Facilitation Guide
Standards in Practice Protocol
Also: Modification Using Mitten Probe
Protocol time: 80 min
Introduction: 10 minutes
Preparation time: 2 hours.

Purpose: This protocol allows for a close examination of students' work in direct relationship to the standards. Teachers or teams would select this protocol if they wonder if this *assignment* assists students in meeting standard OR if this *assessment* adequately measures students' achievement of the standard.

Description: Participants identify the standard implicit in the assignment, generate a scoring guide, determine whether students have met the standard, and plan for needed change. This protocol uses resource materials that reference standards. (e.g. *Curriculum Topic Study, Atlas of Science Literacy, NSES, State Standards*)

Modification Using Mitten Probe: The protocol uses classroom generated student work. This protocol may be modified by using student work sets (e. g., The Mitten Probe and associated scientists' ideas, student work samples, and a scoring guide for the prompt.). Details for doing this workshop with The Mitten probe follow the basic directions below.

Note: This facilitation guide is intended for the session facilitator/presenter. The session may consist of one small group or multiple groups. Within the protocol, there is also a role called "facilitator". This role could be taken by the overall session facilitator/presenter – or delegated. Workshops with multiple small groups would have multiple people filling that role within their group.

Before the workshop:
Arrange for sets of student work to be collected from the participants on a common assessment. The work should elicit student thinking around a single concept. The choice of work might be made at a separate short meeting. If classroom work is not being collected, see Modification Using Mitten Probe.
Step 6 could involve a consensus taking step. Decide how that you would like that to happen. Some people have participants place stickies or dots on the favored choices. Some just talk through to consensus. Consensus might not be needed in some circumstances.

Materials:
Slide presentation (optional)
Standards in Practice Protocol – one per participant.
Copied sets of student work (ten samples, copied and paper clipped) one packet per participant
*Standards resources
Chart paper – two pieces per group.
Tape

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Markers for recorder
Stickies or colored dots if doing action planning consensus taking

*Standards Resources:

- *Science Curriculum Topic Study. Keeley*, P, (2005) Corwin Press.
- CTS resources online: http://www.curriculumtopicstudy.org/ - 1 copy per participant
- *Uncovering Student Ideas in Science.* Vol. 1-4. Keeley et al. NSTA Press.
- *Benchmarks for Science Literacy*, AAAS - Project 2061 (1993) Oxford University Press Online: http://www.project2061.org/publications/bsl/online/bolintro.htm - or 1 copy per group.
- *Atlas of Science Literacy.* AAAS – Project 2061. Volume 1 (2001) and Volume 2 (2007). 1 copy per group.
- *National Science Education Standards*, NRC, National Academy Press. Online: http://www.nap.edu/readingroom/books/nses/ - or 1 copy per group.
- *Science For all Americans* (1990): Project 2061. American Association for the Advancement of Science (AAAS). Oxford Press. http://www.project2061.org/publications/sfaa/online/sfaatoc.htm - or 1 copy per group.
- *Washington State Science Standards*
  http://www.k12.wa.us/CurriculumInstruct/Science/default.aspx

Workshop - Process for using protocol for Standards in Practice.

Step 0 Slide show – (slides 1-5) (10 minutes) Short and optional.

Step 1 **Hand out** protocol and role strips and choose roles. Review purpose of using protocol. (Direct group to read the purpose) Explain how to use protocol (process column, roles, etc.)

Step 2 **Identify standards**. Hand out student work. (Note: if student work from a participant's classroom is not available, see Modification for Mitten.) Describe, if necessary, the standards resources that you are using to guide people in identifying standards. (If participants aren't familiar with the standards materials, it might work to limit the resources and provide more guidance.) Determine which standard/s seems to be intended by the activity/assignment/assessment. Record the standard on the chart paper.

Step 3 **Making a scoring Guide. Generate** a rough scoring guide for the work using the identified standard. Work through this as a group. The two categories will be Meets Standard or Does not Meet Standard. Record the ideas that you would expect to find in answers that fell into each of the categories.

