

## Chapter 2. Today’s Discoveries Unlock the Past

*Volcanic processes are the principal focus of Chapter 2 and are the natural progression from the Chapter 1 overview of how volcanoes work. Activities grouped under the theme “Lava, Rock Rubble, and Mud, Oh My!” invite inquiry about volcanic processes at Cascade volcanoes, and activities grouped under the theme “Interpreting Volcanic History” invite inquiry about how researchers conduct their research:*

### Overview

*Lava, Rock Rubble, and Mud, Oh My!*

- ◆ **Understanding Volcanic Hazards Video/DVD**—Introduces students to the vocabulary and character of volcanic processes and how volcano hazards impact people living near and far from a volcano. This video/DVD is intended for older students only.
- ◆ **Volcanic Processes**—This activity is an alternative to the Understanding Volcanic Hazards video. Students view graphics of volcanic processes, then answer questions on a worksheet. As an optional activity, they can prepare a booklet or computer presentation about each process with an emphasis on the interaction of these processes during a volcanic eruption.
- ◆ **Tephra Popcorn**—Students study physical characteristics of tephra using samples and make mass and volume measurements of popcorn to understand the role gases play in tephra formation.
- ◆ **Lava Building Blocks of Mount Rainier**—Students explore the nature and motion of lava flows and learn their importance as the building blocks of Mount Rainier. Students learn how the composition and texture of lava differs between volcanoes and affects the ultimate shape of a volcano.
- ◆ **Rock Stars**—Using photos and rock samples, students identify the characteristics that tell a story about where and how each rock was formed.
- ◆ **Fire and Ice**—Students conduct or observe an experiment simulating glacier/lava flow interactions, then answer questions about how glacier and lava interactions shaped specific features on Mount Rainier.
- ◆ **Lahar in a Jar**—Using experimental and scientific methods, explore how loose rock is mobilized by small amounts of water to form lahars.
- ◆ **Rock Rubble Review**—This is a physically active game that tests the students’ knowledge of volcano terminology, processes, and impacts on communities.

*Interpreting Volcanic History*

- ◆ **Earth Blocks**—Learn about the “Law of Superposition” and how to interpret rock and sediment layers by reading a short story and arranging “Earth Blocks.”
- ◆ **Volcano Fan Club**—Students learn that tephra layers at Mount Rainier originated from several volcanoes by looking at tephra dispersal patterns and thickness contours on maps.
- ◆ **Tephra Explorer**—Students view distributions of tephra layers found around Mount Rainier and discover the source.
- ◆ **Shoobox Geologist**—Make a model of layers emplaced by processes of deposition and erosion in a volcanically active landscape. Students interpret geologic events from layers in a classmate’s model using stratigraphic columns and the Law of Superposition.
- ◆ **Perilous Beauty Video**—The “Perilous Beauty” video introduces students to the types of hazards common to Mount Rainier, specifically mudflows and the types of mechanisms that produce them.

This page left intentionally blank

# Today's Discoveries Unlock the Past

## Overview—Chapter 2

Living with a **VOLCANO** in Your Backyard  
**MOUNT RAINIER**



Chapter 2 introduces external volcanic processes at Cascade volcanoes, such as lava flows, pyroclastic flows, volcanic ash, and the formation of volcanic mudflows (lahars). Students discover methods for investigation of past volcanic activity and learn how scientists identify hazardous areas. Chapter 2 activities strengthen students' mental connections among volcanic processes, hazards, and their own community.

Throughout Chapter 2, encourage students' recognition of lahars as the principal hazard to communities located on valley floors at the base of Cascade volcanoes. Identify volcanic ash as abrasive but nontoxic fragments of volcanic rock that cool to air temperature and are transported by winds, often to great distances from their source volcano. Activities in Chapter 2 dispel any notion of direct risk to communities near Mount Rainier by lava flows, pyroclastic flows, and volcanic gases.

Start this chapter by viewing the **Understanding Volcanic Hazards Video/DVD** and instructing students to complete the worksheet. Use **Volcanic Processes** with younger students or if the video is unavailable. Both activities provide descriptions of volcanic processes and their potential effects on communities. The **Perilous Beauty Video** activity describes volcanic hazards at Mount Rainier.

Offer students more in-depth investigations into the mechanics of each process in **Tephra Popcorn**, **Rock Stars**, **Lava Building Blocks**, **Fire and Ice**, and **Lahar in a Jar**. In **Volcano Fan Club**, **Tephra Explorer**, and **Earth Blocks**, students learn about the Law of Superposition and other principles of geological investigation. Students become the scientists as they construct and reveal rocky layers in **Shoobox Geologist**. They test their knowledge of volcanic processes in **Rock Rubble Review**. The information learned in Chapter 2 will help students appreciate the geology observed during school field trips to the south side of Mount Rainier (see **Journey Back in Time** fieldtrip in the appendixes). This knowledge of volcanic processes can motivate your students to participate in the family and community preparedness actions presented in Chapter 3.

### **Make your message clear:**

Volcanic events have changed the landscape of the Pacific Northwest noticeably through time. The volcanic landscapes that we view today differ from the vistas enjoyed by our ancestors and the scenes to be observed by our descendents.

