

GUIDED PRACTICE

Class: GEOL 1500

Date assigned: October 1st, 2018

Date due: October 17th, 2018

Time estimate to complete this assignment: 1-1.5 hours

Overview/Introduction

This lesson is about how different types of volcanoes form and why they are different. Where are the majority of volcanoes found? What factors control how dangerous a volcano might be?

Learning Objectives

Basic objectives- this is what I expect you to be able to do as after completing this pre-class assignment. Please note that I will not be going over this material in class. Please keep in mind these learning objectives as you work through the pre-class exercises (reading and/or watching video, and taking notes).

1. List three basic types of volcanoes.
2. Name at least three major volcanic gases, and list at least 3 type of volcanic deposits that may come out during volcanic eruptions.
3. Identify different types of volcanoes based on their characteristics.
4. Name the types of rocks that are generally associated with each type of volcano.

Advanced objectives- this is what I expect you to get out of the in-class activity and post-class assignment.

1. Predict what type of volcanoes are found at different plate boundaries
2. Compare and contrast composite (strato-) volcanoes vs. shield volcanoes in terms of their shape, size, rocks present, and determine how each of the above properties contributes to the formation of two different volcanoes
3. Determine which type of tectonic settings produce the most dangerous type of volcano (and therefore you may want to avoid living near these types of volcanoes if possible) and list at least 3 reasons to support the conclusion.

Preparatory Activities and Resources:

1. Take notes as you read or view one or both of the following material:
 - a. Review and Read your textbook (Marshak) Review Chapter 4 (Igneous rocks, pay close attention to Figure 4.2(a), Fig 4.2(b), and Fig (4.2(c) as well as GEOLOGY AT A GLANCE) and read Chapter 5 (Volcanoes). Remember to take notes with the above learning objectives in mind.
 - b. Watch a video as you take notes on the content with the above learning objectives in mind: https://www.learner.org/vod/vod_window.html?pid=324 (with caption recommended so it is easier to take notes, and see the spelling of all the terminology)

CAUTION: If you decide to look for your own source of information, please be aware that not all the content available online is factually correct. Please avoid utilizing sources such as Wikipedia as they may contain errors.

After completing the preparation work, take an online quiz (unlimited attempt) prior to attending the class on October 17th. The quiz will close prior to the class time, so please be sure to complete it before coming to the class.

Exercises: Please complete by October 17th, 2018.

- Take an online quiz on Canvas (if Canvas is available on time, if not, Moodle). Be sure to get 100% on this quiz!!
- Submit in-class an outline of the reading material or video (please don't forget to put your name!). Please be sure to email me a copy **prior to** the class time if you must miss the class for a legitimate reason.

Questions?

Please come see me during my office hours, catch me before or after the class (if the question is a quick one) or contact me via email at yoshie.hagiwara@calstatela.edu

Lesson Plan

Yoshie Hagiwara

Lesson: Volcanoes

Timeframe: Note how long it will take the learner to complete all the activities from pre-class to post-class activities.

Approx. 3-3.5 hours

Materials needed: Describe what items will be needed to complete the in-class activities.

Papers to write the answers and brainstorm on their ideas.

Objectives: List out the basic objectives tied to pre-class activities and the advanced objectives tied to in-class and post-class activities.

Basic:

1. List three basic types of volcanoes.
2. Name at least three major volcanic gases, and list at least 3 type of volcanic deposits that may come out during volcanic eruptions.
3. Identify different types of volcanoes based on their characteristics.
4. Name the types of rocks that are generally associated with each type of volcano.

Advanced:

1. Predict what type of volcanoes are found at different plate boundaries
2. Compare and contrast composite (strato-) volcanoes vs. shield volcanoes in terms of their shape, size, rocks present, and determine how each of the above properties contributes to the formation of two different volcanoes
3. Be able to determine which type of tectonic settings produce the most dangerous type of volcano (and therefore they may want to avoid living near these types of volcanoes if possible) and list at least 3 reasons to support the conclusion.

Background to the Lesson: Note the typical composition of learners in the class, how this lesson fits into the course design/schedule, prerequisite knowledge required, and typical challenges that learners face with this content area.

This is an introductory physical geology course with majority freshmen and sophomores taking the course as part of GE requirement. Volcanoes is a topic covered in the 2nd half of the course, but it is an important topic. The students need to know the definition of igneous composition such as mafic and felsic, as well as recognize a few of the typical igneous rocks by the time we cover this material. The students also need to be able to list three types of plate boundaries, including the type of movement at each boundary prior to completing the in-class activity.

The typical challenges students face in this content area is seeing the big picture. The students often focus on and try to memorize the individual components and often fail to fully grasp the overall concept of how the different volcanic activities relate to different plate boundary conditions as well as the type of rocks.

Introduction to Lesson: Describe the purpose of this content area for learners and an overview of the activities and resources for the flipped lesson.

