

## Chapter Challenge and Assessment Criteria

The opening paragraph sets the context for student investigation within this chapter. Students are asked to prepare materials that will help a local middle-school teacher teach her or his students about the theory of plate tectonics. At first glance, it appears that the central focus of the chapter is demonstrating how we know that plates move. However, the history and nature of science is the central theme of this chapter. “How we know” is essential to understanding and appreciating the nature of science. “How we have come to know” brings in the history of science. Traditionally, textbooks have sought to boil down the nature of science into a sequence of set steps that all scientists follow to develop new knowledge. It is as though there is one single “nature of science” that describes how all scientific investigations unfold and how all scientific theories develop. The theory of plate tectonics developed during the twentieth century, but its development was not as smooth as most presentations of the nature of science would lead students to believe.

The **Chapter Challenge** is the focus for the chapter. All activities are connected to the **Chapter Challenge**, and this should be pointed out to the students right from the beginning. If you constantly refer back to the **Chapter Challenge**, students will realize how the activities are connected and how all of their studies in plate tectonics are related to a real-life situation.

Read (or have a student read) the **Chapter Challenge** aloud to the class. Allow students to discuss what they have been asked to do. Have students meet in teams to begin brainstorming what they would like to include in their **Chapter Challenge** presentation. Request a brief summary in their own words of what they have been asked to do and a description of attributes of a high-quality report. Alternatively, lead a class discussion about the challenge and the expectations. Review the titles of the activities in the Table of Contents. Familiarize students with the structure of each activity. When you come to the section called **Preparing for the Chapter Challenge** in each activity, point out that each activity contributes to the challenge in some way.

### Guiding questions for discussion include:

- What do the activities have to do with the expectations of the challenge?
- What have you been asked to do?
- What should a good final report contain?

A rubric for assessing the **Chapter Challenge** is shown on the following page. You can use the assessment rubric as it is or modify it to accommodate specific state or local science content standards, your particular assessment style, and/or to better meet the needs of your students. Help your students to become familiar with the criteria upon which their **Chapter Challenge** will be assessed.