

Project-Based Learning

Natural Hazards Educational Campaign

Eighth Grade

Earth Science



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Earth Science

Overview

The USGS has released a Request for Submissions asking students to design an online educational campaign to be put on their Natural Hazards Program website.

While designing their educational campaign, students will explore how natural events can impact the Earth.

Students must demonstrate understanding by meeting the design requirements and communicating the impact of natural events on the local community.

Guiding Questions

How does the historic development of evidence support plate tectonic theory?

How can plate tectonics impact the formation of crustal features?

How can topographic and satellite maps be used to identify land and erosional features?

How can land and erosional features be reshaped by weathering?

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PBL Project Guide

Timeframe

This project will take approximately twelve 50-minute class periods.

Step-by-Step Overview

- Introduce Launch Video
- Introduce Entry Document
- Facilitate Know/Need to Know activity
- Students engage in an exploration activity
- Groups brainstorm initial design products and assign roles/responsibilities
- Groups alternate between facilitated content experiences and design time
- During design time, groups integrate new content into design and re-evaluate product(s)
- Groups finalize product(s) and presentation
- Groups present according to project guidelines
- Content Debrief
- Summative Assessment

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PBL Resources

Project Resources

- Launch Video: <http://youtu.be/uwuUN8ggdM4>
- Entry Document Text
- Anticipated Knows/Need to Knows
- Strategies/considerations for implementation

Resources to Assemble/Prepare

You may wish to assemble the following resources ahead of time:

- Formatted Entry Document to local context
- Sample authentic products similar to project expectations
- Informational resources about plate tectonics, natural events, and land features

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Entry Event Guide

Launch Video

Compilation of Earthquake in Japan:

<http://youtu.be/uwuUN8ggdM4>

Purpose:

Engages and introduces students to the impacts of natural hazards. Use video to solicit student responses to the following question:

What impacts did this earthquake have on Japan?

Post student responses.

Entry Document

Format:

Request for Submissions from the USGS. Edit document to include local city or community and logistics such as submission dates and presentation requirements.

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Entry Event Guide *continued*

Entry Document

Request for Submissions

The USGS is a science organization that provides impartial information on the health of our ecosystems and environment, the natural hazards that threaten us, the natural resources we rely on, the impacts of climate and land-use change, and the core science systems that help us provide timely, relevant, and useable information. Our mission is to provide reliable scientific information to describe and understand the Earth, minimize loss of life and property from natural disasters, manage water, biological, energy, and mineral resources, and enhance and protect our quality of life.

One of our efforts is the Natural Hazards Program where we work with many partners to monitor, assess, and conduct targeted research on a wide range of natural hazards so that policymakers and the public have the understanding they need to enhance preparedness, response, and resilience.

To enhance the program's website, we are accepting submissions for online educational campaigns that will help increase the public's knowledge of natural disasters and how they affect local communities.

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Entry Event Guide *continued*

Entry Document *continued*

Submission Guidelines:

- utilize historical evidence that support plate tectonic theory
- relate plate tectonics to the formation of crustal features on Earth and in your local community
- utilize topographic maps and satellite views to show how land and erosional features can be reshaped
- visually describe how weathering has changed your local community

Presentation Requirements:

Groups will present their educational campaign along with a 5-minute presentation on the due date. Additional consideration will be given to submissions that demonstrate creativity and are aligned with the USGS mission.

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What do we KNOW about the project?

Content

- Utilize historical evidence that support plate tectonic theory
- Relate plate tectonics to the formation of crustal features on Earth and in our local community
- Utilize topographic maps and satellite views to show how land and erosional features can be reshaped
- Visually describe how weathering has changed our local community

Product

- The USGS is accepting online educational campaigns to help increase the public's knowledge of natural disasters and how they affect local communities
- The educational campaigns are to enhance the Natural Hazards Program website
- 5-minute presentation on due date

Additional responses will vary

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What do we NEED to know about the project?

Content

- What is plate tectonic theory?
- What historical evidence supports plate tectonic theory?
- How does plate tectonics help form crustal features?
- What crustal features exist on Earth and in our community?
- How can topographic maps and satellite views be used to show how land and erosional features can be reshaped?
- How has weathering changed our community?

Product

- What is an online educational campaign?
- What natural disasters can we use in the educational campaign?
- What form of technology can we use?

Additional responses will vary

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Implementation Guide

Websites

USGS Earthquake Hazards Program:
http://www.usgs.gov/natural_hazards/

MCEER Natural Disaster Lesson Plans and Activities:
http://mceer.buffalo.edu/info-service/reference_services/naturalDisastersLesson.asp

Design Process:
<http://www.sciencebuddies.org/engineering-design-process/engineering-design-process-steps.shtml>

Teaching Strategies/Considerations

Consider the guiding questions for the project when selecting content workshops. A combination of research and hands-on activities should be included.

Have students develop an understanding of how natural events impact the Earth before designing educational campaign.

Consider having students use science notebooks or journals to meet the project expectations of recording their design process, design revisions, etc. Have them create rough drafts of their design.

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Assessment/Presentation

Final Product

- Educational campaign that meets submission requirements
- Visual description of how weathering has changed local community
- 5-minute presentation that meets presentation guidelines

Rubric

- Students will use the entry document as a real world rubric to meet expectations of the project

Individual

- Individual assignments as they pertain to each content workshop
- Journal entries documenting what the individual has contributed to the product(s)
- Summative assessment

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provides essential Project-Based case studies to K-12 teachers across the United States. These cases help support the development of authentic, inquiry-based learning environments to increase student achievement. Access case studies on Math, Science, English Language Arts and other STEM topics online at: WakeProblemBasedLearning.com



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