



When Nature Strikes: Natural Hazards Safety Booklet

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Grade Level	8
Duration	1-3 class periods

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National Standards

GEOGRAPHY

Element 2: Places and Regions

4. The physical and human characteristics of places

Element 5:

Environment and Society

15. How physical systems affect human systems

AZ Standards

SCIENCE

Earth and Space

8.E1U3.7 Obtain, evaluate, and communicate information about data and historical patterns to predict natural hazards and other geological events.

ELA

Reading

Key Ideas and Details

8.RI.1 Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.

8.RI.2 Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.

WRITING

Production and Distribution of Writing

8.W.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Arizona Social Science Standards

GEOGRAPHY

The use of geographic representations and tools helps individuals understand their world.

8.G1.1 Use geographic tools and representations to analyze historical and modern political and economic issues and events. Key tools and representations such as maps, globes, aerial and other photos, remotely sensed images, tables, graphs, and geospatial technology

Human-environment interactions are essential aspects of human life in all societies.

8.G2.1 Examine impact of and responses to environmental issues such as air, water, and land pollution, deforestation, urban sprawl, and changes to climate.

Global Interconnections and spatial patterns are a necessary part of geographic reasoning.

8.G4.1 Take an active stance on a geographic issue reflecting its scale (local, regional, state, national, or global)

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SIOP Elements		
Preparation Adapting content Linking to background Linking to past learning Strategies used	Scaffolding Modeling Guided practice Independent practice Comprehensive input	Grouping Option Whole class Small groups Partners Independent
Integrating Processes Reading Writing Speaking Listening	Application Hands on Meaningful Linked to objectives Promotes engagement	Assessment Individual Group Written Oral

Arizona ELP Standards

Stage IV

Basic

Reading

Standard 4: The student will analyze text for expression, enjoyment, and response to other related content areas. The student will demonstrate knowledge of reading comprehension by:

B-21: applying understanding of content area vocabulary within math, science and social studies texts.

B-23: locating information in print and electronic reference sources (e.g., encyclopedia, atlas, almanac, dictionary, thesaurus, periodicals, website, and textbooks) periodicals for a specific purpose.

Writing

Standard 1: The student will express his or her thinking and ideas in a variety of writing genres. The student will express his or her thinking and ideas by using a variety of writing genres, as demonstrated by:

B-3: taking notes using a teacher selected and student created graphic organizer or cloze notes.

B-6: writing a variety of functional text (e.g., instructions, directions) that addresses the audience, stated purpose and context.

Standard 2: The student will identify and apply conventions of standard English in his or her communications. The student will identify and apply conventions of standard English in his or her written communications by:

B-3: writing words and sentences using appropriate capitalization (e.g., proper nouns, pronoun "I", titles, abbreviations, words used as names).

B-4: writing sentences using appropriate punctuation (e.g., ending punctuation; period: abbreviations; colons: time; commas: items in a series, introductory words, friendly letters; apostrophes: contractions).

Standard 5: The student will demonstrate research skills by using a variety of reference materials to complete a variety of writing tasks. The student will demonstrate research skills by using a variety of reference materials to complete a variety of writing tasks as evidenced by the following:

B-4: paraphrasing information from at least one source.

Overview

Physical systems often affect human systems. This is especially evident when the impact of natural disasters on humans is observed. It is important for

students to be aware of the dangers of environmental hazards such as flash floods, tornadoes, hurricanes, and earthquakes. Since these disasters often strike with little warning, students who know what to do in the face of such

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dangers, will be more likely to avoid property damage and, most importantly, personal injury.

Purpose

In this lesson, students will read about various environmental hazards, take notes, and create a safety booklet. This lesson contains strategies for diverse learners (ELLs).

Key Vocabulary

hazard - a source of danger

adapt - to change based on environmental conditions

precautions - a measure taken before hand to prevent harm

encounter - to meet unexpectedly

criteria - a standard on which a judgment may be based

Materials

- Labels for four of the natural hazards
- Tape
- Vocabulary Cards
- Projection device
- Natural Environment Safety Hazards reading
- Pencil, colored pencils, drawing paper, and notebook paper
- Student Example
- Safety Booklet Project Guidelines
- Safety Booklet Project Scoring Guide

Objectives

The student will be able to:

- Read for details about various natural disasters.
- Take notes using a T-chart or web diagram.
- Identify 5 natural hazards and ways to stay safe if any of these occur.
- Identify scale of an issue.
- Produce a safety booklet suitable for public reading.

Procedures

SESSION ONE

1. Begin the lesson by having students brainstorm types of natural hazards. List them on the board. **(Preparation: Links to Background)**

2. Ask students how many of them have personally experienced one or more of these dangerous

conditions. As students respond, put check marks next to the conditions. **(Preparation: Links to Background)**

3. Briefly review the Five Themes of Geography with students. (Location, Place, Human Environment Interaction, Movement, and Regions)

Ask the question: "Living with natural hazards is most closely related to which theme of geography?"

Answer: Human Environment Interaction. HEI encompasses the ways that humans depend upon, change, and adapt to their environment. Conversely, HEI also includes the environment's impact, both positive and negative, on humans.

Note: Students may also suggest other themes.