Activity- Think-Pair-Share – Give them a quick quiz by using either Kahoot, iClickers, or 1-min. notes- this must be done individually. Then, the students will go through think-pair-share to share and discuss their answers with another student in class. After the discussion, the students will answer the same question again to see if the answers have changed. The students will receive ~2 points for the initial answer, and ~2 points for the 2nd answer.

Procedure

Pre-Class Individual Space Activities and Resources: Outline the major steps for the preparatory activities and be sure to tie the steps to the basic learning objectives you have noted above. Note resources required for learner preparation.

Steps	Purpose	Estimated Time	Learning Objective
<p>Step 1: Read Chapters 4 & 5(Igneous rocks and Volcanoes) and/or watch a video as you take notes on the content https://www.learner.org/vod/vod_window.html?pid=324 (with caption on so it is easier to take notes, and see the spelling of all the terminology)</p>	<p>Ch. 4 is a review of the material already covered previously, but I want to make sure that the students refresh their memory on some of the terms to make sure they understand what is discussed in Ch. 5. The video covers the same material with additional visual help. I am providing both options to accommodate different type of learning styles.</p>	<p>45 mins.-1 hour</p>	<p>Basic 1-4</p>

<p>Step 2:</p> <p>Take an online quiz on the above content. The quiz should also include review of Plate tectonics and igneous rocks.</p>		15 mins.	Basic 1-4
<p>Step 3:</p>			

In-Class Group Space Activities and Resources. Outline the major steps for the in-class activities and be sure to tie the steps to the advanced learning objectives you have noted above. Also note any resources needed/developed to provide effective active learning activities within class.

Steps	Purpose	Estimated Time	Learning Objective
<p>Step 1: Pre-test- either have them write it down, or do the quiz through Kahoot or other interactive response program. Need: Either a sheet of paper with questions or interactive response interface</p>	<p>Mental preparation for students for the in-class activity, and initial assessment of the students' understanding.</p>	10 min	Basic 1-4
<p>Step 2: Think-Pair-Share Question: Where would you rather live? (multiple choice question with 4-5 different volcanic settings) And provide the reason (maybe) Need: paper to write on for note taking</p>	<p>Having students think about the information they acquire in class from a real-life angle. Which type of volcanic activities are more dangerous and/or unpredictable? What causes the difference?</p>	20min.	Basic 1-4 and Advanced 1-3

<p>Step 3: Post-activity assessment- answer the same questions as step 1 and with the same method as step 1. Need: The same material as Step 1</p>	<p>Checking to see if the answers remain the same after discussing with a partner.</p>	<p>5 min.</p>	<p>Basic 1-4 and Advanced 1-3</p>
<p>Step 4: Call on some of the groups to share their answers and justification for these answers.</p>	<p>Adding the component to explain the thought process provides for higher-order learning experience.</p>	<p>10 min</p>	<p>Basic 1-4 and Advanced 1-3</p>

Post-Class Individual Space Activities and Resources. Outline the major steps for the post-class activities and be sure to tie the steps to the advanced learning objectives you have noted above. Also note any resources learners will need to complete any post-class activities assigned after the group space activities.

Steps	Purpose	Estimated Time	Learning Objective
<p>Step 1: Re-visit the impact of volcanoes in lives. Review Ch. 5 Box 5.1, Sec 5.5, and watch recent Hawaiian eruption video clip (max. 5 mins.) and have them compare the eruption style with the one from Chile (or any equivalent volcanic eruptions that may occur). Have them also re-read Ch. 5.7 (Volcanoes and climate) and think about the impact of volcanoes in climate change.</p>	<p>Reinforce the knowledge they obtained from completing preceding assignments.</p> <p>Applying the knowledge to the real-world situations.</p> <p>This also provides introduction to a later topic: Climate Change</p>	<p>30 min.</p>	<p>Basic 1-4, and Advanced 1-3</p>

<p>Step 2: Quiz/homework– Take an online quiz (moodle or canvas) on what type of plate boundary produces type of volcanic material (rocks, pyroclastics etc.), and questions on impact of volcanic activities on lives, climate, etc. (2 attempts will be allowed)</p>	<p>Provides assessment of what the students were able to master through the flip class.</p>	<p>30 min. to 1 hour</p>	<p>Basic 1-4, and Advanced 1-3</p>
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Evaluation:

Analysis. In this section, note what you think will work, and what challenges you think you may face in implementation.

Think-pair-share will work well in a large-class setting although I am going to try this in my smaller class setting this upcoming semester. The biggest challenge with this activity will be to ensure proper preparation during the pre-class portion of the activities. It could also be a little difficult for some of the students to talk with another student in class.

Grading any written material in a large lecture is always a challenge, but for this semester, I am planning on testing this out in my smaller lecture class to see if this can be done in a large lecture. Without accountability and assessment, the learning will not be effective for a class like this, but to streamline the assessment process that involves higher learning objectives will be difficult.

Connections to Future Lessons. In this section, note how you think this lesson plan connects to your next topics in the course.

Volcanoes and volcanic eruptions can create real-life issues, and an eruption can trigger Mass Wasting (landslides) that is covered in after volcanoes. Volcanoes can also have an impact on the climate (future topic climate change).