

Learning Objective: Natural Hazards

NGSS Standard: MS-ESS3.B - Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events.

Objective:

Students will be able to:

1. Explain how natural hazards may eventually lead to a natural disaster
2. Explain how certain processes can help the prediction of natural disasters such as earthquakes and volcanic eruptions.
3. Explain how increasingly effective technology can help in mitigating the effects of natural disasters.

Time Required: 90 minutes

Materials Needed:

- Teacher computer with internet access and projector
- Student computers/laptop/tablet with internet access (preferably one per student but at least enough for small groups of 3 -4 students)
- Natural Hazards Handout (attached)

Teacher Preparation:

- Create Playlist 1, a 20-minute [playlist](#) in [Legends of Learning](#) with the following game found in the Natural Hazards learning objective:
 - *Bubbly Hazards*
- Create Playlist 2, a 15-minute [playlist](#) in Legends of Learning with the following game found in the Natural Hazards learning objective:
 - *Seismic City*
- Make copies of the Natural Hazards Handout (1 per student)

Engage: 15 minutes

- 1) The teacher will play the video “ESS3B – Natural Hazards” up to the 4:20 min mark (minute 4:20 to the end is for teachers only)
<https://www.youtube.com/watch?v=1bmOmozR7ZQ>
- 2) The teacher will lead a discussion about the video and the relationship between the terms Natural Hazards and Natural Disasters.
- 3) The teacher will instruct students to write down 4 natural hazards that may occur and the disasters that came as a result of them. What types of natural hazards are present near your hometown? Have they ever caused disasters? How ready do you think your hometown is in dealing with the natural hazard(s) you described?

Explore: 20 minutes

- 1) Students will [sign in to Legends of Learning and enter your teacher code](#).
- 2) [Launch](#) Playlist 1 to your students.

- 3) Students will complete *Bubbly Hazards* as the teacher assists students as needed. Stopping game play to address the questions asked in the game may be needed.

Explain: 20 minutes

- 1) Teacher will give each student the Natural Hazards Handout.
- 2) Students will work individually or in pairs to complete the handout.
- 3) Teacher will review the answers to the handout and address any questions or misconceptions.

Elaborate: 20 minutes

- 1) Teacher will split the class into groups of 2.
- 2) Each group of students will go to the [USGS Volcano Hazards Program](#) page.
- 3) Each group will pick one volcano on the map and develop a 'fact-sheet' describing how the volcano affects the surrounding area, the hazards of the volcano, and any mitigation procedures that the neighboring population has undertaken in preparation for an eventual eruption.
- 4) Teacher will then lead a jigsaw style discussion in which each group shares-out their individual 'fact sheet'.

Evaluate: 15 minutes

- 1) [Launch](#) Playlist 2 for students.
- 2) Students will play Seismic City and be assessed on their ability to answer the questions provided in the game correctly.
- 3) Teacher will analyze student results to determine what concepts need to be a focus for reteaching.

Additional Lesson Strategies:

- To use Legends for additional instruction, create a [custom playlist](#) with an [instructional game](#) and pre and post [assessment](#).
- To use Legends for a quick formative assessment, create a 5-question [assessment](#) in a [playlist](#).
- To use Legends for a student-directed experience, create a [targeted freeplay](#) playlist.
- Encourage students to play on their own at home in [Legends of Learning: Awakening](#) for a student-driven experience including avatars, battling, and quests all centered around topics they are covering in class.



Name: _____

Date: _____

Natural Hazards Handout

Natural Hazard	Areas affected in the U.S.	Cause	Prediction
Hurricane	Coastal regions along the east and south	Strong low pressure system	Can be predicted using radar simulations
	Any area that is experiencing dry conditions either due to a drought or as a part of natural climate.		Cannot be predicted but areas can be at an enhanced risk due to weather patterns.
		Sudden rise in water level	
	Mainly West Coast, and a few states that run along hidden plate boundaries	Movement of Earth's tectonic plates	
Tornado			Can be predicted using radar
Tsunami		An underwater earthquake moving a large quantity of water towards land	



Questions

1) What other natural hazards are there that are not listed on the chart?

2) Which is preventable, a natural hazard or a natural disaster? Why?

3) When does a natural hazard become a natural disaster?
