**The Eruption of Mount St. Helens**

Tigard English Language Learning for Adults (Tiella.org)

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Please share interesting things you learned from the “Legends and Volcanoes” class!

Has anyone experienced a volcanic eruption?

In addition to Mt. Hood, have you been to other volcanoes in the Portland area? (Mt. Tabor, Powell Butte, Cook’s Butte, La Butte, Boring Volcanoes)

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What are some volcanic hazards? *Slide: Volcano Hazards*

What is the Native American name for Mt. St. Helens? (Mt. = Mount and St. = Saint).

Where are Mt. Hood, Mt. Ranier and Mt. Adams, and what are their Native American names?

Why do the volcanoes of the Cascade Range line up nearly north to south?

*Slides: Cascade volcano names, Animation of subduction zone cross-section*

What was the big clue that Mt. St. Helens was going to erupt in May, 1980?

*Slides: surface bulge, lateral eruption, landslide statistics*

How big was the Mt. St. Helens eruption in comparison to the eruptions of “supervolcanoes”?

*Slides: Super Volcanoes and Toba*

Watch video of 1980 eruption (USGS). <https://www.usgs.gov/media/videos/mount-st-helens-may-18-1980>

**Discussion Activity for Tutors**

**Watch the video** **of bulging** (1 minute) at: <https://www.youtube.com/watch?v=kc_T4buG2gE> (This video appears as part of the Deformation Lesson (Mt. St. Helens Institute; USGS) at: <http://www.mshslc.org/activity/volcano-deformation/> The slide of a balloon can be found on this page.)

1. What happens to the surface of the ground as a magma reservoir fills with magma? How is this process similar to inflating a balloon?
2. What happens to the surface of the ground after the magma erupts? How is this process similar to deflating a balloon?
3. Which side of Mt. St. Helens had a bulge more than one-half mile wide?
4. How fast did this bulge grow?
5. What happened after the bulge collapsed?
6. How do tiltmeters and GPS help scientists infer what is happening underground?

**Vocabulary and Reading Comprehension Activity for Tutors**

**Mt. St. Helens: Stages of Eruption**

1. ash (fine-grained particles, smaller than sand)
2. debris avalanche (a rapidly descending and flowing mix of particles and air or gases)
3. eruption
4. blast zone (area of destruction from the violent winds of an eruption)
5. burning cloud (ash and stones so hot they glow red)
6. gases
7. gravity
8. landslide
9. bulge
10. lateral blast
11. magma (melted rock within the earth)
12. lava dome (bulge within a crater formed by successive eruptions of lava)
13. north
14. nuée ardente (fiery or burning cloud)
15. pressure (the force exerted over an area)
16. pyroclastic (fragments of volcanic rock)
17. pyroclastic clouds
18. pyroclastic debris flows
19. tephra (any solid material ejected from a volcano—ash, stones, “bombs,” rock fragments. Rock from tephra is called “tuff.”)
20. volcano
21. lahar (cement-like flow of ash, rock, and water)
22. crater (empty space left after the ejection of tephra and lava)
23. glaciers (ice formed from compacted, repeated snowfall that fails to melt in summer)

**Missing word exercise (choose from the vocabulary list to fill in the blanks):**

Rising and expanding \_\_\_\_\_\_\_\_ caused \_\_\_\_\_\_\_\_ to build within Mt. St. Helens and form a \_\_\_\_\_\_\_\_ on the slope on the \_\_\_\_\_\_\_\_ side of the mountain. This side became so steep that \_\_\_\_\_\_\_\_ caused it to collapse. The collapse created a massive debris \_\_\_\_\_\_\_\_. The collapse of the side of the \_\_\_\_\_\_\_\_ allowed \_\_\_\_\_\_\_\_ to escape suddenly and with great force. This stage of the \_\_\_\_\_\_\_\_ was called the \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_. The blast erupted sideways and upwards, and erupted material fell down like snow over much of Oregon and Washington. The \_\_\_\_\_\_\_\_ also sent a hot cloud that moved down the volcano, a “stone-filled wind” that reached speeds over 300 miles per hour and temperatures of 660 °F. The “stone-filled wind” toppled or snapped off trees over a 230-square-mile area north of the volcano. This area became known as the \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_.

**Pyroclastics**

\_\_\_\_\_\_\_\_ means “fire rock.” Very violent eruptions produce pyroclastic \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_ clouds. A French name for an avalanche of extremely hot, fast-moving, stone and ash-filled cloud erupted from a volcano is \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ . Such avalanches are so hot that they glow red in the dark. The name translates into English as \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_.

**Lahars and Crater Filling**

Rocky material of all sizes washed down the slopes of Mt. St. Helens, filling rivers and causing destructive \_\_\_\_\_\_\_\_. The heat from the blast rapidly melted the \_\_\_\_\_\_\_\_ on the upper mountain. Torrents of water raced into the river valleys and flowed downstream carrying ash and rocks.

The \_\_\_\_\_\_\_\_ left a large \_\_\_\_\_\_\_\_ which soon began filling with flows of sticky \_\_\_\_\_\_\_\_. By 2004, within the \_\_\_\_\_\_\_\_, a \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ had formed.

**Missing word answers:**

Rising and expanding *magma* caused *pressure* to build within Mt. St. Helens and *bulge* the slope on the *north* side of the mountain. This side became so steep that *gravity* caused it to collapse. The collapse created a massive *debris avalanche*. The collapse of the side of the *volcano* allowed *gases* to escape suddenly and with great force. This stage of the *eruption* was called the *lateral blast*. The blast erupted sideways and upwards, and erupted material fell down like snow over much of Oregon and Washington. The *eruption* also sent a hot cloud that moved down the volcano, a “stone-filled wind” that reached speeds over 300 miles per hour and temperatures of 660 °F. The “stone-filled wind” toppled or snapped off trees over a 230-square-mile area north of the volcano. This area became known as the *blast zone*.

*Pyroclastic* means “fire rock.” Very violent *eruption*s produce *pyroclastic debris flows* and *pyroclastic clouds*. A French name for an avalanche of extremely hot, fast-moving, stone and ash-filled cloud erupted from a volcano is *nuée ardente*. Such clouds are so hot that they glow red in the dark. The name translates into English as *fiery cloud*.

**Lahars and Crater Filling**

Rocky material of all sizes washed down the slopes of Mt. St. Helens, choking rivers and causing destructive *lahars*. The heat from the blast rapidly melted the *glaciers* on the upper mountain. Torrents of water raced into the river valleys and flowed downstream carrying ash and rocks.

The *eruption* left a large *crater* which soon began filling with flows of sticky *lava*. By 2004, within the *crater* a *lava dome* had formed.

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**Closing Discussion (slides):**

In addition to Mt. Hood, what other volcanoes are in the Portland area?

Mt. Tabor, Powell Butte, Cook’s Butte, La Butte, Boring Volcanics.

Where can the people of Oregon see “frozen” lava hundreds of feet thick?

The cliffs and walls of the Columbia River Gorge. Volcanic rocks are everywhere in Oregon.

What kinds of material erupts from volcanoes?

Gases, lava, ash, stones, broken rock, glassy rock. Eruptions may also cause landslides. Underwater eruptions of lava form “pillows.” Deep pools of lava may harden into “columns.”

Oregon Field Guide on OPB (Oregon Public Broadcasting) resource:

<https://www.opb.org/news/article/mount-st-helens-eruption-anniversary-40-history/>