Module 7: Plate Tectonics and Earth's Structure
Topic 3 Content: Volcanoes - The Basics Notes

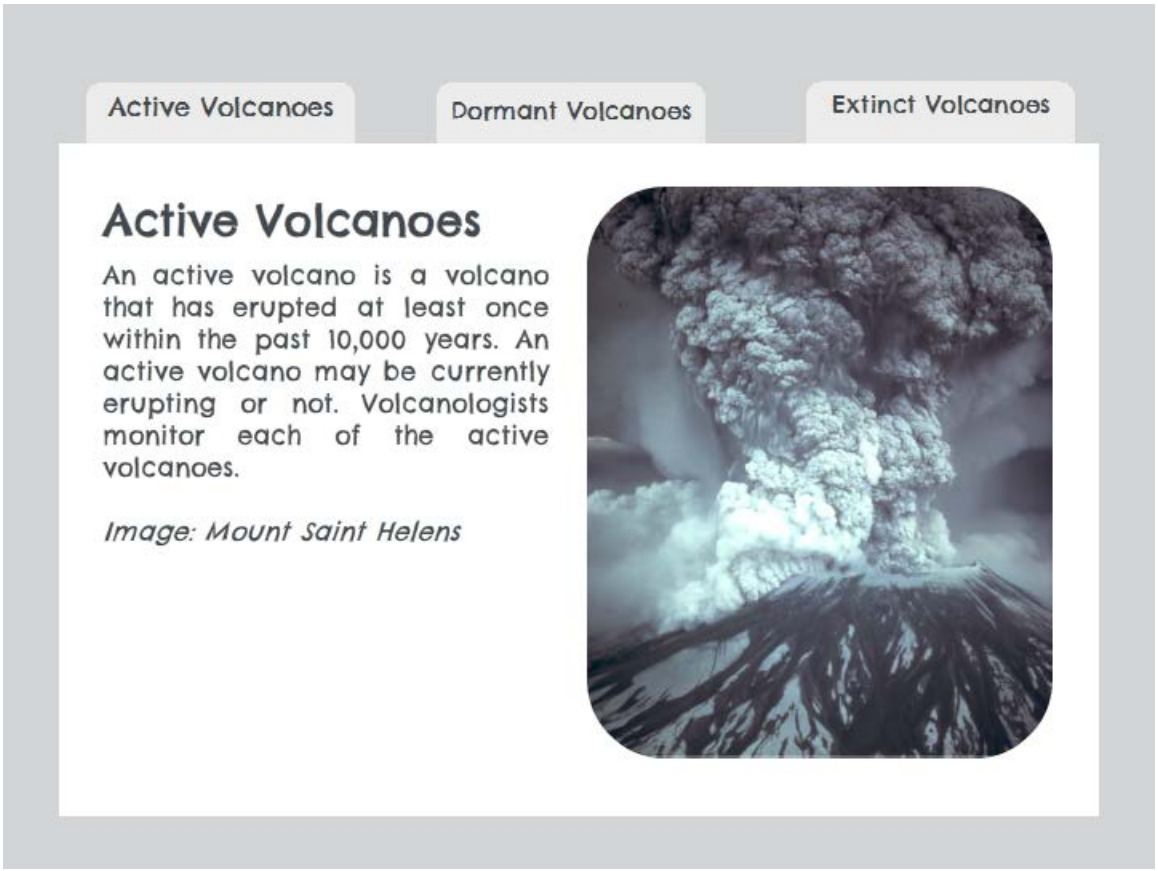
Volcanoes – The Basics

Enter your name in the blank provided and click ***SUBMIT***.

