



Reflecting on Practice: Using Formative Assessment to Inform Instruction

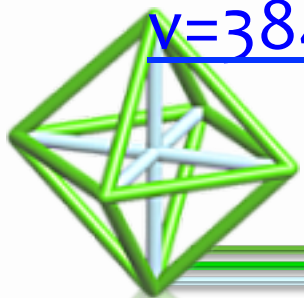
“When students can correctly explain their answers they understand what they are doing.” True or False?

Unit 1
Session 2



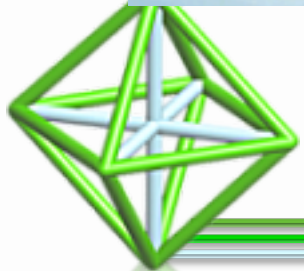
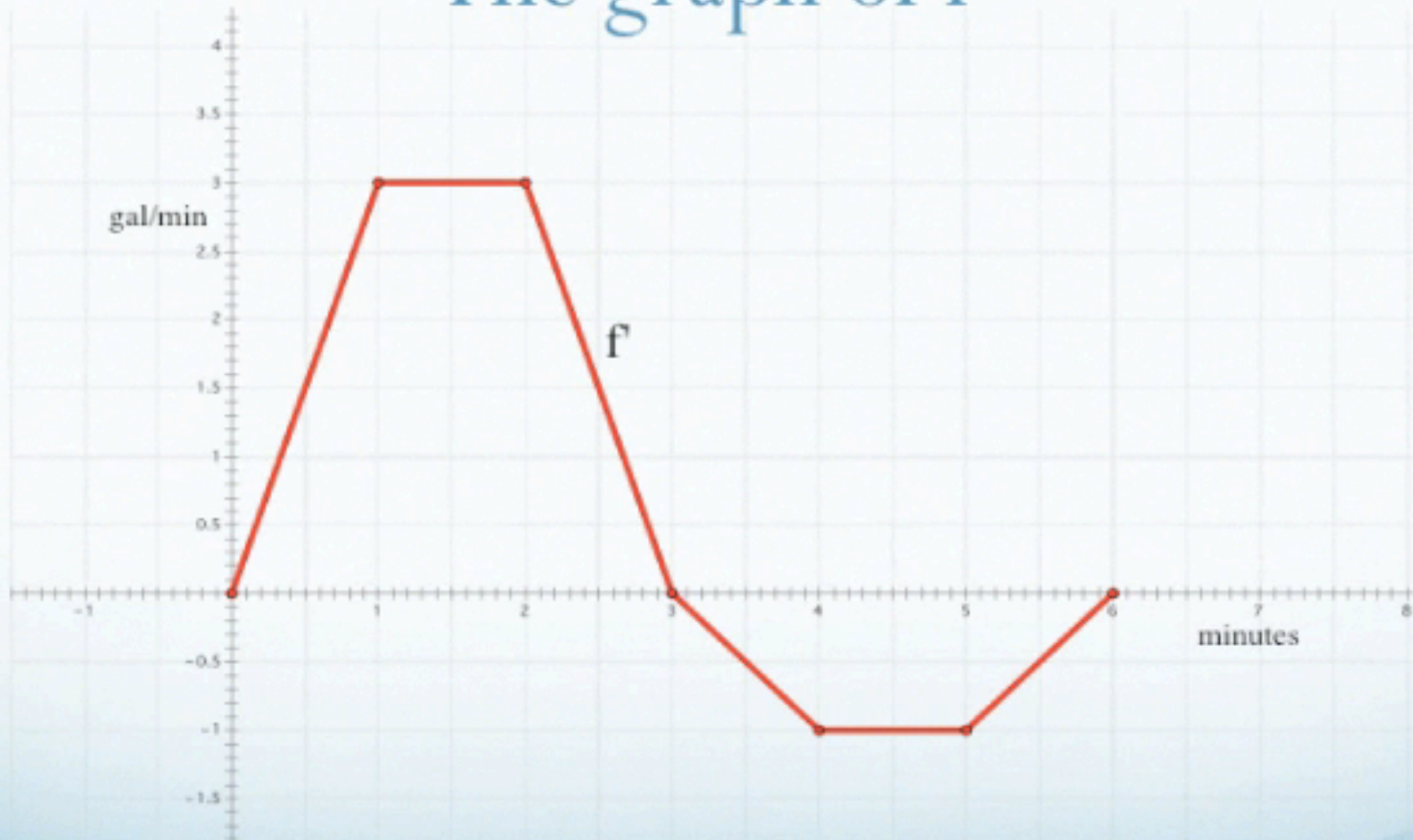
This a calculus class where the students are working on a task involving rate of change as water goes in and out of a tower. Don't worry about the complexity of the math but as you watch pay attention to the general feel and routines of the class.

http://198.101.226.199/show_exvid.php?v=384&u=&k=e79a0a647faba1eda7ee9b4e1a281ddb



Atlas

The graph of f'



ATLAS Calculus video

At your table discuss what you think students understood. Support your claim by giving evidence from the video clip of what students are saying and doing.



