

Lesson title

Tales of Terrain

Duration

Two class periods

Grade level

6–8

Subject area

Earth science

Credit

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Objectives

Students will be able to do the following:

1. Identify significant landforms found in novels recently covered in class
2. Understand the geological terms that identify landforms

Materials

For this lesson, you will need:

- Novel previously studied in class
- Overhead transparency sheets
- Overhead markers
- Paper
- Rulers
- Drawing software (optional)

Procedure

1. Ask the class to consider the geography or location of a famous book they've read, such as Robert Louis Stevenson's *Treasure Island* or Jack London's *Call of the Wild*. Discuss how the book may have been different given a different location. For example: What would *Treasure Island* be like if there had been no Spy Glass Hill on the island? In *Call of the Wild*, how would Buck's life have been different if the author had set his story in the California gold rush rather than the Alaska gold rush? Talk about how the topography and location of a novel adds a significant dimension to the story.

2. Brainstorm and prepare a class list of previously read books that have some significant geographical features in their settings.
3. Have students select one book and list the topographical features encountered in the story.
4. Then ask students to draw a map on their overhead transparency sheets, incorporating the topographical features they identified. Students should label the geographical terms on their maps.
5. Have students share their maps on the overhead screen with the class and explain how geography affected the events of their story. How did the topography affect the plot or the characters? How would the story have changed if the landscape had been different? Challenge them to change the location of the story and create a new title for the book.
6. If the technology facilities are available, the project could also be done on the computer using drawing software.

Adaptations

Adaptation for older students: Once students have selected a book to study, have them identify the topographical features in the story and explain how they affected the plot and the characters. Then ask them to think of a different geographical location for the story and create a brief summary of the new story. How did the events and characters change?

Discussion questions

1. Describe continental drift. What kind of fossil and geological evidence is there of this phenomenon?
2. Describe the physical results of plate tectonics on the Earth's surface. Cite evidence to support your answer.
3. Classify volcanoes according to their characteristics and describe the forces that create them. What commonalities are you able to identify?
4. Discuss to what extent humans can have an impact on landforms. Should this be a concern? Why or why not?
5. Debate whether people should be permitted to live in known earthquake centers or near active volcanoes.
6. Explain how fossils can show evidence of Earth's history.

Evaluation

You can evaluate your students' maps by using a 4-point rubric:

- **Four points:** Map includes a complete key to landforms, a detailed list of definitions of terms, elements of creativity and attractive design, and detailed use of illustrations and lettering.
- **Three points:** Map includes a key to landforms, a list of definitions of terms, some elements of creativity and attractive design, and use of illustrations and lettering.
- **Two points:** Map includes a brief key to landforms, a brief list of definitions of

- terms, a few elements of creativity and attractive design, and use of some illustrations and lettering.
- **One point:** Map includes an incomplete key to landforms, an incomplete list of definitions of terms with few facts, a disorganized design, and use of some illustrations and lettering.

Extension

Landform Letters

If you don't currently have e-pals for your class, find a partner class to share information about local geography and interesting landforms. If you can, don't reveal your partner school's location. First, have your students exchange information about favorite recreational activities and the important products and crops for their state or country. Ask your class to predict the types of landforms found near their e-pals based on the list. Then have your students prepare a detailed topographical map of their area with definitions of the various landforms. If they don't know their partner's location, use a topographical map of the United States to make a guess. Exchange the maps with your e-pals and verify if their predictions were correct. What landforms do they have in common? Compare and contrast the activities and landforms.

Comparing U.S. Faults and Earthquakes

One of the most frightening and surprising events to experience is an earthquake. Scientists are now challenging the commonly held assumption that earthquakes are not predictable. They are studying faults and making recommendations for creating structures that can survive earthquakes. The Earth's faults provide the keys to these forecasts. Divide the class into groups and have them research the fault histories of states in the U.S., such as California, Washington, Alaska, Utah, and Missouri. Create a chart that compares their history and any recent theories that geologists have published on the faults.

Suggested readings

A Short History of Planet Earth: Mountains, Mammals, Fire, and Ice

J.D. MacDougall. New York: John Wiley, 1996.

This book presents an overview of the Earth's 4.5 billion years.

Collision Earth! The Threat from Outer Space: Meteorite and Comet Impacts

Peter Grego. New York: Blandford, 1998.

The Earth's geography has been shaped by inside as well as outside forces; this book recounts stories of known meteors and their Earth-shaping effects. It also tells of upcoming meteor showers and tips for amateur sky watching.

Web links

Ask-a-Geologist

Questions about volcanoes, earthquakes, mountains, rocks, maps, groundwater, lakes, or rivers are answered by a geologist via email.

<http://walrus.wr.usgs.gov/ask-a-geologist/>

USGS (United States Geological Survey)

Lesson plans and resources for teachers, across the grade levels. Emphasis on "hands-on" learning and the use of technology tools. USGS offers a wealth of resources.

<http://education.usgs.gov/>

Taking Winter by Storm

Information about winter storms.

<http://www.govlink.org>

Kids Web

A comprehensive digital learning resource library and information portal, especially designed for kids, families, and educators.

<http://www.kidsvista.com/index.html>

Vocabulary

agents of erosion

Definition: Forces that cause erosion, including running water, wind, waves, gravity, and glaciers.

Context: The agents of erosion were evident as one viewed the deep crevices in the canyon.

deposition

Definition: The process by which weathered materials are carried by erosion and deposited in new places, building new landforms.

Context: The geologist had spent considerable time analyzing the deposition on the mountain.

fault

Definition: A weak point of fracture in the Earth's crust where the rock layers have ruptured or slipped, or both.

Context: A new fault was identified after the devastating earthquake.

rock cycle

Definition: A series of natural processes by which rocks are slowly changed from one kind of rock to another.

Context: The students tried to classify the pebbles that they found according to the rock cycle.

vent

Definition: An opening from which lava and gases from the Earth's interior may flow.

Context: The tourists at the volcano site were told not to approach the vents due to safety concerns.

Academic standards**Grade level**

6–8

Subject area

Science

Standard

Understands basic Earth processes.

Benchmarks

Knows how landforms are created through a combination of constructive and destructive forces (e.g., constructive forces such as crustal deformation, volcanic eruptions, and deposition of sediment; and destructive forces such as weathering and erosion).

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Subject area

Science

Standard

Understands basic Earth processes.

Benchmarks

Knows how successive layers of sedimentary rock and the fossils contained within them can be used to confirm the age, history, and changing life-forms of the Earth, and how this evidence is affected by the folding, breaking, and uplifting of layers.

Grade level

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Subject area

Science

Standard

Understands basic Earth processes.

Benchmarks

Knows processes involved in the rock cycle (e.g., old rocks at the surface gradually

weather and form sediments that are buried, then compacted, heated, and often recrystallized into new rock; this new rock is eventually brought to the surface by the forces that drive plate motions, and the rock cycle continues).

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