What We’ve Learned About Assessment Part 2: Analyzing and Learning from Student Work- a Protocol

5th Annual New Wisconsin Promise Conference Closing the Achievement Gap January 13, 2009

Presenters:

Pandora Bedford- Math Teaching Specialist bedforpd@milwaukee.k12.wi.us

Laura Maly- Math Teaching Specialist guzmanlm@milwaukee.k12.wi.us

Rosann Hollinger- Math Teaching Specialist hollinrl@milwaukee.k12.wi.us

www.mmp.uwm.edu

The Milwaukee Mathematics Partnership (MMP), an initiative of the Milwaukee Partnership Academy (MPA), is supported with funding from the National Science Foundation under Grant No. EHR-0314898.
MMP Protocol
Analyzing and Learning from Student Work

Goals:

- To foster a common understanding of student learning expectations for mathematics.
- To provide a collaborative forum for examining student work to inform mathematics instruction.
Session Overview:

1. Complete a math prompt

2. Align math prompt with State Assessment Framework

3. Practice the MMP Protocol

4. Discussion
Protocol Research:

- Tuning Protocol
  Coalition of Essential Schools, 1992

- Collaborative Assessment Conference
  Harvard Project Zero, 1988

- Standards in Practice
  The Education Trust, 1995
MMP Protocol
Analyzing and Learning from Student Work

2. Discussing the Work

- **Round 1.** Describing: What do you see?

- **Round 2.** Interpreting: What do the students understand?

- **Round 3.** Questions: What questions does this work
Why Use a Protocol?

• Forum for individual and group reflection.

• Stay focused, make the most of limited time.

• Safe, supportive environment to publicly discuss student work.

• Surfaces specific feedback from colleagues.
MMP Protocol
Analyzing and Learning from Student Work

1. Getting Started
   - Facilitator
   - Volunteer to present student work
   - Participants review the work silently

2. Discussing the Work
   - Round 1. Describing: What do you see?
   - Round 2. Interpreting: What do the students understand?
   - Round 3. Questions: What questions does this work raise?

3. Hearing from the Presenting Teacher
   - Comment on students’ work, respond to questions raised
   - Insights from surprising or unexpected comments

Repeat Steps 1–3 with another presenting teacher.

4. Discussing Implications for Teaching and Learning
   - Based on the discussion of the students’ performance, what might you suggest doing next with the class?

5. Debriefing
   - What are we learning through this process?
   - How can the process be improved?

Developed by: DeAnn Huinker, University of Wisconsin-Milwaukee
Adapted from: Collaborative Assessment Conference, Harvard's Project Zero, http://pzweb.harvard.edu

MMP10-17-08
MMP Protocol
Analyzing and Learning from Student Work

This protocol provides a set of guidelines for structuring conversations among teachers about student work. The goal is to foster a common understanding of student learning expectations for mathematics and to provide a collaborative forum for examining student work to inform mathematics instruction.

Each teacher brings three samples of student work from the same assessment that show a range of responses from low to middle to high performance (e.g., not there yet, almost there, got it).

1. Getting Started
   - The group chooses a facilitator who keeps the group focused.
   - One person volunteers to present student work.
   - The presenting teacher puts the selected work where everyone can see it or provides copies for the other participants. S/he says nothing about the work, context, or students until Step 3.
   - The participants review the work in silence, perhaps making notes about aspects of it.

2. Discussing the Work
   The participants take turns speaking, varying the speaking order. Individuals are free to pass. There is no cross-dialogue. Comments are kept short (if you hear yourself saying “and” you’ve probably said too much). The facilitator may choose to insert a clarifying question.
   - Round 1. Describing the Work: The facilitator asks the group, “What do you see?”
   - Round 2. Interpreting the Work: The facilitator poses one or more of these prompts:
     - What does this work tell us about how well the students understand __________?
     - What did the students demonstrate that they knew? What did the students not demonstrate?
     - What do the students seem on the verge of understanding?
     - What aspects of the assessment were difficult for the students?
   - Round 3. Asking Questions: The facilitator asks, “What questions does this work raise for you?”

3. Hearing from the Presenting Teacher
   - The facilitator invites the presenting teacher to speak.
   - The presenting teacher comments on the students’ work, describing what s/he sees, responding (if s/he chooses) to questions raised, and adding information that s/he feels is important to share with the group.
   - The presenting teacher also comments on insights and anything surprising or unexpected that s/he heard during the describing, interpreting, and questioning phases.

Repeat Steps 1–3 examining student work from another presenting teacher. Repeat the cycle for other teachers as time allows, making sure there is sufficient time to move to steps 5 and 6.

