

**TEACHING KATE
TEACHING KIDS ABOUT THE ENVIRONMENT**

WHAT IS INSIDE THE EARTH

Grade Level: 3

Time Required: 1-2 class periods

SC Science Standards

This lesson plan was correlated with only the grade level specified unless otherwise noted.

- I. A. 1. a
- I. A. 4. a
- II. A. 1. b
- II. C. 2. a
- III. B. 1. a

Purpose

The students will identify the three layers of the earth and describe some features of each layer.

Skills

Comparing, describing, hypothesizing, identifying, inferring, observing.

Concepts

The earth has three layers - the crust, the mantle and the core. The outer layer, the crust, is of the most concern to us because that is where the earth's different environments can be found; the influence of environment on what lives in each area can be studied; needs of plants and animals can be met.

Materials Needed

1 hard boiled egg
paper towels
1 globe

1 cake knife
1 paper plate
construction paper

Definition of Terms

<u>Core</u>	The innermost layer of the earth, found under the mantle, with a radius of about 2100 miles. The hottest part of the earth.
<u>Crust</u>	The outer layer of the earth.
<u>Desert</u>	Land where evaporation exceeds rainfall.
<u>Environment</u>	All the surroundings which affect the life and growth of plants and animals.
<u>Forest</u>	The trees and all the things that make up the environment where the trees grow.
<u>Mantle</u>	The layer of the earth between the crust and the core.
<u>Ocean</u>	The entire body of salt water that covers nearly 3/4 of the earth's surface.
<u>Plain</u>	A vast area of level or rolling treeless (for the most part) country.

Before the Session

Gather materials needed for activities.

Background Information

Because it is the easiest to study, scientists have accrued more knowledge about the surface of the earth's crust than the other layers of the earth. The crust varies in thickness from about 8 km (5 miles) under the ocean to 32 km (20 miles) under the continents. Environments found on the earth vary greatly in temperature and rainfall.

Deserts are found in areas where evaporation exceeds rainfall. These areas can support little primary production. They may be cold or hot. Only a small portion of the total desert lands are hot. These areas are extremely hot during the day but due to low moisture the air can not hold the heat and the areas may become uncomfortably cold at night. Examples of hot deserts are the Chihuahuan, Mohave and Sonoran in North America, the Sahara and Arabian in Africa and the Great Victorian in Australia. Cool deserts are found where cold winters are followed by prolonged drought. Examples of cold deserts are the Great Basin of North America and the Gobi of Asia.

The ocean is the large saline body of water that covers nearly 3/4 of the earth's surface and is nearly 7 km in depth in some places. All the individual oceans and seas are interconnected by currents, blanketed by waves and influenced by tides.

A Plain is a vast treeless area usually characterized by grasslands. The climate is characterized by a rainfall of 250 mm to 800 mm per year, a high rate of evaporation, a terrain which may be rolling or flat and animal life comprised of grazing and burrowing animals. The rainfall is too high for a desert but too low to support forests. In North America, grasslands once covered most of the area between the Eastern Forests and the Rocky Mountains. These were divided into three main categories based on the height of the dominant species and governed by climate and rainfall. Tall grass prairie was a narrow area running north and south along the edge of the eastern deciduous forest. Mixed grass prairie was typical of the great plains. Short grass prairies were found to the south and west of the mixed grass prairie and graded into the desert areas.

Forests consist of the trees and all the things that make up the environment where the trees grow. There are many types of forests such as coniferous (dominated by conifers), deciduous (dominated by trees which lose their leaves during the fall and put on new leaves in the spring) and mixed (containing both types). These types of forests are characterized by daily and seasonal temperatures which may fluctuate greatly. They may be found from mountain tops to low lands; and semi-arid and warm to wet and cold regions. Rain forests are characterized by little variation of temperature and high rainfall.

Suggested Lesson Plan

1. Cut a hard boiled egg in half lengthwise so that the shell, white and yolk are clearly visible. The students will identify these parts of the egg as layers. The teacher will explain that in this lesson they will learn how the inside of the earth is comparable to the inside of the egg.
2. Introduce the objective. Have students draw the three parts of the earth on a sheet of construction paper. Instruct the students to color, cut out and paste the drawing on another sheet of paper.
3. Use the drawings for discussion. Call on several students and ask them how the layers of the earth are like the layers of the egg. Ask the students, "How many layers do the earth and the egg have?" (3)
4. Present the terms crust, mantle and core as the names of the layers of the earth. Have the students identify each layer by labeling the egg and their drawings with these terms. Have students compare the thickness of the layers.

5. Have students list ways the earth's crust is used. Have each student (in groups of 5) read one use. Have the students list the 5 chosen uses and read lists to class. List on board and see how many different answers are given.
6. Ask students to identify pictures that show how the surface of the crust looks in different places. Tell students that the crust is also found beneath the oceans. Ask them to read about the crust from their textbook or give them a paragraph about the crust to read. Ask students, "What important materials are found within the earth's crust?" (coal, oil, iron, gold, etc.)
7. Direct each group to discuss the earth's environments. List desert, forest, ocean and plain on the chalkboard. Put a picture of each on the chalkboard.
8. Have students choose one picture and draw animals or plants that live in that environment.
9. Take students on a "nature walk" around the school campus. Ask them to look for animals and plants on the school grounds. Identify what is found. Discuss findings with the group.
10. Have students name three reasons why they think those animals and/or plants were there. Have them discuss what type of environment they are living in and what adaptations they have to enable them to live there.

Application

Plants and animals have different adaptations that allow them to live and survive in the different environments found on the earth's crust. Animals living in the ocean must be able to regulate their salinity, must be able to extract oxygen from water or be able to hold oxygen in their lungs and bloodstream for long amounts of time and must be able to survive the pressure exerted by water on their bodies. Plants living in the ocean must be able to get oxygen and carbon dioxide from the water and must be able to reach sunlight. They can get sunlight by floating on or in the water unanchored or may be anchored with a long stem and have structures that serve as floats. Most environments on earth, no matter how inhospitable have some type of plant and/or animal that are adapted to living there. Working in groups, students should pick an environment and learn about the plants and animals that live there and hypothesize their adaptations that allow them to survive in that environment. (Examples: many animals living in forests climb trees and/or live in cavities in trees for safety; many plants in forests are vining type which can vine up a tree to reach sunlight; many animals in desert areas live in burrows which are cooler than the surface and help them escape from predators and most plants in the desert are able to survive extended drought either by sprouting, growing, blooming and producing seeds very quickly; taking in as much water as possible when rain occurs and blooming; and/or blooming at night to conserve water.)

Extension

Have the students use three different colors of clay to make a model of the layers of the earth.

Resources Available

Elementary Science Program. 1987. Silver, Burdette and Ginn.

Elements of Ecology, 3rd edition. 1992. Robert L. Smith. Harper Collins Publishers Inc., New York, N.Y.

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