

Living Well With a Volcano in Your Backyard

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



Grade Level: 3-12

Learner Objectives:

Students will:

- Recognize the benefits and attractions of living near a volcano
- Balance concerns about volcanic unrest with the recognition that volcanoes can be safe and desirable destinations

Setting: Classroom, assembly, home

Timeframe: Variable

“Stories about an Imaginary Eruption”
30 minutes

“Poll Attitudes about Volcanic Hazards”
Homework; 50 minutes class

“Begin a Pen Pal Program” –50 minutes
“Volcanoes as Community Assets”
50 minutes

“Cascade Volcanoes Influence the Vitality and Ecology of Your Community”
50 minutes

“Create a Mechanism Whereby a Cascade Volcanoes Can Bring Economic Benefit to Your Community” –50 minutes



Living with a Volcano in Your Backyard- An Educator's Guide with Emphasis on Mount Rainier

Prepared in collaboration with the National Park Service

U.S. Department of the Interior
U.S. Geological Survey

General Information Product 19

Overview

This activity invites students to examine the advantage of living near an active volcano.

“Draw a Picture or Write a Story about a Visit to a Cascade Volcano” –50 minutes

“Make a Paper Cone Representation of Mount Rainier” – 30 minutes

Materials:

“Stories About an Imaginary Eruption”

- Writing materials

“Poll Attitudes about Volcanic Hazards”

- Community cooperation

“Begin a Pen Pal Program”

- Library or Internet Resources
- Educators at schools in communities near other volcanoes

“Volcanoes as Community Assets”

- Library or Internet Resources

“Cascade Volcanoes Influence the Vitality and Ecology of Your Community”

- Library or Internet Resources

“Create a Mechanism Whereby a Cascade Volcano Can Bring Economic Benefit to Your Community”

- Library or Internet Resources

“Draw a Picture or Write a Story about a Visit to a Cascade Volcano”

- Drawing materials

“Draw a Picture or Write a Story about a Visit to a Cascade Volcano”

- Volcano cone cutout (provided)
- Drawing materials

1

Living Well With a Volcano

Chapter 3

Vocabulary: Eruption, geothermal, lahar, lava flow, volcanic ash, volcanic gas

Skills: Apply, interpret, participate, explain

Benchmarks:

3 – *Application:* The student knows and applies science ideas and inquiry to design and analyze solutions to human problems in societal contexts.

Scientific design process skills are used to develop and evaluate scientific solutions to problems in real world contexts. The application of an understanding of systems an inquiry is comprised of two components:

3.1 – *Designing Solutions:* Apply knowledge and skills of science and technology to design solutions to human problems or meet challenges.

3.2 – *Science, Technology and Society:* Analyze how science and technology are human endeavors, interrelated to each other, to society, and to the workplace and the environment.

Teacher Background

Student fascination with volcanoes is almost universal. The risk from volcanoes in the Pacific Northwest adds some complexity as some students' homes, schools, or places where their parents work are at risk from the effects of eruptions and lahars. Balance the emphasis of hazards and recommendations with any or all activity procedures *A* through *H*. Recommendations address community involvement and the benefits of living near a volcano.

Living Well With a Volcano in Your Backyard continued...

Prepare Students:

Before conducting this activity, students should have knowledge of volcanic processes and Mount Rainier volcanic hazards. As appropriate, show older students one or more of the videos, **Understanding Volcano Hazards**, **Perilous Beauty-The Hidden Dangers of Mount Rainier**, or instruct them to obtain information from the Internet and library research. For younger students, conduct the activity **Volcanic Processes** in chapter 2.

Procedures

Choose from any or all of these activities for your students.

A. Stories about an Imaginary Eruption

Students write a story about an imaginary eruption at a Cascade volcano and how they and their classmates respond to it. Your class may have already recorded their ideas about this scenario in “**Eruption**,” the first activity in chapter 1. If so, advise students to compare their earlier story with their present one and report on how their ideas have changed.

B. Poll Attitudes about Volcanic Hazards

Students design and conduct a survey about volcanic-hazards knowledge in the classroom, school, or community. The survey should capture opinions on what measures should be taken for education and protection from volcanic hazards. Report the results of your poll to your class and to your school safety officer.

C. Begin a Pen Pal Program

Start a Pen Pal program for your students with others who live in the vicinity of other Cascade volcanoes, or at other volcanoes around the world. Students can learn about other volcanic areas and communities at risk by researching the Internet.

Living Well With a Volcano in Your Backyard continued...