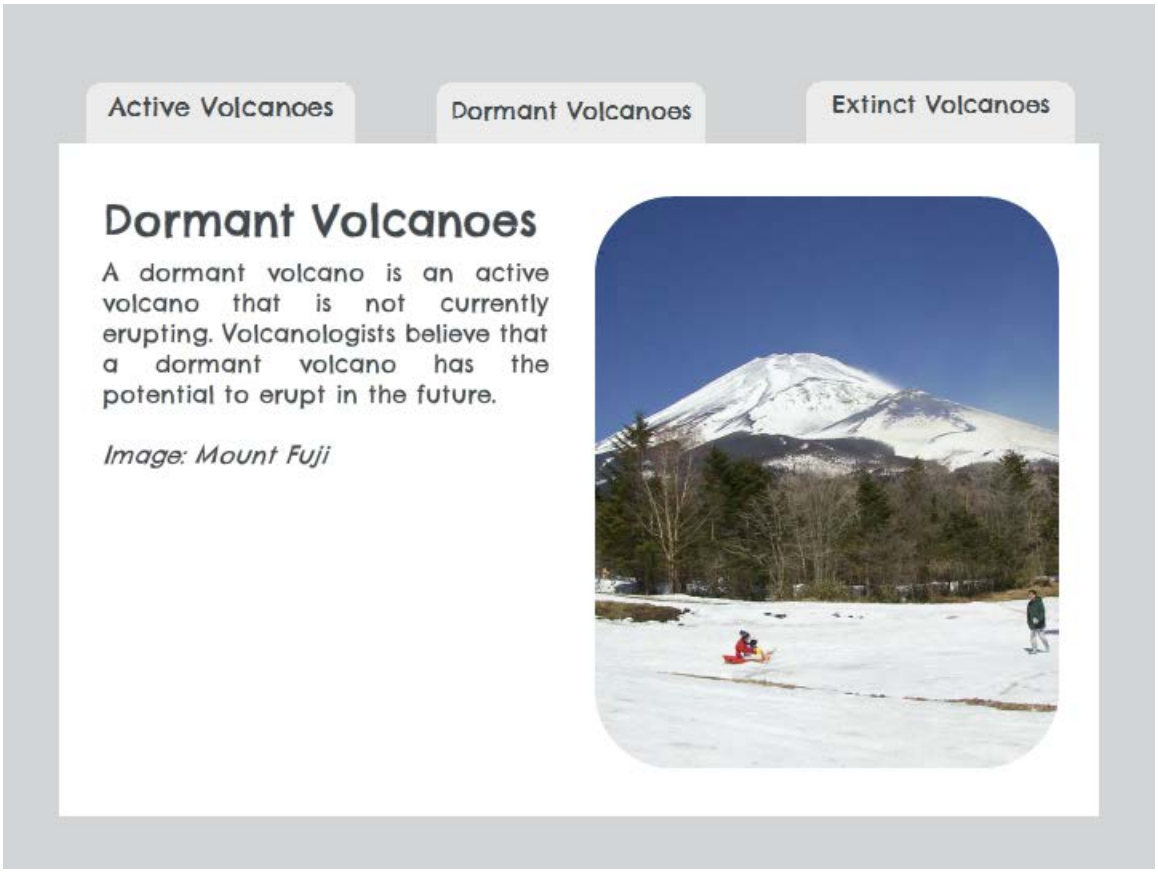
Hello, my name is Dr. Simpson, and I am a volcanologist. I am here to explain some basic information about volcanoes to you.

I think we should get started by taking a look at the different classifications of volcanoes. Click ***NEXT*** to take a look at some files I have on the subject.

Volcanoes vary widely in their shape, size, and frequency of eruptions. Some volcanic eruptions can be incredibly violent and destructive while others can erupt continuously without threatening nearby communities. Click on each of the tabs to learn more about the classifications of volcanoes.



An active volcano is a volcano that has erupted at least once within the past 10,000 years. An active volcano may be currently erupting or not. Volcanologists monitor each of the active volcanoes.



A dormant volcano is an active volcano that is not currently erupting. Volcanologists believe that a dormant volcano has the potential to erupt in the future.

Scientists classify volcanoes as extinct when they have not erupted in 10,000 or more years.

