

Volcano Outdoor School

Activity Descriptions



Mount St. Helens Institute programs are designed to give youth foundational knowledge, scientific practice and artistic reflection in an outdoor classroom. These activities can be combined with overnight and day trip programs. With the learning objectives of the group in mind, Mount St. Helens Institute staff may alter programs based on variables such as safety, weather, fitness level, ability level, behavior, energy, and resources.



For a 2-Hour Program, choose from one of our [2-hour activities](#) or mix-and-match from our [shorter activities](#) to create your own unique learning experience.

Many activities can be modified based on your learning objectives and we are often developing new activities. Please contact us at learn@mshinstitute.org to determine what will be best for your group.

Questions

For questions regarding our education programs contact us at (360) 449-7883 or by email at learn@mshinstitute.org. For questions the day of your program contact (360) 274-2114.

We look forward to your visit to Mount St. Helens!

Activity Name	Time	Topics		Skills	Location	
		Geology	Ecology		Outside	Inside
GPS Scavenger Hunt	2	✓	✓	Teamwork, Making observations, Constructing Explanations, Public speaking, Designing solutions, Technology literacy	✓	
Hummocks Hike	2	✓	✓	Making observations, Hiking	✓	
Coldwater Lake Investigation	2		✓	Teamwork, Making observations, Carrying out an investigation	✓	
Field Study: Ecology	2		✓	Teamwork, Making observations, Carrying out an investigation	✓	
Field Study: Geology	2	✓		Teamwork, Making observations, Carrying out an investigation	✓	
1980 Story	0.5	✓			✓	✓
Monitoring Volcanoes	0.5	✓		Teamwork, Technology literacy, Engaging in an argument from evidence		✓
Plate Tectonics Puzzle	0.5	✓		Teamwork, Making observations, Identifying patterns,	✓	✓
Rocks Rock!	0.5	✓		Making observations, Identifying patterns, Developing models,	✓	✓
Skits	0.5	✓	✓	Teamwork, Public speaking, Literacy	✓	✓
Hazard Mapping	0.5	✓		Teamwork, Imagination, Designing solutions		✓
Reflections & Journaling	0.5	✓	✓	Creativity, Imagination, Literacy	✓	✓
From Below to Blow	0.5	✓		Communication, Developing and using a model, Integration of written and visual information	✓	✓
When Did it Blow?	0.5	✓		Literacy, Draw evidence from written texts and graphs,		✓
Predator-Prey	1		✓	Teamwork, Strategy	✓	
Teambuilding: Lava Crossing	.25	✓		Teamwork, Problem-solving	✓	✓
Species Interactions Game	0.5			Communication, Literacy, Developing and using models	✓	✓

2 - HOUR ACTIVITIES

GPS SCAVENGER HUNT

Students learn about GPS technology and investigate the geology, ecology, and human history of the Mount St. Helens area. In small teams, students use hand-held GPS devices to navigate to hidden boxes, each containing evidence and a question. Students use clues from the landscape and evidence in the box to form a hypothesis based on the question. Students then develop a plan for how they would test their hypothesis. Teams regather for a mock science conference where they learn to communicate their findings.



GUIDED HUMMOCKS HIKE

On a 2.5 mile loop hike, students have the opportunity to make observations and use critical thinking skills and landscape features to interpret geological and ecological stories. Guided by our engaging and knowledgeable staff, students learn about Mount St. Helens' phenomenal history as they observe and study landslide deposits, beaver ponds, plant communities, erosion processes, and species interactions.



COLDWATER LAKE INVESTIGATION

On the shore of Coldwater Lake (formed in the aftermath of the 1980 eruption of Mount St. Helens) students make observations of the lake's physical environment and collect samples from macroinvertebrate and amphibian traps. They learn to identify species and graph population and diversity at different sites. Students then use equipment to collect data on water quality metrics to investigate the relationship between the species living at the lake and the lake's



FIELD STUDY: ECOLOGY

Students become ecological researchers as they study the ecosystem and the amazing return of life in areas decimated by the landslide or the lateral blast of the 1980 eruption. Students measure either vegetative growth or aquatic health at permanent student plots near Coldwater Ridge or the Hummocks. Teams use a variety of equipment, learn to record data, and can conduct simple analysis and



FIELD STUDY: GEOLOGY

Students become geological researchers as they investigate the processes of lake formation and ongoing erosion and transport of sediment. Students work in small teams to collect data and make calculations to serve as evidence and to quantify the ongoing geologic processes of erosion and sediment transport from Coldwater Lake into the Toutle River basin. Students will gain an understanding of how ongoing sedimentation poses a long-term geologic hazard to those living downstream.



