dimensions – you’ve been introduced to an approach!
• In-Formative classroom interactions and norms spark and sustain knowledge-in-use
Thank you!

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