

## INSTRUCTOR SUPPORT FOR GUIDING EXPLORATIONS

–Field experiences should include multiple opportunities for students to explore an interesting aspect of the natural world for an extended period of time. This kind of discussion can take place during the Exploration phase of an activity, after the introduction of a routine like “I Notice, I Wonder, It Reminds me of,” or whenever students encounter something in nature that they want to know more about.

–Leading discussions about explorations takes practice–this resource can help guide your planning and build your facilitation skills. Use the questions below to guide student thinking during exploration. Be prepared to ask questions that deepen observations of whatever they are excited about investigating. Try to pay attention to student interest and be open to following their ideas during the discussion. As student attention shifts, ask more general questions to encourage discovery. Make sure to spend time on sharing observations before having students make explanations, and help students to link their observational evidence with the explanations they offer to the group.

–Begin with the prompts associated with Goals One, Two and Three, to help initiate the exploration. Gradually shift to Goal Four once students have enough information to begin making evidence-based explanations. The prompts under Goal Five will help students build deeper understanding and develop scientific argumentation skills through discussion. Practice using these prompts/moves until, eventually, you feel comfortable making “on-the-fly” instructional decisions and moving appropriately between each of these goals to lead an exploration discussion.

Goals and Prompts/Moves
<b>GOAL ONE: HELP STUDENTS MAKE BETTER OBSERVATIONS</b>
<input type="checkbox"/> <b>1. Ask for detailed observations.</b> → “What do you notice?” → “What observations can you make?” → “What color is it? What shape? What texture? What size? How many are there? Where is it? What are surroundings like?” → “Let’s check this out further- is the pattern you just noticed the same everywhere? If not, where is it different?”
<b>GOAL TWO: HELP STUDENTS ASK QUESTIONS</b>
<input type="checkbox"/> <b>2. Probe for questions.</b> → “What does that make you wonder about?” → “Can you think of any questions you can ask that we can answer through observations?”
<b>GOAL THREE: HELP STUDENTS CONNECT PAST IDEAS TO NEW EXPERIENCES</b>
<input type="checkbox"/> <b>3. Prompt students to recall prior knowledge.</b> → “How is this the same or different from...?” → “Can you compare this to something else?” → “What have you heard about this before?”
<b>GOAL FOUR: HELP STUDENTS MAKE EXPLANATIONS BASED ON EVIDENCE</b>
<input type="checkbox"/> <b>4. Ask students to make relevant explanations.</b> → “What do you think is the explanation for...?” → “Which part do you think is the top, and which part the bottom?” → “What do you think caused it to be like that?” → “What type of animal do you think it was? And why?”
<input type="checkbox"/> <b>5. Ask them to include evidence in their explanation.</b> → “What is your evidence for that?” → “What makes you think that?” → “Show me what you mean?”
<b>GOAL FIVE: HELP STUDENTS THINK WITH OTHERS/DEVELOP ARGUMENTATION SKILLS</b>
<input type="checkbox"/> <b>6. Ask students to disagree politely.</b> → “Does anyone have a different idea?” or “So, everyone agrees with that explanation?” → “Do you agree or disagree with that?” “What do you think of that idea?” → “Can you rephrase that in a more polite way?”
<input type="checkbox"/> <b>7. Prompt them to ask for evidence</b> → “If someone says something and you don’t know what their evidence is, be sure to ask for it.”
<input type="checkbox"/> <b>8. Remind students to use Language of Uncertainty</b> → “Remember that in science you’ve always got to keep your mind open so you shouldn’t say anything like it’s the absolute truth. Use ‘I wonder if’, ‘Maybe’, ‘The evidence seems to show’ or similar phrases to express your ideas.”
<input type="checkbox"/> <b>9. Ask students to add on to other’s thinking.</b> → “How does that relate to what Jake said?” → “Can anyone add to what Keylee just said?” → “Can anyone put into words what they think Tanya is trying to say?”

Adapted from Talk Science Primer (2012), TERC