

Managing Discourse During Class Discussions

Aim

To encourage students to articulate clear explanations for phenomena they are studying and discussing by applying developed model(s).

“I know what I think when I hear what I say.”

Human thought is closely tied to the language we use to express our ideas. What we have difficulty putting into words is generally not as clear as it needs to be in our own thinking. Dan McIsaac addresses this in an unpublished manuscript on whiteboarding:

Several bodies of education research literature describe the kinds and effectiveness of student discourse, presentation and cooperative learning in the classroom [refs]. In particular, Lev S. Vygotsky [ref] articulated short clear models and terms describing how student ability is developed through the use of discussion in classrooms... Vygotsky claims that the use of language is critical to the development of ideas to the extent that thought is **impossible** without language:

The relation of thought to word is not a thing but a process, a continual movement back and forth from thought to word and from word to thought. ... Thought is not merely expressed in words, it comes into existence through them. (Vygotsky, *Thinking & Learning*, 218)

Hence, Vygotsky's ideas can guide our use of whiteboards in the classroom: we want to increase and support students discourse time spent 'in the zone,' we need to promote student use of rich language in articulated and negotiated social interaction (make students discuss detailed physics with each another), and finally we need to provide an instructor's guidance— students must be directed to important and germane insights and kinds of reasoning and standard vocabulary. [MacIsaac, 2005]

Therefore, it is critical that each student have opportunity to:

- develop carefully defined vocabulary in context of observation
- articulate (and hear) their own thinking so they can see how it measures up to our observations and the models we develop.

Socratic Dialog

Socratic dialog is the **art** of guiding students' thinking and learning by asking questions. These are questions that draw students to deeper understanding by eliciting deeper discussion from the students. The best questions open up discussion, while those that can be answered with yes/no or a fact tend to close discussion. It is **not** 'twenty questions', 'guess what the teacher is thinking', or 'stump the student' (trivia).

Socratic dialog

- requires purposeful thought and practice on the teacher's part.
- is dynamic; it takes different turns with each group of students, and therefore can be a little unpredictable since each class has its own learning to do.

This strategy works best when we as teachers

- **promote** an atmosphere of **safety** for open dialog in the classroom
- **teach students** to formulate respectful questions and responses
- **listen closely** to what the students are actually saying
- know the **common naïve beliefs** that could be encountered for the subject
- **clearly articulate** the most important ideas for the activity (we can only get them there if we know where we're going)
- **formulate questions** in response to student dialog that draw students to clearer thinking and articulation of the core ideas
- know when to **quit**; good process, not perfection, is the goal

Examples of Questions

- “I heard you say _____; is this what you meant?”
- “How did you know that?”
- “What evidence did you have for (a claim or conclusion)?”
- “Tell me how you ...”
- “How would your results change if you had (changed a variable)?”
- “What led you to select this (approach/model application/way of calculating...)?”
- “Remember when we _____? How is this related to what we saw then?”
- “How do your results compare with Group 6? Can you explain (the difference)?”
- “Does this observation/conclusion support our model? In what way?”
- “Can you explain how that happened in terms of our model?”

We are working to help our students think clearly about the structure of matter and chemical change. We should continually ask:

How have you defined your system?

How are you picturing matter? Which features of our model apply to this situation?

How does it behave in this situation?

What is the role of energy?

How are your representations related to what you observed?

Some Web Resources:

1. *Socratic Questioning Strategies*
<http://set.lanl.gov/programs/cif/Resource/Handouts/SocSampl.htm>
2. *The Critical Thinking Community* <http://www.criticalthinking.org>