Eliciting Ideas and Activating Prior Knowledge

2
ELICITING students' ideas

Planning the Conversation

Topic/Unit

Phenomenon/Design Problem

Starter Questions	Ideas to Listen For

Framing the Lesson
- Context, link to previous topics
- Reasons for investigating the ideas
- Expectations for participation in the intellectual work and how ideas will be treated

Introducing the Phenomenon/Design Problem and Eliciting Observations
What might you say to students to introduce the phenomenon/design problem?

What observation questions might you ask after the phenomenon/design problem is introduced?

Generic questions	Questions to pose + talk goals/strategies to use	What you will listen for, plan to respond to	Notes
• What do you see going on here? • What did you notice when _____ happened? • When or where does _____ occur?		• What if students cite relevant features of the task? • What if students cite irrelevant ideas or cannot understand the scenario/problem? • What if students give inferences rather than observations?	

Transitioning to Talk about "Under What Conditions Would This Happen?"
Elicit and discuss possible hypotheses (whole class or small group)

Generic questions	Questions to pose + talk goals/strategies to use	What you will listen for, plan to respond to	Notes
• What do you think is happening here? (at level of inference) • What would happen if _____? • What might be going on here that we can't see? • Why do you think this happens this way? (emphasize cause) • What do you think causes _____? • What do you think is going on to make ___ happen?		• What if students exhibit pre-conceptions? • What if students cite relevant facets of the big idea? • What if students make connections to what they've experienced? • What if students offer explanations congruent with scientific explanations? • What if students offer simplistic cause-effect? Example: "Why does the water boil?" "Because you put it on the stove." • What if students offer explanations that involve alternative conceptions?	

Helping Students Represent Their Thinking Publicly

Option 1: Create and share small-group models

What might students include in their initial model (both observable and unobservable)? What time scale will the model capture?

What might a sketch of a student initial model look like to show what is going on before, during, and after the phenomenon happens?

How might students make their models public (e.g., gallery walk, select and share out)?

What questions might be asked to guide students in the development and sharing of their initial models?

Generic questions	Questions to pose + talk goals/strategies to use	What you will listen for, plan to respond to	Notes
● Why are you representing ___ that way? ● What is happening in this part of the model? ● What does this part of your model represent in the real world? ● What are some things we are not sure about here? ● What ideas/features have been included in some of the presented models that were not in yours? ● Describe one model that has a different explanation from the one in your model. How is it different? ● What questions do we now have, and what information do we need to make progress on our models?		● What strategy will you use if students are unable to respond to any of these questions? ● How will you support hesitant students? ● How will you encourage participation from all students?	

Option 2: Create a public list of 4-6 student hypotheses

What sentence frames will be used so students know how to participate?

Generic questions	Questions to pose + talk goals/strategies to use	What you will listen for, plan to respond to	Notes
● We think [the phenomenon] has something to do with ____. ● We think [the phenomenon] happens the way it does because ____.		● How will you encourage participation from all students?	

How will you moderate the construction of the list of hypotheses?

Generic questions	Questions to pose + talk goals/strategies to use	What you will listen for, plan to respond to	Notes
● Is this hypothesis different from the others? How? ● Can we combine your hypothesis with theirs? ● Do you mean ___? ● What are some things we are not sure of?		● What hypotheses do you anticipate students will share? ● Which hypotheses are partial understandings? ● Which hypotheses do you wonder whether or not are valid? ● How will you ensure that all students participate in generating the hypothesis list (i.e. casting a vote)	

How will you revisit and revise the list of hypotheses throughout the unit?