4. Discussing Implications for Teaching and Learning
   - The facilitator invites everyone (the participants and the presenting teacher) to share any thoughts they have about (1) their own teaching, (2) children’s learning, or (3) ways to support students in future instruction. For example, “Given what we’ve noticed in the students’ work, let’s identify three specific suggestions for next steps to move the class forward in their learning.”
   - If time allows or if appropriate, discuss task revisions. For example, “Describe ways the assessment did or did not give students an opportunity to demonstrate what they knew and suggest possible revisions.”

5. Debriefing
   The group reflects on the experience of using the protocol as a whole or to particular parts of it.
   - In what ways did this process work or not work for you?
   - What are we learning through this process? How can the process be improved?
   - What suggestions might you have for facilitation of future conversations?

Developed by: DeAnn Huinker, University of Wisconsin-Milwaukee
Adapted from: Collaborative Assessment Conference, Harvard’s Project Zero, http://pzweb.harvard.edu
Why is it important for teachers to have this discussion about student work?
**Round 1**

Pick a facilitator at your table to lead the discussion

Spread out student work samples and examine them quietly

**Describe** the work

**Round 2**

Facilitator will lead the participants to **interpret** student understanding

**Round 3**

Facilitator will ask participants to share what questions they have about the student work
Ducks and Cows

Farmer Ben has only ducks and cows. He can’t remember how many of each he has, but he can remember how many total he has as the total matches his age, 22. He also knows that the animals have a total of 56 legs because 56 is also his father’s age. Assuming that each animal has all legs intact and no more, how many of each animal does farmer Ben have?

Solve this problem below using words, pictures and/or numbers.

Answer: ________________________________
Ducks and Cows

Farmer Ben has only ducks and cows. He knows he has 22 animals. He also knows that the animals have a total of 56 legs. Assuming that each animal has all legs intact and no more, how many of each animal does farmer Ben have?

Solve this problem below using words, picture, and/or numbers.

16 ducks

6 cows

7 x 8 = 56 legs
11 x 2 = 22 animals
Ducks and Cows

Farmer Ben has only ducks and cows. He knows he has 22 animals. He also knows that the animals have a total of 56 legs. Assuming that each animal has all legs intact and no more, how many of each animal does farmer Ben have?

Solve this problem below using words, picture, and/or numbers.

6 cows
4 legs (cows) 2 legs (ducks)

16
x 2
32

16 ducks

There are 16 ducks and 6 cows.
Ducks and Cows

Farmer Ben has only ducks and cows. He can't remember how many of each he has, but he can remember how many total he has as the total matches his age, 22. He also knows that the animals have a total of 56 legs because 56 is also his father's age. Assuming that each animal has all legs intact and no more, how many of each animal does farmer Ben have?

Solve this problem below using words, pictures and/or numbers.

Answer: Cows 7, Ducks 15
Ducks and Cows

Farmer Ben has only ducks and cows. He can’t remember how many of each he has, but he can remember how many total he has as the total matches his age, 22. He also knows that the animals have a total of 56 legs because 56 is also his father’s age. Assuming that each animal has all legs intact and no more, how many of each animal does farmer Ben have?

Solve this problem below using words, pictures and/or numbers.

\[
\begin{align*}
11 \text{ Ducks} \times 2 &= 22 \text{ legs} \\
11 \text{ Cows} \times 4 &= 44 \text{ legs} \\
&= 66 \text{ legs} \\
12 \text{ Ducks} \times 2 &= 24 \text{ legs} \\
10 \text{ Cows} \times 4 &= 40 \text{ legs} \\
&= 64 \text{ legs} \\
16 \text{ Ducks} \times 2 &= 32 \text{ legs} \\
6 \text{ Ducks} \times 4 &= 24 \text{ legs} \\
&= 56 \\
\end{align*}
\]

Answer: 32 legs (Ducks), 24 legs (Cows)
Ducks and Cows

Farmer Ben has only ducks and cows. He can't remember how many of each he has, but he can remember how many total he has as the total matches his age, 22. He also knows that the animals have a total of 56 legs because 56 is also his father's age. Assuming that each animal has all legs intact and no more, how many of each animal does farmer Ben have?

Solve this problem below using words, pictures and/or numbers.

\[\begin{align*}
&1. \ x + y = 22 \\
&2. \ 2x + 4y = 56 \\
&3. \ x = 22 - y \\
&4. \ 2(22 - y) + 4y = 56 \\
&5. \ 44 - 2y + 4y = 56 \\
&6. \ 4y + 2y = 56 \\
&7. \ 2y = 12 \\
&8. \ y = 6 \text{ cows} \\
&9. \ x + 6 = 22 \\
&10. \ x = 16 \text{ ducks}
\end{align*}\]

Check: 6 + 16 = 22 animals
32 legs + 24 = 56 legs

Answer: 6 cows
16 ducks