D. Volcanoes as Community Assets

Students use library and Internet searches to investigate how volcanic eruptions around the world can be beneficial to towns or nearby communities and then make a poster, report, or computer presentation about their findings. Their findings should include some of the following concepts:

- ◆ **Lava flows** add new land to Earth's crust
- ◆ **Volcanic gases** developed Earth's atmosphere
- ◆ Volcanic rocks provide building stones, gemstones, natural abrasive material, and raw material for early man's tools
- ◆ **Geothermal** steam can be used for indoor heating
- ◆ Geothermal energy converts steam to electrical power. It is a clean energy resource in some areas of the world
- ◆ **Volcanic ash** contains minerals that enrich the farmlands
- ◆ Spectacular scenery is created
- ◆ Volcanoes generate income from tourism

E. Cascade Volcanoes Influence the Vitality and Ecology of Your Community

Students use the library and Internet to investigate the different ways a Cascade volcano currently influences the ecology and vitality of nearby communities. Water, glaciers, and tourism are some ideas for investigation.

F. Propose a Plan that Can Bring Economic Benefit to Your Community

Your class assembles a special committee to examine how having a nearby Cascade volcano can bring economic benefit to your community. Student groups might consider tourism, community artwork, signs, or other business and public projects that build on your community's close proximity to a beautiful Cascade volcano. Students work in groups to develop several plans and then write a plan of action and draw maps and pictures of their ideas. Students present their ideas to a local community group and encourage the group to use them.

G. Draw a Picture or Write a Story about a Visit to a Cascade Volcano

Invite students to draw a picture or write a story about a recent trip to Mount Rainier or another Cascade volcano. Invite students to express their feelings about the beauty of the volcano and its ecosystems and share their creation with the class.

Living Well With a Volcano in Your Backyard continued...

H. Make a Paper Cone Representation of Mount Rainier

Students color, cut, fold, and glue the model included in this activity. This project works best when photocopied with enlargement on 11 x 17-inch paper (see graphic). Assess the student's ability to understand how to apply their knowledge of volcanic hazards on a local and a global scale.

Assessment

(A) Pay particular attention to how a student's ideas have grown between the first and last writing. Do students have a better understanding of the geologic processes common to Cascade volcanoes?

(B,C) Assess the student's ability to understand how to apply their knowledge of volcanic hazards on a local and a global scale.

(D, E and F) Assess the student's ability to apply their new knowledge about volcanoes to a real-world situation. Students who are beginning a study of volcanoes might not recognize that volcanoes can bring benefits to their community and to the world at large. To assess a student's current understanding, pay particular attention to their research findings, creativity and depth of involvement.

(G, H) Use standard rubrics to assess a student's ability to express their ideas in written form and to the class. Look for evidence that students have a greater familiarity with Mount Rainier or another Cascade volcano. Students might indicate a working knowledge of places they have visited or intend to visit.

