From Vision Building to Implementation to Evaluation: The Many Uses of a Classroom Observation Protocol

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- Read the vignette.
- What are the strengths and weaknesses of the instruction?
  - Jot down your thoughts
  - Share with your small group
  - Be prepared to share with the large group

- We expected there to be variation in your responses
- We would also guess that there would be variation in responses within most MSP projects.

- We've had the good fortune to be involved in many, many projects over the years that included a PD component.
- One of the lessons we've learned is that building a common vision of effective instruction is a critical, but often overlooked, aspect of a project's work.
- It's also more difficult than many people expect.

In This Session

- Discuss the importance of building a common vision across all stakeholders
- Consider how a structured classroom observation protocol can be useful in that process
- Examine a new classroom observation protocol explicitly aligned with learning theory

First, Some History

- HRI developed a widely used COP for the evaluation of NSF's Local Systemic Change Initiative.
- A revised version what used for the Inside the Classroom Study.
- This COP was also a launching point for a number of other observations protocols such as the RTOP.

LSC/ItC COP

- Lessons were rated on:
  - Design
  - Implementation
  - Content
  - Classroom Culture

But…

- Observers often would get caught up in features of instruction
- How People Learn was released, which made us want to make learning theory more explicit in the protocol

- We have been working on a new classroom observation protocol
- Explicitly aligned with learning theory

Classroom Observation Protocol

- Rate Student Opportunity to Learn on four elements of effective science teaching:
  1. Opportunities to Surface Prior Knowledge
  2. Engaging with Examples/Phenomena
  3. Using Evidence to Draw Conclusions and Make Claims about the Examples/Phenomena
  4. Sense-making of the Targeted Idea

Important Differences

- Learning goal is central to all ratings
- Neutral to pedagogy
- Focuses on conceptual understanding of science ideas
- Aligns with the nature of science

COP Structure

1. Description of Instruction

2. Ratings and Rationales

Ratings

- Three main components:
  1. To what extent are key features of the element present within the observed instruction?
  2. To what extent is the instruction aligned to the targeted idea?
  3. To what extent is the instruction sufficient for learning the targeted idea?

Science Content Ratings

- Observers rate the extent to which the science content in the instruction was
  - Accurate
  - Developmentally appropriate

Opportunities to Surface Prior Knowledge

- Key Features
  - Students are made aware of their own prior knowledge
  - Students are asked to provide reasons for how they are thinking
  - Students record and/or make public aspects of their prior knowledge
  - Students' ideas are surfaced without judgment

Let's look at some examples

Targeted Idea:

A force is a push or pull exerted on one object by another object when they interact with one another.

Examples

A. What are some examples of forces that you saw on your way to school this morning?

Vs.

B. Imagine a soccer player kicks a ball, which flies toward the goal where the goalie catches it. When did the force of the kick stop acting on the ball?

Engaging with Examples/Phenomena

- Key Features
  - Examples/phenomena are accessible to students
  - Students are focused on the relevant aspects of the examples/phenomena
  - Students describe and/or keep record of the processes they use/data they generate

Examples

Students are given a toy car with a piece of soft foam attached to the top.

A. Students measure how long it takes for the car to move a specified distance when they push on the foam softly. In a second trial, they push harder on the foam and time how long it takes to cover the same distance.

Vs.

B. Students record their observations of the shape of the foam when pushed and not pushed, doing so while the car is at rest and while it is moving.

Using Evidence to Draw Conclusions and Make Claims

- Key Features
  - Helps students understand what the data represent
  - Facilitates students' interpretation/analysis of the data
  - Students use evidence to support their claims
  - Students use evidence to critique claims

Examples

A. The teacher asks students to share something from their observations

Vs.

B. The teacher asks students, “When was a force acting on the car and how do you know?”

Sense-making

- Key Features
  - Students connect what they did in the instruction to the targeted idea
  - Students use evidence from multiple phenomena to support/critique claims about the targeted idea
  - Students compare their emerging understanding of the targeted idea to their prior ideas and other science ideas they already know

Examples

A. Write an entry in your journal about something you learned today.

Vs.

B. Let's revisit the soccer ball example. How has your thinking changed about when the force of the kick stops acting? Why?

Vignette: Take Two

- What are its strengths and weaknesses in terms of Engaging with Examples/ Phenomena?
  - Jot down your thoughts
  - Share with your small group
  - Be prepared to share with the large group

- Are there still differences in opinion?
- Having a common language isn't enough to ensure a common vision.
- Having shared images of instruction to discuss, especially ones that vary in the extent to which they embody the vision, can be an effective way of developing a common vision.

Importance of Common Vision

- Using a structured observation protocol that embodies your vision of effective instruction can:
  - Help ensure all partners are working toward the same goal and project efforts are coherent
  - Help guide the design and implementation of your PD program

- Help ensure that PD:
  - Models your vision
  - Explicitly addresses key aspects of the vision
- Projects can even use a simplified version of a COP in the PD to help teachers develop a vision of effective instruction and provide a common language for discussing it.

- It can also help ensure:
  - That your evaluation is focusing on key aspects of instruction
  - That your research is measuring impacts you care about

- Other possibilities?

AIM: K–8 Science

Assessing the Impact of the MSPs: K–8 Science

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