

## 5 Tips for Effective Questioning (Teacher-Leader Version)

### 1. Plan to use questions that encourage thinking and reasoning

Students need to talk about mathematics with one another as well as when responding to the teacher's questions. When planning your lesson (anticipating) write down possible questions that you want to focus on, but remember to be flexible. Sometimes a different question from the one you had planned might elicit more information. Your role then is to elicit student responses by asking questions. Doing this consistently fosters discourse on mathematical thinking and reasoning. Well-posed questions can lead to an environment of thoughtful reflectiveness.

Here is a list of questions to help students increase understanding, explain strategies, describe relationships and find extensions to problems. Classify each item as assessing (1), advancing (2):

- \_\_\_\_\_ What is this problem about? What can you tell me about it?
- \_\_\_\_\_ How do you interpret that?
- \_\_\_\_\_ What do you know about this part?
- \_\_\_\_\_ What did not work?
- \_\_\_\_\_ How did you organize the information?
- \_\_\_\_\_ Why did you decide to use this approach?
- \_\_\_\_\_ Have you tried.. (a picture, diagram, table...)?
- \_\_\_\_\_ Where could you find information about that?
- \_\_\_\_\_ What is the relationship of this to that?
- \_\_\_\_\_ What is the same? What is different?
- \_\_\_\_\_ Can you write/find another problem similar to this?
- \_\_\_\_\_ Would another method work better?
- \_\_\_\_\_ Show me another related problem. Is there an easier problem?
- \_\_\_\_\_ Could you explain what you think you know right now?
- \_\_\_\_\_ Which words are most important? Why?
- \_\_\_\_\_ What was your estimate or prediction?
- \_\_\_\_\_ How do you feel about your answer?
- \_\_\_\_\_ What do you think comes next?
- \_\_\_\_\_ What else would you like to know?
- \_\_\_\_\_ Where could you go for help?
- \_\_\_\_\_ How could you help another student without telling the answer?
- \_\_\_\_\_ Is that the only possible answer?
- \_\_\_\_\_ How did you know you were done?
- \_\_\_\_\_ What made you think that was all you needed to do?



- \_\_\_\_\_ Is there a real life situation where this could be used?
- \_\_\_\_\_ Where else would this strategy be used?
- \_\_\_\_\_ How would your method work with another problem?
- \_\_\_\_\_ What questions does this raise for you?
- \_\_\_\_\_ Can you explain why it works?
- \_\_\_\_\_ What parts are still difficult for you?
- \_\_\_\_\_ Is that true for all cases? Explain.
- \_\_\_\_\_ Can you think of a counterexample?
- \_\_\_\_\_ How would you prove that?
- \_\_\_\_\_ What assumptions are you making?
- \_\_\_\_\_ Can you explain what you have done so far? What else is there to do?
- \_\_\_\_\_ Why did you decide to use this method?
- \_\_\_\_\_ Can you think of another method that might have worked?
- \_\_\_\_\_ Is there a more efficient strategy?
- \_\_\_\_\_ Have you thought of all the possibilities? How can you be sure?
- \_\_\_\_\_ What do you think about what \_\_\_\_\_ said?
- \_\_\_\_\_ Do you agree? Why or why not?
- \_\_\_\_\_ Does anyone have the same answer but a different way to explain it?
- \_\_\_\_\_ Can you convince the rest of us that your answer makes sense?
- \_\_\_\_\_ What would happen if...? What if not?
- \_\_\_\_\_ Do you see a pattern? Can you explain the pattern?
- \_\_\_\_\_ Can you predict the next one? What about the last one?
- \_\_\_\_\_ What do you need to find out?
- \_\_\_\_\_ What tools will you need?
- \_\_\_\_\_ How would you describe the problem in your own words?
- \_\_\_\_\_ What do you know that is not stated in the problem?
- \_\_\_\_\_ How does this relate to...?
- \_\_\_\_\_ What ideas that we have learned before were useful in solving this problem?
- \_\_\_\_\_ Does your answer seem reasonable? Why or why not?
- \_\_\_\_\_ Can you describe your method to us all? Can you explain why it works?
- \_\_\_\_\_ What if you had started with... rather than...?
- \_\_\_\_\_ What if you could only use...?
- \_\_\_\_\_ What are the key points or big ideas in this lesson?
- \_\_\_\_\_ Is there anything missing or that could be eliminated?
- \_\_\_\_\_ What made you think of...?
- \_\_\_\_\_ How did you arrive at this conclusion?
- \_\_\_\_\_ What was your first step? What are you thinking of doing next?
- \_\_\_\_\_ What have you tried? What strategies are you using?
- \_\_\_\_\_ What is keeping you from continuing? What did not work?
- \_\_\_\_\_ What is the hard part of the problem?

- \_\_\_\_\_ How do you know...?
- \_\_\_\_\_ What conclusion can you make?
- \_\_\_\_\_ What would happen if...?
- \_\_\_\_\_ How is \_\_\_\_\_ different from \_\_\_\_\_? How does \_\_\_\_\_ compare to \_\_\_\_\_?

## 2. Ask questions in ways that include everyone

### **Skit A: Use a “no hands up” rule**

After a few hands have gone up some students stop thinking because they know the teacher will not ask them. When students have their hand up they too stop thinking as they already have the answer they want. “No hands up” encourages everyone to keep thinking as anyone may be called upon to respond.

### **Skit B: Ask questions that encourage a range of responses (focusing) while avoiding teacher - student - teacher - student “ping pong” (funneling)**

Rather than asking for specific right answers, ask for ideas and suggestions. Encourage students to listen to and to reply to each other’s responses. While engaged with a team in questioning avoid taking over the thinking for the students often referred to as funneling.

## 3. Give students time to think

### **Skit C: Demonstrate the use of wait time with the use of Study Team and Teaching Strategies and/or the use of mini whiteboards for independent work. Walk away from a team after asking an advancing question.**

Wait time is the time interval between a teacher asking a question and the response which might be provided by either the teacher, themselves, or one of the students. Students need to take time to think before responding.

## 4. Avoid judging students responses

### **Skit D: Avoid judging student responses**

“If you can both listen to children and accept their answers not as things to just be judged right or wrong but as pieces of information which may reveal what the child is thinking you will have taken a giant step towards becoming a master teacher rather than merely a disseminator of information.”

Teaching by Listening--Toward a New Day in Math Classes Easley, J.A., Jr.: Zwoyer, Russell E.

When a teacher judges every response with “yes”, “good”, “nearly” and so on, students are likely to reason to themselves:

“The teacher said that was good. That is not what I was going to say. So what I was going to say cannot be good. So I won’t say anything.”

Acknowledge a response without evaluating it...do not close off alternative ideas.

**5. Follow up students’ responses in ways that encourage deeper thinking (Advancing the Thinking)**

Situation:	Example:
Ask students to repeat their explanation	
Invite students to elaborate	
Challenge students to offer a reason	
Cue alternative responses	
Support with non-verbal interest	
Encourage students to speculate	
Make challenging statements	Someone in this group said...were they right?
Allow rehearsal of responses	Try out the answer on your partner first.
Encourage students to ask questions	Would anyone like to ask Susie a question about that?
Ask students to think aloud	
Encourage students to make connections	
Thinking aloud with students	

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