

EARTH SCIENCE Lesson Plan

Quarter 3, Week 4, Day 1



Outcomes for Today

Standard Focus: Earth Sciences 3.b “students know the principal structure that form the three different kind of plate boundaries” and 3.e “students know there are two kinds of volcanoes, one kind with violent eruptions producing steep slopes and the other kind with voluminous lava flows producing gentle slopes”.

PREPARE

1. Background knowledge necessary for today’s reading.

In certain areas of the world magma lies relatively close to the surface. As plates move over these spots volcanic features form. The magma chamber heats surrounding rock which in turn heats the ground water in the area. Sometimes the superheated water reaches the surface in the form of geysers or hot springs, as in Yellowstone National park.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today’s reading

vent lava crater caldera

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for investigation/activity.

5. Read text.

Ch. 18.3, pp. 480-481

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Magma reaches Earth's surface through an opening in the crust called a vent.
- A caldera forms when the summit or the side of a volcano collapses into the magma chamber.
- A crater is a bowl-shaped depression that forms around a vent.

7. Post information on the billboard. Add new information to ongoing projects on the wall.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity: Evacuating a volcano: A Simulation

Procedure: Students work together to create an emergency plan for a given scenario

Discussion: Discuss the kind of behaviors that are important in an emergency

Key question: What is your plan for evacuation?

Source:

<http://volcano.und.edu/vwdocs/vwlessons/Lesson1/lesson1.html>

EXTEND

11. Prompt every student to write a short product tied to today's reading.

12. Close with a short summary.

Extend the reading to the students' lives or to the world

EARTH SCIENCE Lesson Plan

Quarter 3, Week 4, Day 2



Outcomes for Today

Standard Focus: Earth Sciences 3.b and 3.e

PREPARE

1. Background knowledge necessary for today's reading.

Volcanoes are classified according to the type of material that forms the volcano and its type of eruption. Cinder cones are the simplest type of volcano. They are built from particles and lava from a single vent, and are bowl-shaped. Some of the world's most conspicuous and beautiful mountains are composite or stratovolcanoes. They are built of alternating layers comprised of volcanic ash, cinders, lava flows, blocks and bombs with a central vent or cluster of vents. Shield volcanoes with their gently sloping sides, are built slowly from highly fluid basaltic lava.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

shield volcanoes

cinder cone volcanoes

composite volcanoes

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for investigation/activity.

5. Read text.

Ch. 18.3, pp. 481-483

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- There are three major types of volcanoes: shield, cinder cone, and composite.
- Shield volcanoes are the largest of the three types.
- Mount St. Helens is an example of a composite volcano.

7. Post information on the billboard. Add new information to ongoing projects on the wall.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity: Aerosol Lesson: Volcano Types

Procedure: Students categorize volcanoes into the three main types

Discussion: Discuss the characteristics of the three main types

Key question: What conclusions are drawn from the data?

Source:

http://eosweb.larc.nasa.gov/EDDOCS/Aerosols/Volcano_Types_Lesson.html

EXTEND

11. Prompt every student to write a short product tied to today's reading.

12. Close with a short summary.

Extend the reading to the students' lives or to the world

EARTH SCIENCE Lesson Plan

Quarter 3, Week 4, Day 3



Outcomes for Today

Standard Focus Earth Sciences 3.b and 3.e

PREPARE

1. Background knowledge necessary for today's reading.

Explosive eruptions involve magmas of high viscosity and high gas content (andesitic and rhyolitic magmas). Explosive bubbles fragment the lava into tephra particles of various sizes ranging from dust particles to huge blocks as large as small houses.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

| | | |
|-----------------------|----------------|-------------------------|
| Tephra | lapilli | volcanic blocks |
| volcanic bombs | | pyroclastic flow |

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for investigation/activity.

5. Read text.

Ch. 18.3, pp. 483-484

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Rock material ejected during an eruption is called tephra.
- Tephra is classified according to size.
- A pyroclastic flow of gas, ash, and other tephra can travel at speeds of up to 200 km/h down a slope.

7. Post information on the billboard. Add new information to ongoing projects on the wall.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity: The Distribution of Tephra and the Location of Eruptions

Procedure: Students use a map to determine the distribution and thickness of tephra

Discussion: Discuss the concept of constructing an isopach

Key question: What factors influenced the distribution of the tephra?

Source:

http://volcano.und.edu/vwdocs/vwlessons/activities/t_number5.html

EXTEND

11. Prompt every student to write a short product tied to today's reading.

12. Close with a short summary.

Extend the reading to the students' lives or to the world

EARTH SCIENCE Lesson Plan

Quarter 3, Week 4, Day 4



Outcomes for Today

Standard Focus: Earth Sciences 3.f “students know the explanation for the location and properties of volcanoes that are due to hotspots and the explanation for those that are due to subduction”.

PREPARE

1. Background knowledge necessary for today’s reading.

The Pacific Ring of Fire marks the location of a series of convergent plate boundaries in the Pacific Ocean. The location coincides with the location of ocean trenches and island arcs that result from the movement of tectonic plates. Along convergent boundaries as the sinking plate moves deeper into the mantle increasing pressure and heat causes the overlying plate to partially melt. The magma rises and erupts to form volcanoes that often form island arcs.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today’s reading

Pacific Ring of Fire

Mediterranean Belt

rift volcanism

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for investigation/activity.

5. Read text.

Ch.18.3, pp. 484-486

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Most volcanoes form at plate boundaries.
- Most of the Earth's volcanoes form two distinct volcanic belts: the Pacific Ring of Fire and the Mediterranean Belt.

7. Post information on the billboard. Add new information to ongoing projects on the wall.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post

One possible activity: What's the Difference?

Procedure: Students read an article and answer worksheet questions

Discussion: Review the concepts of plate tectonics and continental drift

Key question: How do volcanic processes differ at convergent and divergent tectonic plate boundaries?

Source:

http://oceanexplorer.noaa.gov/explorations/05fire/background/edu/media/rof_difference.pdf

EXTEND

11. Prompt every student to write a short product tied to today's reading.

12. Close with a short summary.

Extend the reading to the students' lives or to the world

EARTH SCIENCE Lesson Plan

Quarter 3, Week 4, Day 5



Outcomes for Today

Standard Focus: Earth Sciences 3.f

PREPARE

1. Background knowledge necessary for today's reading.

Although most volcanic activity is generated at plate boundaries, there are a few active volcanic sites within plates called hotspots. Hotspots are thought to be areas where plumes magma rise towards the surface. Yellowstone sits above such a hotspot. So does the island of Hawaii, the most southeast island in the chain. It is the only island in the chain that is currently volcanically active. The seven islands become progressively older to the northwest.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

hotspot

flood basalt

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for investigation/activity.

5. Read text.

Ch. 18.3, pp.486-487

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- A plume moves vertically, but not laterally.
- Flood basalts form plains or plateaus since they erupt from fissures rather than from a central vent.
- The location of seamounts provides evidence of plate movement in the distant past.

7. Post information on the billboard. Add new information to ongoing projects on the wall.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity: Dante's Peak Movie Review (Please consult your school or program policy before using theatrical films in class)

Procedure: Students write a movie review from the perspective of a volcanologist

Discussion: Review that criteria for writing the review

Key question: What were the realistic and unrealistic aspects of the movie?

Source:

http://www.windows.ucar.edu/tour/link=/teacher_resources/dantes_peak_edu/html

EXTEND

11. Prompt every student to write a short product tied to today's reading.

12. Close with a short summary.

Extend the reading to the students' lives or to the world