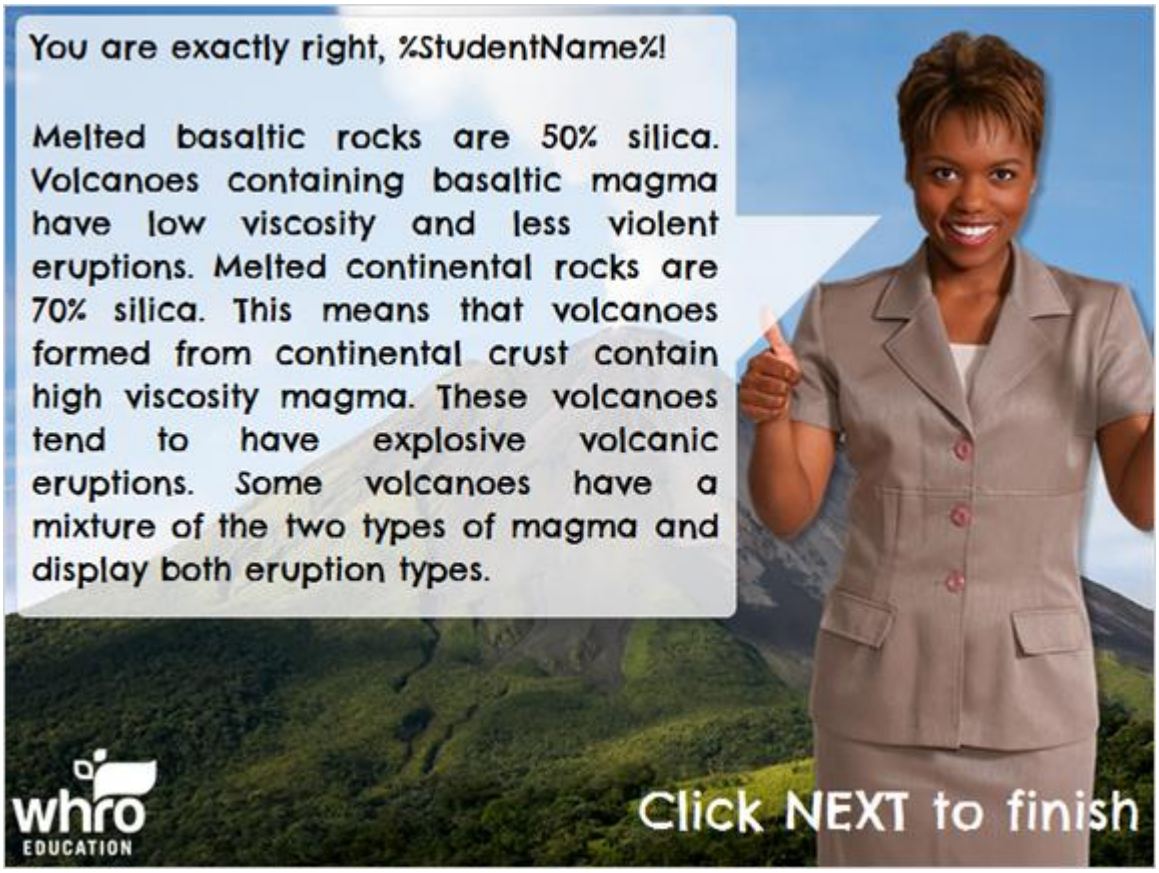
The majority of Earth's volcanoes are located along the Ring of Fire, which follows the margins of the Pacific plate. It has 452 volcanoes, and it is the most seismically-active region on Earth.

Volcanoes also form above hot spots, areas of the mantle that are unusually hot and close to Earth’s surface. The Hawaiian Islands formed from a hotspot in the mantle underneath the Pacific Plate. A chain of volcanoes were created as the plate slowly moved over the hot spot. The current hot spot is fueling the island of Hawaii and an undersea volcano called the Lõ 'ihi seamount.

