



# Mount St. Helen's Visitor Center: Teacher Resources 2016

## Title:

Grades Middle and High school pre-visit lesson

Time Commitment: 1 class period  
Location: School  
Site: Classroom

The purpose of this lesson is to establish a set of prior knowledge and prepare the students to understand the terms and concepts that they will see in the displays inside of the visitor center during their visit. Students will be able to recognize important terms and overarching scientific processes. The students will be best served by having the lesson presented to them the day before their field trip to be able to better understand the information regarding the eruption of Mount St. Helens.

Goal: the student will be able to understand the theory of plate tectonics and how it can form stratovolcanoes and be able to recognize and identify key terms.

Objectives:

- 1) Students will be able to accurately describe the theory of plate tectonics.
- 2) Students will be able to identify and define key terms.
- 3) Students will be able to read informational text and find the main ideas.
- 4) Students will be able to pick out key terms from informational text.

Next generation Science Standards:

**MS-ESS2-2:** Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

- Identify the types of processes that create volcanoes.

**MS-ESS2-3:** Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

- Understand the theory of plate tectonics and recognize the movements of the plates.

**HS-ESS1-5:** Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.

Understand the theory of plate tectonics and recognize the movements of the plates.

- Identify the types of processes that create volcanoes.

**HS-ESS2-1:** Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.

- Understand the theory of plate tectonics and recognize the movements of the plates.

## **Common Core Standards:**

### **CCSS.ELA-Literacy.RH.6-8.8**

Distinguish among fact, opinion, and reasoned judgment in a text.

### **CCSS.ELA-Literacy.RST.6-8.1**

Cite specific textual evidence to support analysis of science and technical texts.

### **CCSS.ELA-Literacy.RST.6-8.2**

Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

### **CCSS.ELA-Literacy.RST.6-8.4**

Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

### **CCSS.ELA-Literacy.RST.6-8.7**

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

### **CCSS.ELA-Literacy.RST.6-8.8**

Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

### **CCSS.ELA-Literacy.RI.9-10.1**

Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

### **CCSS.ELA-Literacy.RI.9-10.2**

Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

### **CCSS.ELA-Literacy.RI.9-10.4**

Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).

### **CCSS.ELA-Literacy.RI.11-12.1**

Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

### **CCSS.ELA-Literacy.RI.11-12.4**

Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).

### **CCSS.ELA-Literacy.RH.9-10.4**

Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.

### **CCSS.ELA-Literacy.RH.11-12.2**

Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.

### **CCSS.ELA-Literacy.RH.11-12.3**

Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.

### **CCSS.ELA-Literacy.RH.11-12.4**

Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines faction in Federalist No. 10).

# Lesson: Vocabulary and Plate Tectonics

## Introduction

Begin by introducing the topic of plate tectonics and the new key words the students will be learning.

## Demonstration

Plate tectonics is the theory that the earth's crust is made up of separate plates that are constantly moving on the mantle. Where plates meet there is a point where the crust can break apart, earthquakes can occur, and the crust can crumple forming mountains. This theory can be shown through a simple demonstration.

Using a few colors of play dough or craft foam you can demonstrate the various movements of tectonic plates and the layering of the earth. While introducing the idea that earth's crust is made up of many separate plates all floating on the mantle portion of the earth's core. To demonstrate movement along a fault line you can use layered play dough to show how the plate move past one another.

## Activity

Have students read an article that describes the eruption details of Mount St. Helens and discusses plate tectonics then have students use their new knowledge and the article to complete the KIM vocabulary sheet (see below). This worksheet is a tool to help students learn and understand the terms that they read in the article. The students will come up with a definition of the term based on the reading and then create a memory clue or drawing to help describe their definition that they agree upon. Key terms for this unit would be: plate tectonics, earthquake, volcano, fault line, subduction zone, magma, lava, igneous rock, lateral blast, oceanic plate, continental plate, pyroclastic flow.

As students work you can help guide them in their knowledge by providing clues and directing them along the right path as you circulate between groups add in encouragement and ask questions about the agreed upon definitions among the students.

## Wrap up

As a class go through the definitions that the teams provided and come up with an anchor chart for the room with an agreed upon definition and memory cue for each new term.

K.I.M. Vocabulary worksheet: Students work in pairs to define the terms and draw a picture (memory cue) to help remember the definition of the new term. After the pairs are finished then the class comes together to share their definitions and memory clues.

<u>K</u> nowledge (Term)	<u>I</u> nformation (definition)	<u>M</u> emory (illustration)
