Evidence of Effective Teaching Practices

The Case of Barbara Peterson

**Goals**

* Ms. Peterson was clear about what students would learn
* Her goal was grade-level appropriate and consistent with recommendations from CCSS
* She made decisions through out the lesson based on her goal:
* Asking students questions to help them see the relationship between the train number/number of hexagons and the perimeter (lines 28-31)
* Inviting groups to present who had written different but equivalent equations (Groups 1, 5, and 2)
* Highlighting different representations so that connections could be made (Group 3’s table, Group 1’s equation, and the graph everyone was picturing --lines 77-78)

**Task**

Ms. Peterson selected a task that was high level, had multiply entry points and solution paths, and it would challenge her students to think and reason. It was grade level appropriate and aligned with her goals for student learning (lines 7-19).

**Representations**

Ms. Peterson used and made connections to different representations.

* *Visual* -- the picture of the hexagon trains -- was used repeatedly. Students were asked to make connections between the equations they found (lines 32-34; 46-47) and visual arrangement of tiles.
* *Verbal* -- Group 1’s verbal description was connected to Group 3’s equation (lines 47-50)
* *Graph* -- Teacher asked students to picture then sketch a graph and explain why it makes sense (lines 77-78). This would provide the opportunity to connect the equation to graph to the context.
* *Table* -- It is not clear if the teacher explicitly connected group 3’s equation P=4h +2 with the table, but she could (and probably should!) do so.

**Discussion**

Ms. Peterson:

* Set a clear goal for learning
* Selected a good task
* Pressed students to make connections between different strategies and to the key mathematical ideas in the lesson
* Asked questions
* Monitored what her students did during the lesson and noted solutions that would be shared
* Selected and sequenced solutions in a particular order

There is clear evidence that she engaged in 4 of the 5 practices: monitor, select, sequence, and connect. While there is no evidence of ANTICIPATE it is unlikely that she could have conducted the lesson the way she did without a firm understanding of the possible solutions students were likely to use.

**Questions**

The questions Ms. Peterson asked were very open – trying to determine what it was the students knew and understood; they required students to think and explain

* Made students thinking visible (54-56)
* Engaged students in exploring mathematics (39-41; 64-65)
* Invited others to participate (57-58; 66; 70)
* Helped students make connections (45-46)

**Productive Struggle**

Ms. Peterson supported students’ ability to work through the problem without taking over the thinking for them and thereby lowering the demand of the task. In this way she set the message to students that they were capable of figuring it out for themselves. In the end they would have ownership of the work. Specifically:

* When students struggled, Ms. Peterson asked questions to help them make progress on the task (27-29) and encouraged them to build and examine a model (29-30).
* When students came up with insufficient or incorrect solutions, she again asked them questions (37-41).

**Elicit and Use Student Thinking**

Ms. Peterson consistently elicited student thinking and use what she learned about what students knew to help them make progress. To elicit thinking she:

* Gave them a task that required them to think and reason and explain. So the task help elicit student thinking. (10-18)
* T asked questions throughout the lesson that focused on explaining what they knew and what they thought about solutions produced by others.
* T gave a exit slip at the end of class that was intended to ellict their thinking about a graphical representation (77-80)

Ms. Peterson planned a discussion that is based on student work (lines 44-52).

Her entire lesson appears to unfold based on what she has learned about students thinking and understanding. One would expect that her lesson the following day would be informed by what she learned from the exit slip.