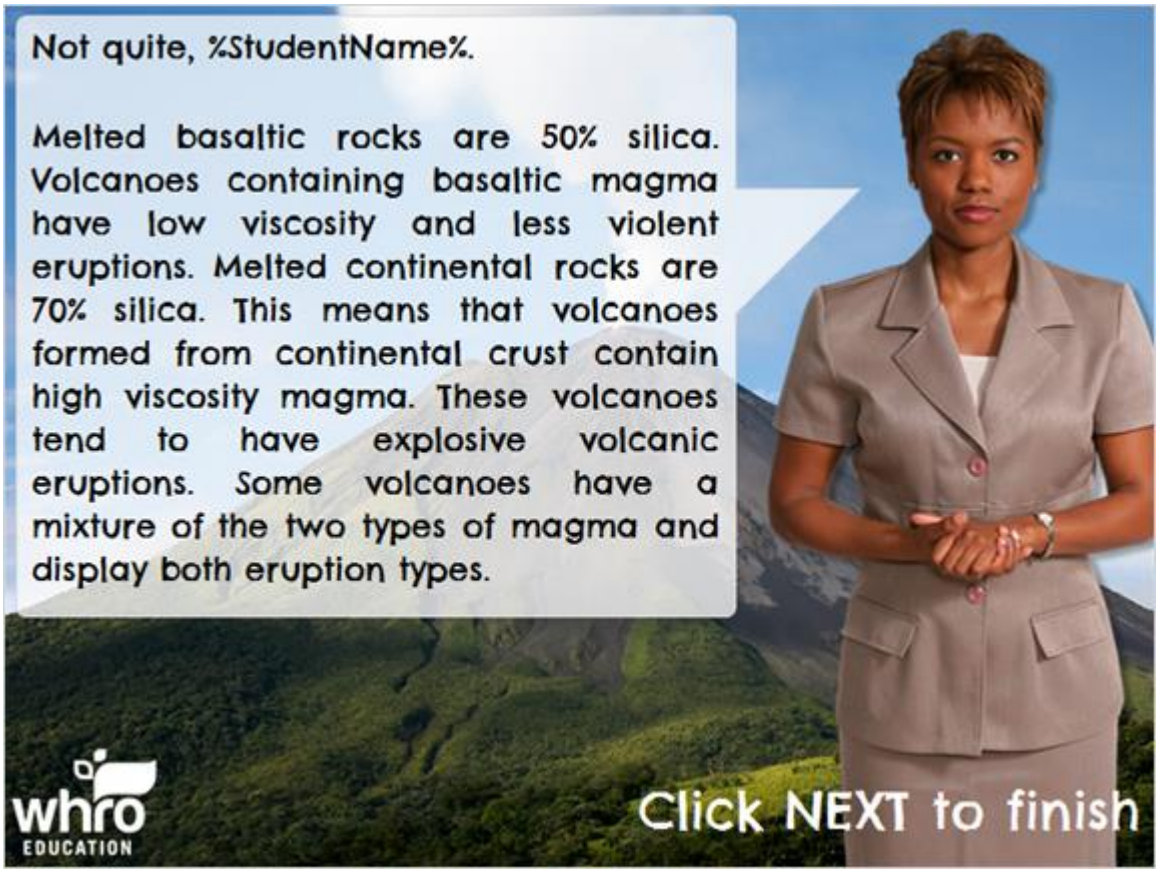
Take a moment to view a USGS video showing a draining event in the lava pond within the Halema'uma'u vent cavity.

Volcanic eruptions can be explosive or relatively gentle, depending on the magma's viscosity. Viscosity is the ability of a liquid to resist flowing. When compared to a low viscosity liquid like water, a high viscosity liquid would flow at a much slower rate. The viscosity of magma is determined by its temperature and silicon content.

Now, it is your turn to be the scientist. Considering what you have just learned about viscosity, which type of crust do you think would have more explosive eruptions, those have more or less silica? Click the appropriate button.