At your tables, consider other possible strategies besides the cups and use of small response boards that might have been more effective in eliciting what EACH student understood.

Make a list of the suggestions at your table. You will be explaining someone else's idea, not your own.



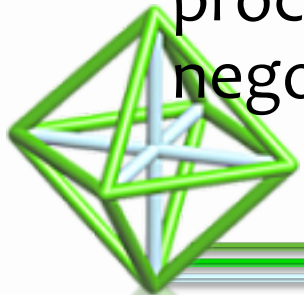
“It is by listening — by attending to the person's action and situation, and not just to his or her voice — that one comes to know the other” (Davis, 1996, p. 36)



What kind of listening was happening in the video?

- **Evaluative:** student contributions viewed as right or wrong; if the expected response is not given, gaps filled by the teacher's response. Teacher strives to maintain a well-structured lesson that does not deviate.
- **Interpretive:** listen to a student's ideas with the primary purpose of accessing not assessing; opens up spaces for re thinking and revision; teacher is aware of and responsive to students
- **Generative** (Yackel,2003) Hermeneutive (Davis, 1996): interactively listen to students' ideas as part of the instructional process by engaging with them in the messy process of negotiation of meaning and understanding.

Davis, 1996



- Think back to the video we saw yesterday about the sides of the parallelogram. What evidence can you remember about the kind of listening that was happening in that video on the part of the teacher? Of the students?



- Reflect on listening that happens in your own classroom: what percent of the time do you spend in each of the three ways?



- At your tables, what are the benefits of listening in each of the three ways?



The only reasons to ask questions are:

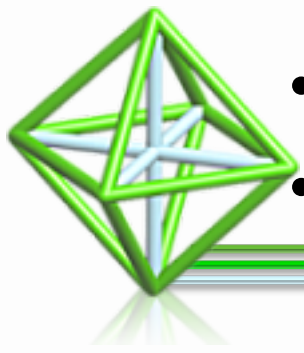
(Black et al., 2004)

To **PROBE** or uncover students' thinking.

- understand how students are thinking about the problem.
- discover misconceptions.
- use students' understanding to guide instruction.

To **PUSH** or advance students' thinking.

- make connections
- notice something significant.
- justify or prove their thinking.



Working in pairs, identify at least two questions that you think would have helped reveal what students did or did not understand after you say a few more words and they all nod in agreement.

(You might think back to the Calculus video or to any other situation you remember from your own classes.)

On a poster:

- Describe the context,
- what you would ask,
- anticipated responses (what you hope your questions will reveal about what students understand: pushing/probing), and
- how you would respond.

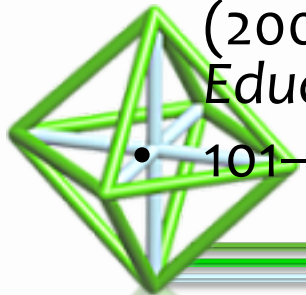


- Share your poster with your table and ask for any constructive comments.
- Adjust your descriptions in response to the comments.
- Put your names on your poster and turn it in to your facilitator.



References

- Atlas Calculus video: National Board for Professional Teaching Standards ATLAS library. National Council of Teachers of Mathematics
www.nctm.org/Conferences-and-Professional-Development/FHSM-Video-Library-Task-Force/CCRA-Cluster/Water-Tower-Clip-1/
- Black, P. Harrison, C., Lee, C., Marshall, E., & Wiliam, D. (2004). Working Inside the black box: Assessment for learning in the classroom, *Phi Delta Kappan*, 86 (1), 9-21.
- Davis, B. (1996). Teaching mathematics: Toward a sound alternative. New York: Garland.
- Yackel, E., Stephan, M., Rasmussen, C., & Underwood, D. (2003). Didactising: Continuing the work of Leen Streefland. *Educational Studies in Mathematics*, 54, 101–126.



“When students can correctly explain their answers they understand what they are doing.”

True or False?