#9194
GEOGRAPHY PRINCIPLES:
SOIL AND VEGETATION

CLEARVUE/eav
2000
Grade Levels: 7-12
20 minutes

DESCRIPTION

Surveys soil's formation, composition, properties, types, and movement. Also identifies the five major plant communities: tundra, forests, scrublands, grasslands, and deserts. The connection between soils and vegetation affects where people live.

ACADEMIC STANDARDS

Subject Area: Earth and Space Sciences

- Standard: Understands Earth's composition and structure
  - Benchmark: Knows how features on the Earth's surface are constantly changed by a combination of slow and rapid processes (e.g., weathering, erosion, transport, and deposition of sediment caused by waves, wind, water, and ice; landslides, volcanic eruptions, earthquakes, drought)
  - Benchmark: Knows the composition and properties of soils (e.g., components of soil such as weathered rock, living organisms, products of plants and animals; properties of soil such as color, texture, capacity to retain water, ability to support plant growth)
  - Benchmark: Knows components of soil and other factors that influence soil texture, fertility, and resistance to erosion (e.g., plant roots and debris, bacteria, fungi, worms, rodents)

INSTRUCTIONAL GOALS

1. To define *soil* and list the different types of soils.
2. To name the three categories that describe all terrestrial surfaces.
3. To understand what components are involved in soil formation and how those components work together.
4. To discuss the process of weathering.
5. To name several of the animals involved in aerating the soil.
6. To understand and discuss the concept of terrestrial ecosystems.
7. To name the different ways soil scientists describe and classify soils.
8. To define *texture* as it relates to soil.
9. To understand what the color of soil indicates about its composition.
10. To define the four types of erosion and how each erodes the soil.
11. To define *vegetative regimes* and list examples of each.
12. To understand the importance of soil conservation and discuss the different methods of conservation.

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VOCABULARY

1. aerate
2. blowout
3. clay
4. deserts
5. ecosystems
6. fertilization
7. glacier
8. grasslands
9. gravel
10. humus
11. inorganic
12. iron oxide
13. leaching
14. loams
15. loesses
16. mudslides
17. no-till farming
18. organic
19. parent material
20. regolith
21. sand
22. scrub land
23. silt
24. soil
25. soil conservation
26. soil erosion
27. terrestrial
28. tundra
29. vegetation
30. vegetative regimes
31. weathering
32. wind rows
33. woodlands

BEFORE SHOWING

1. Ask students if they can name what types of soil primarily make up the ground where they live. Can they list some reasons why soil is important in their region? Can they list some reasons why soil is important throughout the world? What type of vegetation grows around students' homes? Have students make a list of the different responses to each of these questions.
2. Ask students to define *erosion*. Then ask them what kind of weather occurs in their region. Does that weather contribute to soil erosion?
3. Conduct an informal discussion on places students may have visited that have different soil and weather from your region, such as the Southwest or the Great Plains. Have them describe their experiences.

AFTER SHOWING

1. What is *soil*? Why is soil important? What are the three general categories that can describe all terrestrial surfaces? How do these three types of rock work together?
2. What is soil made of? How are parent materials changed from rock into soil? What is *weathering*? What are some examples of weathering in your area?
3. What types of organic material are a part of soil? Name some of the animals that live in the soil. What is a *terrestrial ecosystem*? What is *humus*?
4. How does water work with soil? What is more important: the amount of precipitation or the amount of water in the soil? Why? How much water does your region get?
5. List the two ways soil scientists describe soil. What are the four texture classifications? What are the three basic colors of soil? What does each color mean? What is *leaching*? What color is the soil in your region?
6. How do soil scientists classify soil? How many classifications are there? What are the four most common soil classifications? What are the least common soil classifications?

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7. What are *vegetative regimes*? How many types are there in the world? What are the five vegetative regimes? What are the defining characteristics of each? What are the three types of trees that grow in forests? What types of trees grow in your area?
8. What is *erosion*? What are the forces of nature that are most often responsible for erosion? How does water work to erode the soil? How does wind erode the soil? What happens when a blowout is formed?
9. What is a *glacier*? How does a glacier erode the soil? How does gravity work to erode the soil?
10. What term is used to describe efforts to reduce erosion? What are soil conservation's goals? What are the primary ways to prevent soil erosion? How does soil conservation work to maintain the fertility of the soil? Ask students to find examples of soil conservation in their region.

RELATED RESOURCES

Captioned Media Program

- Bill Nye the Science Guy: Rocks and Soil #3579
- Soil and Decomposition #2012
- Soil and Water: A Living World #2013

World Wide Web

The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **USDA FOR KIDS**

http://www.usda.gov/news/usdakids/index.html

A U.S. Department of Agriculture site, click on "S.K. Worm" who answers questions "About Soil and Stuff!" "What does the weather do to soil?" "Do soils come in different colors?" "What is soil conservation?" and more questions are answered.

- **SOIL SCIENCE EDUCATION**

http://ltpwww.gsfc.nasa.gov/globe/index.htm

A NASA site, shows a picture of "Soil Profile Of The Month," explains "How Much Soil Is There?" "Every Soil Has A Story!" "Soil & the Environment," and more information.

- **UNDERGROUND ADVENTURE**

http://www.fmnh.org./ua/

Take a virtual tour of the exhibit as if you were a half-inch tall. During the exploration, provides sidebars for additional information. Do experiments alongside with scientists. Contains a link for teachers and for a Spanish version as well. Requires QuickTime and Shockwave, which can be downloaded for free.