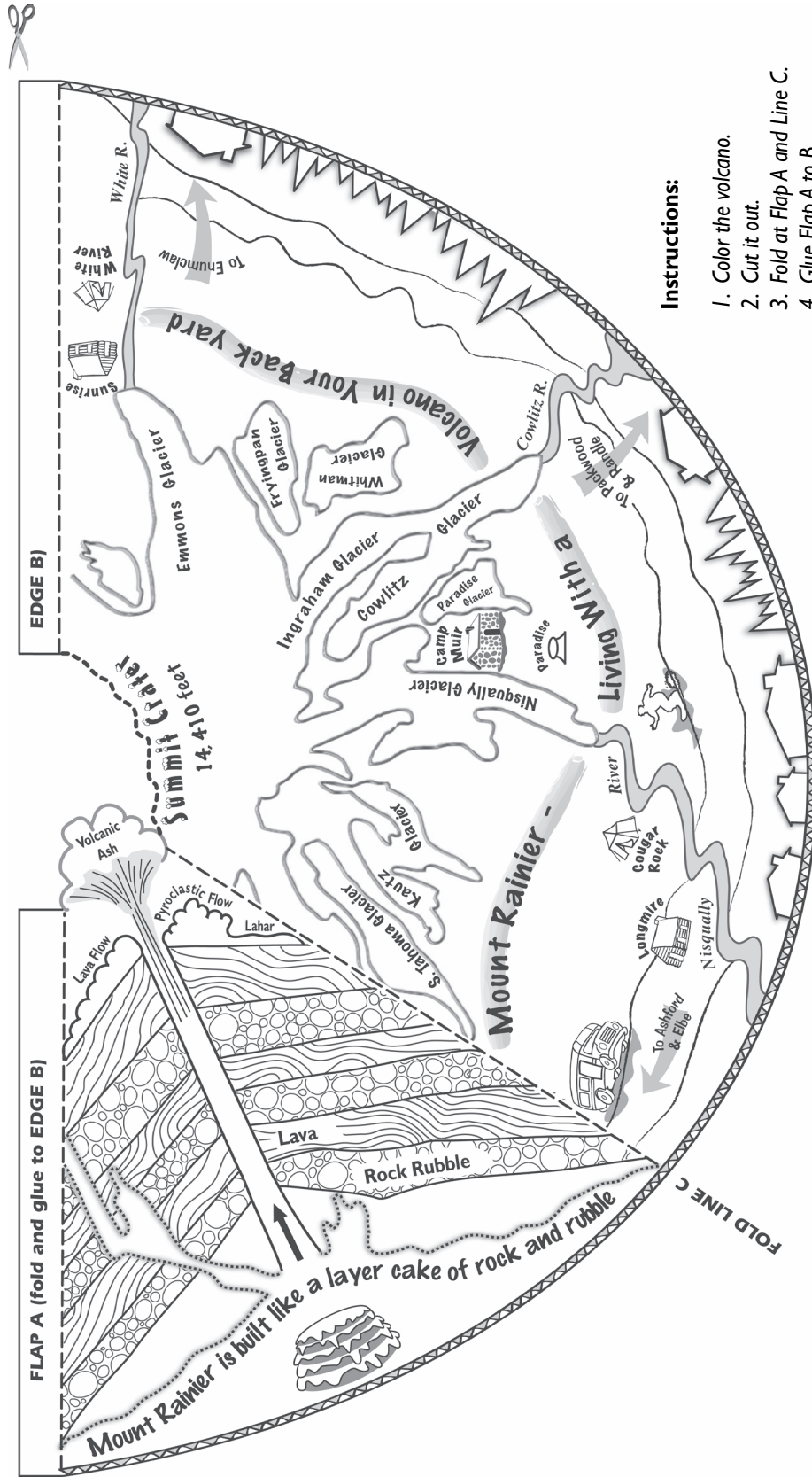
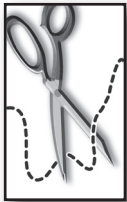
Resources

- Decker, R., and Decker, B., 1981, *Volcanoes*: New York, W.H. Freeman and Company, 244 p.
- Dent–Cleveland, Laurie, 2003, *The beautiful mountain in the sky–How to be safe if a lahar flows down the mountain*: Washington Military Department–Emergency Management Division, Elementary Edition K-6 Booklet: 24 p.
- Dzurisin, D., Stauffer, P.H., and Hendley II, J.W., 1997, *Living with volcanic risk in the Cascades*: U.S. Geological Survey Fact Sheet 165–97 (revised March 2003), 2 p.
- Harris, Stephen L., 2005, *Fire mountains of the west–The Cascade and Mono Lake volcanoes*: Missoula, Mont., Mountain Press Publishing Company, 390 p.
- Hoblitt, R.P., Walder, J.S., Driedger, C.L., Scott, K.M., Pringle, P.T., and Vallance, J.W., 1998, *Volcano hazards from Mount Rainier, Washington–1995 volcano–hazards assessment report*: U.S. Geological Survey, Open-File Report 98–428, 10 p.
- Northwest Interpretive Association, 1999, *Rainier the Mountain (DVD) (re–recorded 2005)*: Seattle, Wash., Northwest Interpretive Association Press, 60 minutes.
- Pierce County Department of Emergency Management, 1999, *Mount Rainier volcano hazards response plan*: Pierce County Department of Emergency Services, 103 p.
- Prager, Ellen J., and Woodman, Nancy, 2001, *Volcano!*: Washington, D.C., National Geographic Society, 32 p.
- Simkin, Tom, and Siebert, Lee, 1994, *Smithsonian Institution Volcanoes of the World, 2nd edition–A regional directory, gazetteer, and chronology of volcanism during the last 10,000 years*: Geoscience Press, Inc., Tuscon, Arizona, 349 p.
- Mount Rainier Volcano Hazard Work Group and U.S. Geological Survey, Cascades Volcano Observatory, 1999, *Volcanic ashfall–How to be prepared for an ashfall*: Washington Emergency Management Division and U.S. Geological Survey, 3–page tri–fold.



Refer to **Internet Resources Page** for a list of resources available as a supplement to this activity.

Volcano Cone Cutout



Instructions:

1. Color the volcano.
2. Cut it out.
3. Fold at Flap A and Line C.
4. Glue Flap A to B.