

Volcanoes, Earthquakes, and Tsunamis

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Rationale/Overview:

Mother Nature's more violent moments often help motivate students to learn about geography. Students are interested in learning about natural catastrophes.

Therefore, this lesson provides an opportunity for students to take control of their own learning. In this lesson, they will work in groups to gather information and present their findings. This serves as a chance for students to learn some places that they can locate geographic information on the Internet.

Objectives:

1. After a brief introduction, students will work in groups of four or five to create presentations on earthquakes, tsunamis, and volcanoes.
2. Following this lesson, students will be able to conduct research on various topics using the Internet and/or electronic databases.
3. After this lesson and presentations, students will be able to define earthquakes, tsunamis, and volcanoes.
4. Following this lesson and presentations, students will be able to identify the causes of earthquakes, tsunamis, and volcanic eruptions.

Curriculum Areas Addressed:

Geography, Technology, Speech

Teaching Level:

Grades 6-8.

State Content Standards Addressed:

- Explain how humans and the physical environment impact and influence each other.
- Read, interpret, and make maps, charts, and graphs to explain spatial relationships.
- Acquire information from print, visual and electronic sources, including the Internet.
- Communicate knowledge of a topic through speech, including relevant examples, facts, anecdotes and details.

National Geography Standards Addressed:

Students will know and understand:

- How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.
- The physical processes that shape the patterns of Earth’s surface.
- How physical systems affect human systems.

Materials:

- Whatever materials are necessary for students to make their presentations. Presentations should include a visual aid with all required information on it. Teachers may want construction paper, poster board, or whatever the students plan to use for presentations.
- One or more computers that are connected to the Internet.
- An electronic database of some sort is desirable (this lesson specifically points to “Searchasaurus” and “Electric Library”). If the school district does not have one, web sites and search engines will do.
- Encyclopedias, books, and maps—students may have to go to the library for these.

** Note: Teachers will need to understand how to use Internet search engines, browse the web, and use any electronic indexes that their school subscribes to. If help is needed for the electronic indexes, consult the appropriate person in your school.

Procedures:

1. Briefly introduce the concepts of earthquakes, tsunamis, and volcanic eruptions. Tell the students that these are all examples of natural catastrophes that could occur in Oregon. It may be necessary to explain to the class that tsunamis are very large waves of water.
2. Arrange students in groups of 4-5. Inform them that they will be researching a project together. More than one group will be working on each topic. Specific roles may be assigned if the teacher so desires.
3. Give students the guidelines as to what they need (see the assessment section below).
4. Tell students that they may use these tools on the computer to work on their project:
 - Yahoo!igans.com
 - Nationalgeographic.com
 - Britannica.com
 - Searchasaurus (if the school has it)—highly recommended!
 - Electric Library (if the school has it)
 - Also include any other sites or search tools that you feel are appropriate for students to use.
1. Allow students to work on the project until they have completed it. Time to complete the project will vary, depending upon the number of computers available and the amount of time each day that students are able to work on the project.
2. Monitor student progress. Students should show the teacher their resources when they find them. The teacher will assess whether or not they are reliable sources, and help the students to improve the quality if necessary.
3. Make time for students to present their projects.
4. Students should report how they contributed to the project.
5. Following the lesson, teachers should provide supplemental material to help solidify the topics.

Assessment:

All student projects should have the following:

- Definition of their phenomenon.
- A picture. This might be a picture of a volcano, what a tsunami might look like, or the aftermath of an earthquake. In any case, a picture is required.
- At least three sources from the Internet and/or library.
- A display that includes the definition, picture, an “interesting facts” section (with at least five facts about their phenomenon), and an example of an occurrence of their catastrophe. This should include a map showing where it occurred. This map may be copied from a book or printed from the Internet. Students are responsible for explaining where the area on the map is and labeling where the phenomenon occurred.
- The display may include additional materials if the students wish to include them.

Students will be required to present their topic to the class for at least five minutes. Each student should take part in the speaking part of the presentation. The presentation should cover all of the required components of the assignment.

These specific facts will be required for the catastrophes. The other facts to be included in the presentations are at the students’ discretions.

Volcanoes:

- What causes an eruption?
- How hot is lava?
- What is lava made of?
- Give an example of a volcano and tell about the last time that it erupted.

Earthquakes:

- What causes earthquakes?
- With what scale do we measure earthquakes? How high on this scale does an earthquake have to be to be considered “major?”
- Give an example of an earthquake and the damage that it caused.

Tsunamis—

- What causes tsunamis?
- How fast can tsunamis travel?
- How high can tsunamis be?
- Give an example of a tsunami attack and the damage that it caused.

Extensions:

This same format could be used for future research topics. If enough interest is generated, students could research floods, tornadoes, hurricanes, and so on. The theme does not always have to be about disasters—it could extend to many topics.

Students could be graded using the state speech scoring guide during the presentations.

Further information may be provided by the teacher to firm up what the students have said. Teachers may include additional facts about these phenomena, how scientists are trying to them, and so on. This can obviously be easily integrated with science.