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Step 4 Analyzing Student Work. Using rubric, teachers "analyze" student work by sorting the student work into the two categories. This should first be done independently and then discussed. (It is likely that some papers will fall in-between Meets Standard and Does not. These papers might be set aside until further in the process.)

Step 5. Evaluation. Discuss whether students have generally demonstrated an understanding of the intended target. What do they know and what are they able to do. Did the activity give them an opportunity to reveal their thinking?

Step 6. **Implications for change**. Analyze whether the problem (if there is one) is in the lesson (which may have led to this student work) or in the assessment tool. *Brainstorm* a list of ideas for fixing. Encourage all ideas during brainstorming without comment. In planning for action, decide ahead whether consensus will be needed. If all participants are teaching this lesson sample, that would be the case. If the lesson came from one teacher and the lesson is not going to be shared, then that teacher might have particular insights that should be honored. Consensus will not be needed on the solution in that case; the team would assume the roles of an advisory team.

Step 7 Reflection Slide 6 optional. During reflection phase encourage people to respond to the reflection questions privately. After reflection, share the responses of those willing to share. Some facilitators use a structured method such as a "Think-Pair-Share."

> *Modification of reflection*: Some presenters also find it helpful to have a record of what worked and what didn't. They might provide a simple recording sheet with the date, workshop and purpose on the top; a table with two columns below – What worked and what didn't. Although people will have an opportunity to share this aloud, some members might not feel comfortable doing so.
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Modification Using The Mitten Probe (instead of classroom samples)

Before the workshop:
Gather standards resources. CTS is the resource referenced.
Copy materials.
Arrange technology.

Materials:
Slide presentation (optional)
Standards in Practice Protocol – one per participant
**Blank Mitten Probe - one per participant
Copied sets of student work from The Mitten probe. (ten samples, copied and paper clipped) one packet per participant
Scientist Ideas - one per participant
Rubric and scenario - one per participant.

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*Standards resources (list in first protocol)
Tape
Markers

**The Mitten Problem, p. 103. Page Keeley, *Uncovering Student Ideas in Science*, Vol. 1, Arlington VA: NSTA Press. 2005.

Procedure Using the Mitten Problem Probe. The steps that are different from the original protocol are indented.

Step 0 Slide Presentation (PowerPoint) slides 1 – 5.

> **Step 00** The Mitten Probe. Hand out blank Mitten Problem probe. Participants complete the probe individually. Participants then share answers with group members and then come to agreement on correct answer. When this is concluding, hand out Scientists Ideas Discuss again.

Step 1 **Hand out** protocol and role strips and choose roles. Review purpose of using protocol. (Direct group to read the purpose) Explain how to use protocol (process column, roles, etc.)

Step 2 **Hand out** student work. **Describe,** if necessary, the standards resources that you are using to guide people in identifying standards. (If participants aren't familiar with the standards materials, it might work to limit the resources and provide more guidance.) **Determine** which standard/s seems to be intended by the activity/assignment/assessment. **Record** the standard on the chart paper.

> **Step 3** **Scenario and Scoring guide.** INSTEAD OF DOING STEP 3 ON THE ORIGINAL PROTOCOL, explain that that you have a scenario in which someone has done protocol Step 3 for us. (The scenario has also done Step 2, so this will serve as a check to their identification of the standard.) Hand out & read the scenario and the rubric. Discuss.

Step 4 **Analyzing Student Work**. Using rubric, teachers "analyze" student work by sorting the student work into the two categories. This should first be done independently and then discussed. (It is likely that some papers will fall in-between Meets Standard and Does not. These papers might be set aside until further in the process.)

Step 5. **Evaluation.** Discuss whether students have generally demonstrated an understanding of the intended target. What do they know and what are they able to do. Did the activity give them an opportunity to reveal their thinking?

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Step 6. **Implications for change**. Analyze whether the problem (if there is one) is in the lesson (which may have led to this student work) or in the assessment tool. *Brainstorm* a list of ideas for fixing. Encourage all ideas during brainstorming without comment. In planning for action, decide ahead whether consensus will be needed. If all participants are teaching this lesson sample, that would be the case. If the lesson came from one teacher and the lesson is not going to be shared, then that teacher might have particular

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