

Earthquakes and Volcanoes

5E Lesson

The 5E model is a scientifically proven method to improve student engagement and learning in your classroom

- ✓ Engagement
- ✓ Exploration
- ✓ Explanation
- ✓ Elaborate
- ✓ Evaluate



Complete Teacher Instructions

Earthquakes and Volcanoes 5E Lesson

Grades 6-10 Earthquakes and Volcanoes Ongoing Lesson

Lesson Objective:

Students will learn about:

- Earthquakes
- Volcanoes
- Earthquake Measurements
- Volcano Measurements
- Earthquake Case Studies
- Volcano Case Studies
- Types of Volcanoes
- Dangers of Earthquakes
- Dangers of Volcanoes
- Prediction

Possible Student Misconceptions:

- Volcanoes are randomly located across the Earth's surface
- Volcanoes are only found on land
- Volcanoes are found only in hot climates
- All volcanoes erupt violently
- There is such a thing as "earthquake weather"
- Earthquakes happen randomly around the world
- If a volcano doesn't erupt for 100 years, it's extinct
- The ground opens up during an earthquake
- We can predict earthquakes

Materials:

- 1 device (smartphone, Chromebook, laptop, tablet, or computer) per 3
- A means of projecting a PowerPoint presentation
- Internet access
- General classroom objects

Teacher Notes:

- All videos can be accessed directly from the PowerPoint. To retrieve the icon while in slideshow mode and it will automatically open for you. If for any reason, right-click on the image and click **Edit Hyperlink** or something similar. I've created a video walkthrough if needed. It can be accessed here - <https://youtu.be/oCIkIP9SaDQ>
- I don't believe in long lessons. If you feel your students are losing their focus, stop the PowerPoint and give them a 5-minute break. If you'd like to see more of my video collection here - <http://www.teachwithfergvy.com> are tons of brain-break videos to choose from all grouped by category

Earthquakes and Volcanoes – 5E Lesson

Engagement Phase

Your students will watch the video "Can We Predict Earthquakes?" and complete the questions found in the file – [Engagement – Can We Predict Earthquakes Video](#).

Teacher Notes:

- The video is about four minutes long
- You may need to show the video more than once or pause when an answer is given to one of the questions.

Exploration Phase

Exploration – Lab Station Activity

- In groups of 2-3, have your students complete [Exploration – Lab Station Activity](#). Once they're done, they will submit their passport to you.

Teacher Notes:

- The complete instructions for my Lab Station activity can be found in the [START HERE – Instructions](#) file.

Explanation Phase

PowerPoint Lesson

- The lesson is found in the folder – [Explanation – Lesson](#)
- This lesson is designed to be completed over two days
- There are ten embedded videos and plenty of opportunity to engage, interact and check for your students' understanding throughout the lesson
- The lesson covers the following topics:
 - Natural Disasters
 - Geological/Geophysical
 - Earthquakes
 - Earthquake Measurements
 - The Great Chilean Earthquake
 - Volcanoes
 - Types of Volcanoes
 - Volcano Dangers
 - Volcano Measurements
 - Mount Tambora

Teacher Notes:

- All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-click the image and select **Edit Hyperlink** or something similar.
- I've created a video walkthrough if needed. It can be accessed

here - <https://youtu.be/oCIkIP9SaDQ>

- I have also enclosed a .PDF version of both the teacher and student versions.

Elaborate Phase

Elaborate – Scavenger Hunt

Your students will complete – [Elaborate – Scavenger Hunt](#). This activity will require your students to move beyond what was covered directly in the lesson and allow them to further develop their understanding.

Teacher Notes:

- Students will work individually or in small groups
- Students will need one device per group

Duration: 1 hour

Teacher Role – Facilitate learning and keep students focused

Goal

- ☐ Students use their newly obtained knowledge to propose solutions and extend their learning to new situations

Evaluate Phase

Quiz

Have your students complete - [Evaluate – Earthquakes and Volcanoes Quiz](#)

Teacher Notes:

- It's sometimes best to have the students peer evaluate
- Placing students in small groups and having them exchange papers to mark will accomplish two things
- 1) Provide immediate feedback on the questions they just completed
- 2) Significantly reduce your marking time
- Peer evaluation is not needed, only suggested when appropriate

Duration: 30 min

Teacher Role – Distribute and collect evaluation

Goal

- ☐ Students are given the opportunity to demonstrate their understanding and evaluate their own progress

Each phase is clearly described

A Complete Lesson

Earthquakes

- Stages

- Foreshocks: minor shaking prior to a larger earthquake
- Mainshock: main, largest, earthquake in the sequence
- Aftershocks: minor shaking after the mainshock; can last for years if the mainshock is very strong



← Make sure your students are on track

Student copies with blanks
Videos embedded right into
your slideshow

Earthquakes

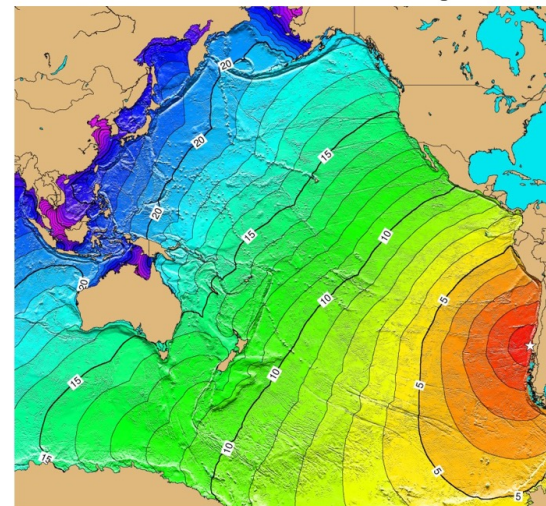
- Stages

- Foreshocks: _____
- _____ : main, largest, earthquake in the sequence
- Aftershocks: _____



The Great Chilean Earthquake

Tsunami travel
time across Pacific.
Contours = 1 hr



Interactive and Engaging Activities

Earthquakes and Volcanoes Lab Station Activity



7 Lab Station Activities to get your kids out of their seats and engaged in their learning

Device-Based Scavenger Hunt Earthquakes and Volcanoes



Includes

- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks, and laptops

- **100% Digital**
- Simulations
- Quizzes
- Videos
- Games
- and more



Get away from tired practices and unengaged students



Provide a Scientifically-Proven means of instruction



Incorporate Technology and Increase Collaboration