SHORT ACTIVITIES: MIX-AND-MATCH

Each of the following activities lasts approximately 20-30 minutes unless otherwise indicated. Choose 3-4 activities to custom-build your 2-Hour program

1980 STORY

Learn the phenomenal story of the 1980 eruption in the heart of the blast zone from our engaging and knowledgeable staff. Bring your questions and curiosities!



MONITORING VOLCANOES: THE SPIDER

The Spider is a remote monitoring device designed by US Geological Survey scientists and engineers that is on-loan and pre-deployed at the Science and Learning Center. Students learn how scientists monitor volcanoes remotely and use the Spider to role-play volcanic eruption scenarios. In the roleplay, students generate signals to mimic a scenario, interpret data, and make decisions about whether or not to give warning.



ROCKS ROCK!

Volcanoes can erupt in many different ways, each with a unique story to tell. The stories of how magma rises through the crust and the way volcanoes erupt are recorded in the features of volcanic rocks. Students learn how to “read the rocks” using their own observations of these features, such as texture, density, color, crystal content, and bubble content. As a team, students arrange igneous rocks based on key features and learn the stories of how the rocks formed. Students may also work in teams to model crystal formation in volcanic rocks in an interactive game.



PLATE TECTONICS PUZZLE

Students investigate the large-scale relationship between the structure of the Earth and the distribution of the world's volcanoes and earthquakes. Divided into small teams, students receive large puzzle pieces of the Earth's plates and piece together the puzzle. Once complete, students identify plate boundaries, the relative direction and speed of tectonic plates, earth features associated with those plates, and hazardous events that have occurred across the globe.

SKITS: Return of Life OR 1980 Eruption

Students divide into small teams. Each team receives a scene from either the 1980 Eruption Story (Pre-eruption activity, Landslide, Lateral blast, etc.) or the Return of Life Story (different ecological processes that shaped how life returned to Mount St. Helens). Students present their skit to the rest of the teams to form a play that details the events.



HAZARD MAPPING

In small teams, students design and map a community. As they design their communities, students are presented with a “hazard map”, which shows the areas that are likely to be affected by lahars (volcanic mudflows) or volcanic ash. Students can modify their community designs based on this information about volcanic hazards. Students then consider the steps they can take to live safely with volcanic hazards.



REFLECTIONS & JOURNALING

A variety of reflection activities are available which include poetry writing, landscape drawing, recording observations from microscopes and metaphor journaling.



PREDATOR-PREY

This is an action-filled game that simulates population dynamics dependent on available resources. Students play the role of herbivores, omnivores, and carnivores.



FROM BELOW TO BLOW

Students will learn about processes that move and transform energy and matter in volcanic systems. Students receive a "process card," each with a different process. Students then arrange themselves in a human flowchart that models the order in which these processes occur. Students then act out the narrated story of the flow of energy, beginning at the formation of the Earth and ending at the conclusion of a volcanic eruption.

WHEN DID IT BLOW?

How do we know when volcanoes erupted? Students will learn how scientists investigate the past by constructing a timeline for the eruptive history of Mount St. Helens over the past 4000 years using three different methods: radiocarbon dating, stratigraphy (tephra layers), and reading historical accounts.

TEAMBUILDING: LAVA CROSSING

This game is designed to develop teamwork and communication. Students work together to cross hot lava with limited resources and added challenges.

LAVA RACES

Not all lava is the same. In this action packed short activity, students simulate different lava types and consider the consequences of silica.

SPECIES INTERACTIONS GAME

Students will work together to gain an understanding of the plant and animal species living within the Mount St. Helens National Volcanic Monument and how these species interact with each other and their environment. This activity is designed to introduce students to the species in the area, how these species interact, and the implications these interactions may have on the surrounding environment and/or people.