

Week 3

Day 2

Reflecting on Practice



Role Play

- Your goal (as a room) is to ensure a student knows the difference between a combination and a permutation
- Work at your table with the problem on the next slide
- Make sure the entire table has a complete understanding!
- What questions might you ask to see if a student has a similar complete understanding?

Math Problem



There are thirty (30) students in your class... you are sending a group of delegates to the Model UN Assembly. There is a delegate team of 5 students. Only two will have an opportunity to speak; one will be designated as the Lead Speaker, the other the Support Speaker. Describe the number of possible teams with designated speakers that you could send.

- *Does the answer change if you chose the speakers first and then the other three people*

OR

- *Choose the five delegates and then decide which two are speaking?*

At the same time, start creating a list of questions you might ask the student to see if they understand the differences between combinations and permutations.

Environment

- Our student will be at the other end of the Internet
- You will be able to ask questions via the chat window or by drawing something on the whiteboard.
- Our environment is Wiziq (www.wiziq.com), an inexpensive online teaching environment
- Room 1: <http://bit.ly/ropwiz1>
- Room 2: <http://bit.ly/ropwiz2>



Questions to Ponder...

- *Take a couple of minutes to reflect, by yourself, on the questions that were used **that probe** for student understanding.*
- *What evidence do you have of student understanding or misunderstanding that came from the questions that were asked?*
- *What is the difference between the questions that DO probe and those that DON'T?*
- *What did you notice about the features of the questions that were good questions?*
- *Were there any questions that were missed that may have been able to probe for student understanding? Or maybe some generalizations you've observed?*

Using a different lens...

Never Say Anything

a Kid Can Say!

STEVEN C. REINHART

MATHEMATICS TEACHING IN THE MIDDLE SCHOOL

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the Ning!

PBS Questioning Article

Developing Mathematical Thinking with Effective Questions

To promote problem solving, ask...

- What information do you have? What do you need to find out?

To encourage reflection, ask...

- How did you get your answer?

To help students build confidence and rely on their own understanding, ask...

- Why is that true? How did you reach that conclusion?

To help students learn to reason mathematically, ask...

- Is that true for all cases? Explain

To check student progress, ask...

- Can you explain what you have done so far? What else is there to do?

To help students collectively make sense of mathematics, ask...

- What do you think about what _____ said?

To encourage conjecturing, ask...

- What would happen if...? What if not?

To encourage conjecturing, ask...

- Do you see a pattern? Can you explain the pattern?

To encourage conjecturing, ask...

- Can you predict the next one? What about the last one?

To encourage conjecturing, ask...

- What decision do you think he/she should make?

Homework

- Black & Wiliam, *Working inside the black box*, pp. 16-18
- Comment form: <http://bit.ly/roprp>