For example, there are certain regions of the world where various natural hazards are most prevalent such as Tornado Alley in the Midwest or the San Andreas Fault in California.

4. Introduce the ideas of adapt or change? Remind students that humans can either change their environment or adapt to it. For example, people adapt to their environment by wearing warm clothing in cold weather. People who live in the desert must adapt by finding ways to irrigate their crops.

Sometimes humans are able to change their environment.

For example, people can build a road through a mountain by blasting a tunnel or they can cut down a forest to build cities or to clear the land for farming. **(Scaffolding: Modeling)**

Ask students to look at the list of natural hazards that was generated at the beginning of class.

Then pose the following question: "Do humans adapt to natural hazards or can they change them?"

Discuss student answers. **(Grouping Option: Whole Group)**

5. Response Corners: Select 4 of the natural hazards (e.g., tornadoes, flash floods, hurricanes, and lightning) and label the four corners of the room with the names of these hazards. Then pose the following: "In many cases, humans cannot prevent natural disasters from occurring, therefore they have to adapt to them. Would you know what precautions to take and how to keep yourself and your family safe in hazardous conditions? Look at the four natural hazards posted in the corners of the room. Of these four, which do you feel you know the most about when it comes to safety?" Direct students to jot down their choice. Instruct students to walk to the corner of the room that corresponds with their choice. Briefly discuss student choices.

(Application: Meaningful, Linked to Objectives, Promotes Engagement, Grouping Option: Small group)

6. Explain that students are not likely to encounter all of these natural hazards in their own neighborhoods. Because students never know in

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what part of the state, nation, or country they are likely to find themselves, it is important for them to know how to keep safe in each situation.

7. Project the Vocabulary Cards and explain the terms that will be needed for the rest of the lesson. If necessary, hand students who may need the extra help copies of the cards or post the words on a wall.

(Scaffolding: Comprehensible Input)

7. Distribute the Natural Environment Safety Hazards reading. Pair up students. Instruct students that while they are reading the article, they will take notes using either a web diagram or main idea/detail T-note format. It is suggested that students include in their notes at least 4 safety points for each natural hazard. They should also be thinking about what scale(s) (local, state, national, global) this hazard impacts. **(Grouping Option: Partners, Scaffolding: Comprehensible Input)**

SESSION TWO

1. Explain to students that they will write and illustrate a safety booklet that will inform others about the precautions that must be taken in the face of natural disasters. Project the Student Example.

(Scaffolding: Modeling) Distribute copies of the Safety Booklet Project Guidelines and explain step by step how to create the Safety Booklet. Allow pairs of students from Session One to work together and to use their T-notes or Web Diagram of safety precautions/tips as a resource for the written sections of their safety booklets. **(Scaffolding: Comprehensible input, Grouping Option: Partners)**

2. Explain that students will work together but each partner will produce their own booklet. Distribute the Safety Booklet Scoring Guide and discuss the criteria for grading. **(Application: Linked to Objectives)**

3. What is not finished in this session can be homework or Session Three. **(Assessment: Individual, Written)**

Assessment

ELA, Science and Geography

Notetaking T-chart or web diagram can be graded for accuracy and completeness. Mastery will be considered having 4 safety points for each natural disaster and identifying the scale of the issues. Mastery will be considered having correctly identifying at least 3 safety points for each of the hazards plus correctly identifying scale for 3 of the hazards.

The Safety Booklet can be assessed with the Safety Booklet Project Scoring Guide. Mastery will be considered a score of 80 points or higher.

Extensions

Nature in the News: Post a map of the world in the classroom and encourage students to read newspapers and newsmagazines for current event articles about natural disasters. Students then post the articles near the map and mark the location of each event with a color-coded map sticker to indicate each type of disaster. Encourage students to look for various regional patterns.

Sources

Internet Sources

USGS Natural Hazards

<https://geohazards.usgs.gov/>

The Natural Hazards Mission Area is responsible for coordinating USGS response following disasters and overseeing the bureau's emergency management activities. Includes links to information on earthquake hazards, geomagnetism, landslide hazards and volcano hazards.

Map Resources

Disastrous Flash Floods: Number of Fatalities in 2013

http://geoalliance.asu.edu/sites/default/files/maps/FLASH_FLOOD_FATALITIES2013.pdf

Disastrous Heat Extremes: Number of Fatalities in 2013

http://geoalliance.asu.edu/sites/default/files/maps/HHEAT_FATALITIES2013.pdf

Disastrous Lightning: Number of Fatalities in 2013

http://geoalliance.asu.edu/sites/default/files/maps/LIGHTNING_FATALITIES2013.pdf

Disastrous Tornadoes: Number of Fatalities in 2013

http://geoalliance.asu.edu/sites/default/files/maps/TORNADO_FATALITIES2013.pdf

Book Sources

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The Handy Weather Answer Book by Walter A. Lyons: Visible Ink Press, Detroit, MI., 1997.

Time Life Student Library, Planet Earth published by Time-Life Inc., Richmond, VA., 1997.

'Weather" *Kids Discover Magazine*, edited by Stephen Brewer: Kids Discover, New York, NY., 1994.

Our Violent Earth, Books for World Explorers edited by Ross Bankson,:National Geographic Society, Washington D.C., 1982.