**Teaching Practices Tool: *Eliciting students’ ideas and adapting instruction* (often referred to as Discourse 1 or “D1”)**

**Purpose of practice?** To *inform instructional decisions* for the next few days— how?—byeliciting *all* students’ initial hypotheses about a scientific idea, and making a public record of these.

**When to use tool?** At outset of any new sequence of lessons. Begin with a *rich task for students* that has potential to open up broadest range of thinking by students on target ideas.

**Step 1. *Introducing the puzzling event and eliciting observations (whole class)***Introduce task: “I recently saw something that puzzled me…” OR “Let’s think about this story and see what kind of sense you make of it…”

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| *After task is introduced, you ask observation questions…*• What do you see going on here?• What did you notice when \_\_\_happened?• When or where does \_\_\_ occur? | *Then you need to listen for, plan to respond to:*What if students cite relevant features of the task?What if students cite irrelevant ideas or cannot understand the representation/problem?What if students give inferences rather than observations? |

Then: Establish agreement about what whole class has observed. Begin to mark some specific features of ideas or of vocabulary if necessary. “OK so we agree that…"

**Step 2. *Eliciting hypotheses about ”what might be going on” (whole class or small groups)***

 Ask students to comment about *observable conditions* that led up to the event or process, ask what might be “responsible” for the event or process.

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| *You ask:*• What do you think is causing this?• What has happened here? (at level of inference)• What would happen if \_\_\_? | *What you need to listen for, plan to respond to:*What if students exhibit pre-conceptions?What if students cite relevant facets of the big idea?What if students *do* make connections to what they’ve experienced? |

**Step 3. *Pressing for possible explanations (have them work in small groups for part of this)***

Prompt briefly for “why” hypotheses—involving processes at the unobservable level. Label them as “hypotheses” so students feel at ease offering them.

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| *You ask:*• 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 you need to listen for, plan to respond to:*What if students offer explanations congruent with scientific explanation?What if students offer simplistic cause-effect? What if students offer explanations that involve alternative conceptions? |

Then ***switch to small groups***, have students explore puzzling event more and create rough models. You can have them represent their ideas in labeled drawings.

**Step 4. *Summarizing and selecting the forms of ideas to make public (whole class)***

In this step, you can ask some of your students to share out their models with the rest of class (during this you would draw attention to important similarities and differences in the models) AND/OR ask the whole class to help you create a list of hypotheses that you’ll address as the unit unfolds. Refer to these as **hypotheses** or **models** that we need to "work on".

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| *At different times in this public conversation you ask*:“What are some things we are not sure about here?”“How could we test our hypotheses?”“What kinds of information or experiences do we need to learn more?” |

**Step 5. Adapting further instruction**

After instruction, use RSST Tool (page 3 of this guide) to analyze student responses and make instructional decisions.

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| **Pre-record your specific questions for each step of the practice** | **Complete this after you teach** |
| *Generic questions for each step* | *Questions you will pose + discourse strategies (i.e. follow-up prompts, turn and talk, getting students to talk to one another)* | *What to listen for and* *plan to respond to* | *What did students say? What discourse strategies did you use?*  |
| **Step 1. *Introducing the puzzling event and eliciting observations (whole class)***• 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 representation/problem?• What if students give inferences rather than observations? |  |
| **Step 2. *Eliciting hypotheses about ”what might be going on” (whole class or small groups)***• What would you predict about \_\_\_?• What has happened here? (at level of inference)• What would happen if \_\_\_? |       | • What if students exhibit pre-conceptions?• What if students cite relevant facets of the big idea?• What if students do make connections to what they’ve experienced? |  |
| **Step 3. *Pressing for possible explanations (have them work in small groups for part of this)***• 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 if students offer explanations congruent with scientific explanation?• What if students offer simplistic cause-effect? Example: "Why does water boil?" "Because you put it on the stove."• What if students offer explanations that involve alternative conceptions? |  |
| **Step 4. *Summarizing and selecting the forms of ideas to make public (whole class)****•* What are some things we are not sure about here?*•* What kinds of information or experiences do we need to learn more? |       | • What if students are unable to respond to any of these questions?• What strategy will you use? |       |

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| **Rapid Survey of Student Thinking (RSST).****Complete this part after teaching.**  |
| **Categories** | **Trends in student understandings, language, experiences****[sample sentence starters included below]** | **Instructional decisions based on the trends of student understanding** |
| Partial understandings?      | [Many students have these facets of understanding already…]      | [In my instruction I can build upon… / I may have to add or change…]      |
| Alternative understandings?      | [Many students believe this to be true….]       | [I'll have to address… / I may have to change or add an activity…]      |
| Everyday language you can leverage?      | [I heard the use of the term\_\_\_\_\_, that I can refer to in upcoming lessons]       | [I can use their descriptions as an entry point to talking about this example of academic language…]      |
| Experiences they’ve had that you can leverage?      | [They seemed to connect their experiences of \_\_ with parts of the big ideas]      | [I can use their everyday experiences with \_\_\_\_ to scaffold this part of the big ideas that explain the anchoring event]      |