Melted basaltic rocks are 50% silica. Volcanoes containing basaltic magma have low viscosity and less violent eruptions. Melted continental rocks are 70% silica. This means that volcanoes formed from continental crust contain high viscosity magma. These volcanoes tend to have explosive volcanic eruptions. Some volcanoes have a mixture of the two types of magma and display both eruption types.



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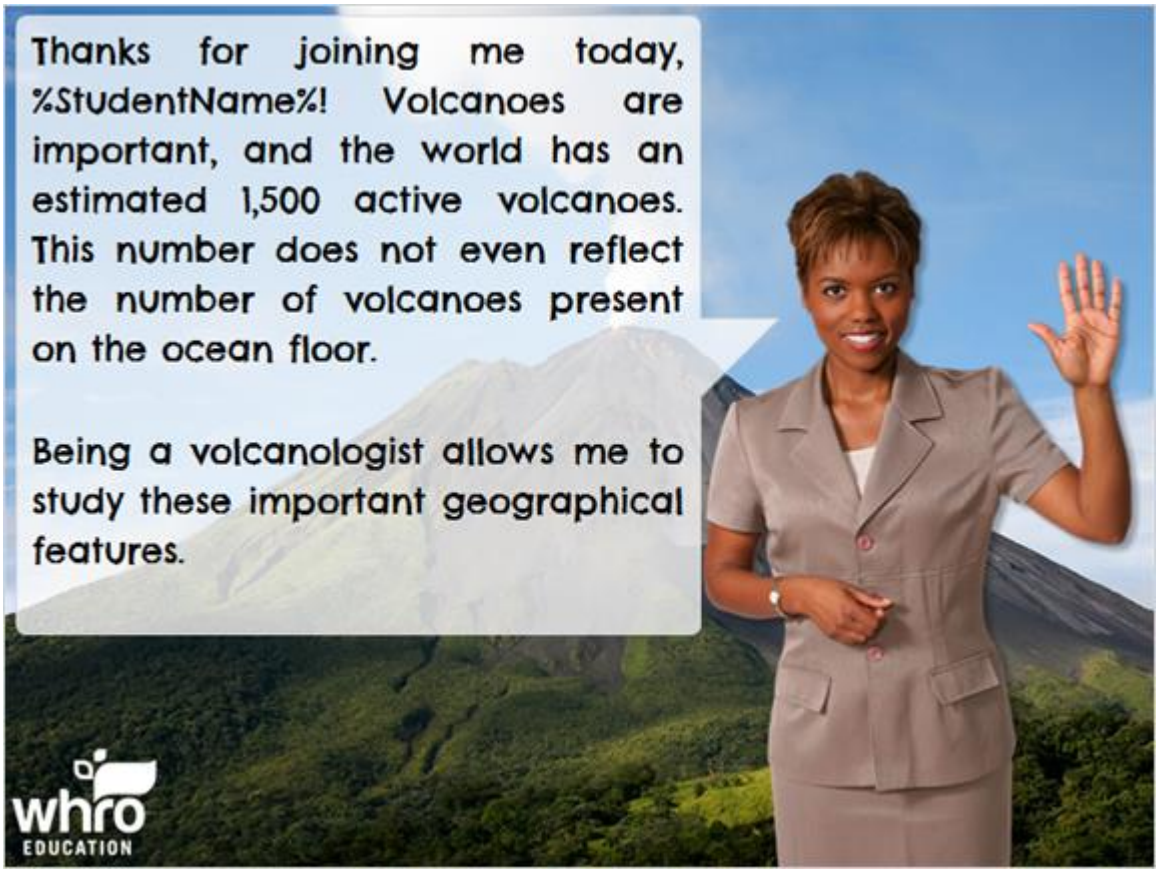

Thanks for joining me today! Volcanoes are important, and the world has an estimated 1,500 active volcanoes. This number does not even reflect the number of volcanoes present on the ocean floor.

Being a volcanologist allows me to study these important geographical features.