

Study Guide—Complete Step 7 before teaching Section 4 and 5 of the Grade 4 Curriculum

Use the Step 7 “Independent Web Study” and “In Your Classroom” to prepare for a productive study group discussion.

INDEPENDENT WEB STUDY

Study the Scientist Case: Roger Tobin—Mineral Materials Investigations

Section 4 of the curriculum—Mineral Materials—focuses on volume and displacement of liquids as a way to measure volume. Section 5—Transformations—focuses on physical change. The Scientist Case explores the nuanced ideas about measurement that arise. Review the learning goals for Investigations 4.1-5.3. What ideas are highlighted? Based on your review of the goals and the Scientist Case, what understandings will you emphasize during each discussion?

Study the Classroom Case: The Role of Explanation Discussions

Prior to doing Investigation 4.1, many students believe that weight is the factor that will make the water level rise. Do their ideas change? Aadina asks for two types of explanation: (1) Explain how data helped you figure out if it was weight or volume that made water level rise? And (2) What’s the principle that explains why volume, not weight, determines how much the water level will rise? How does Aadina provide opportunity for students to develop explanations as a group in this discussion? How does she encourage students to build on each other’s ideas?

Study the Talk Strategy: Think with Others

Evidence from research shows that learning is deeper when students connect their ideas to other’s ideas by: agreeing, disagreeing, adding on, or saying how their ideas have changed based on other’s ideas. Become familiar with strategies that help students to co-construct ideas. Then think about what you can do to encourage students to build on and reason with each other’s ideas?

IN YOUR CLASSROOM

Audio or Videotape an All-class Discussion

Tape a science discussion. (Place the recorder or camera so that it will pick up both your voice and the students’ voices.) After class, listen to sections of the tape (3-5 minutes worth). Can you catch yourself using strategies that encourage students to co-construct ideas? Does encouraging students to talk to each other and connect ideas change the nature of the discussion?

Identify a question or dilemma that arose from your independent study and your experience in the classroom. Plan to talk about your experience in the study group. You may want to identify a short interchange from the tape (~30 seconds) to share during the study group meeting.

STUDY GROUP MEETING

Learn with Colleagues: Share classroom evidence, successes, and challenges

What did you do differently to help students to build on each other’s ideas? What might you do if you find students are only responding to what you say and not what their peers say?

Prepare for a 5-minute discussion of your experience. (There may or may not be time for everyone to share experiences in every study group, but preparing to discuss your own experience will contribute to discussion of others’ experiences.)

Possible Discussion Protocol

1. Plan a core question for discussion.
2. Share experience (2 or 3 minutes). If feasible, share a short audio or video clip to anchor the discussion (~30 – 40 seconds).
3. Respond to colleagues questions
4. Listen while colleagues discuss the issue.
5. Summarize how you are thinking now. What are the implications?