Supporting Learning With Questioning Strategies

Opening reflection

If you did previous module, please discuss the following 3 questions:

- How did you engage in the suggested reflection and follow-up?
- How have you been incorporating changes into your teaching?
- How is it going?
Professional learning in a virtual environment

Everyone is responsible for helping to make an inclusive and productive learning space.

Before going further in the module, please establish or revisit your norms for working together.
Session participants will …

1. Learn the role of questioning in supporting learning.
2. Develop basic skills with questioning.
3. Develop a short list of “pocket” questions.

Overview

If students are engaged in productive struggle, good questions can:

- Ensure that the students do the thinking.
- Determine the edges of student understanding.
- Provide tasks and discussions to help extend students’ ways of understanding.
Role of questioning in supporting learning

Purposes for questioning

In a supportive learning environment, questioning can:

- Empower instructors
  - By facilitating formative assessment.
  - By helping them make in-the-moment teaching decisions based on evolving student knowledge.

- Empower students
  - By phrasing questions at the student level of understanding.
  - By helping them uncover their own misconceptions.
  - By providing opportunities to deepen learning through explanation.
  - By creating opportunities for them to extend what they already understand.

Role of questioning in supporting learning

Answers that you don’t know

Rather than asking questions that you already know the answer to, such as:

- “What is the answer to #5?”

ask the questions that you are truly interested in exploring:

- “How did you approach this problem?”
- “What connections do you see?”
- “What more do you want to know?”

Questioning methods should engage all students in making sense of the problem and improving their thinking. Questions such as these, for which you don’t already know the answer, make it easier for all students to participate in the discussion.
Role of questioning in supporting learning

Questions for the instructor to consider

- Who is asking the question? Of whom?
- Who is answering the question?
- How is the question asked?
- How is the question answered?
- What happens with the answer?

Let’s look at each of these in turn.

Basic questioning strategies

Questions for the instructor to consider

- Who is asking the question? Of whom?
- Who is answering the question?

These questions relate to who is engaged in making sense of the mathematics. Making sense is not just calculating or moving symbols around. It requires:
  - Trying to understand the context.
  - Interpreting relationships between quantities.
  - Creating representations that express those relationships.
  - Trying to generalize.
  - Communicating all along the way.

Think about these ideas as you watch the interaction between an instructor and students in the following video.
Basic questioning strategies

Think-pair-share

Discuss the following questions with a partner:

- How did the instructor use questioning to prompt students to make sense of the mathematics?
- What other teacher moves could the instructor have used to further student thinking?

Share your ideas with the group.
Basic questioning strategies

Questions for the instructor to consider

- How is the question asked?

The way a question is asked can greatly affect the type of response received. Some questions can elicit brief simplistic answers or no response, while other questions encourage students to think about the mathematics, make connections between ideas, and clarify their understanding.

For example, the question, “How did you do number 7?” can elicit, “I divided by 2 and then multiplied,” or an in-depth response.

---

Basic questioning strategies

Turn and talk

How would the following pairs of questions elicit different responses?

- Are there any questions?  What questions do you have?
- What do we do next?  How would you decide what the next step is?
- What is the next number?  What pattern do you see?
- What is the answer?  What other problem does this look like?

---

Slide 14: Questions for the instructor to consider

Slide 15: Turn & Talk: Eliciting different responses
Basic questioning strategies

Turn and talk

Rephrase the following closed questions as open questions:

- Does everyone understand?
- This is a right triangle, isn't it?
- Who wants to tell me about fractions?
- Does everyone agree with this statement?

Questions for the instructor to consider

- What happens with the answer?

A discussion does not have to end when an answer is found. An answer is an opportunity to extend learning with strategies such as:

- Ask students to justify or explain an answer.
- Ask another student to restate an answer or explanation.
- Ask if anyone else worked the problem a different way and describe what made the problem different.
- Ask students how this problem connects to problems discussed in a previous class meeting.

The questions an instructor asks should not signal to students that a possible answer is right or wrong.
Basic questioning strategies

Instructional strategies

The following strategies encourage students to engage in making sense of the mathematics:

- Rather than telling students something, consider whether a question might accomplish the same goal more effectively.
- Encourage students to ask each other questions.
- Do not answer your own questions.

More instructional strategies

- Allow students some time to respond to a question. If students are still not able to respond, consider how to reframe the question. It might not be a clear question!
- Encourage other students to answer questions that are addressed to you.
- Respond to student questions with questions such as, “How would you decide … ?”
Basic questioning strategies

In the following classroom video, a student develops a new understanding of a concept. Think about how the instructor questioning helps lead to this understanding and how the instructor responds to the student’s answers.

Video

Use this space for notes

Slide 20: Video lead-in

Slide 21: Classroom video: Basic questioning strategies
Basic questioning skills

Think-pair-share

How did the instructor’s questions help the student develop new understanding? How did the instructor respond to the student’s answers?

Discuss your observations with a partner, then share with the group.

Develop short list of “pocket” questions

Group collaboration

Pocket questions are specific questions for use in a variety of situations; they can be kept on an index card in one’s pocket.

It is useful to develop a short list of pocket questions to use in common situations. Work with your group to craft a few questions for each of the situations on the following slide.
Develop short list of “pocket” questions

Group collaboration

Develop questions to respond to student statements such as:

- I’m stuck.
- I don’t know how to start.
- I don’t understand.
- Is this right?

Develop interventions for a group or individual student who has:

- Finished early.
- Settled on a simplistic answer.
- The potential to extend or connect learning.
- Work that is completely off track.
- Incorrect work that yields a correct answer.
- Done accurate work, but you can’t tell what they understand.

With your small group, review the pocket questions you developed.

Discuss what makes a “good” question. Try to generalize across questions.

Share your thinking with the other groups.
Develop short list of “pocket” questions

In the following classroom video, note how the instructor intervenes with a student who is confused about the day’s lesson. While watching the video, pay attention to the following items:

▪ Determine if the teacher gave the solution away.
▪ What could the teacher do to help the student accomplish the heavy cognitive thinking?
▪ Does the student end with an understanding of the content taught in the day’s lesson?
▪ How do you know?

Video

Use this space for notes

Slide 26: Video lead-in

Slide 27: Classroom videos: Pocket questions
Develop short list of “pocket” questions

**Think-pair-share**

With your partner, discuss your observations regarding:

- Determine if the teacher gave the solution away.
- What could the teacher do to help the student do the heavy cognitive thinking?
- Does the student end with an understanding of the content taught in the day’s lesson?
- How do you know?

Discuss your observations with a partner, then share your observations with the group.

---

**Role of questioning in supporting learning**

**Reflection and follow-up**

Right now:

- For your own purposes, not to be shared with the group, take a few minutes to summarize the new ideas you generated.
- Discuss as a group a few new techniques you will incorporate into your teaching before the next workshop.

Over time:

- As you try new techniques, make note of your experiences.
- Find opportunities to discuss your experiences with colleagues.
- After experimentation, journal about which practices, if any, you are considering adopting.