

**TEACHING KATE
TEACHING KIDS ABOUT THE ENVIRONMENT**

THE ECOLOGY OF A SITE

Grade Level: 9-10

Time Required: 5 weeks

SC Science Standards

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

- I. A. 1, 2
- I. B. 1, 2, 9, 10
- II. D. 3. b
- II. D. 4. b
- III. A. 3. b

Purpose

Students will become aware of the interrelationships and intricate balance among the components of the landscape - soil, vegetation, animals, landforms - by observing a selected site over a period of time.

Skills

Analyzing, classifying, drawing conclusions, interpolation, measurement, observation, scale drawing, surveying.

Concepts

Awareness of populations and systems and man's impact on them using identification of plants and animals, mapping and identification of soil horizons and types.

Materials Needed

large sheet of paper	construction paper
compass	camera and film
topographic maps	poster board
soil survey maps	
reference material for identification of plants and animals	

Definition of Terms

<u>A Horizon</u>	Surface stratum of mineral soil characterized by maximum accumulation of organic matter and maximum biological activity.
<u>Biome</u>	Major regional ecological community of plants and animals.
<u>B Horizon</u>	Soil stratum beneath the A horizon characterized by accumulation of clay.
<u>Community</u>	A group of interacting plants and animals inhabiting a given area.
<u>Ecology</u>	The study of the relationship between organisms and their environment.
<u>Ecosystem</u>	The biotic community and its abiotic environment functioning as a system.
<u>Habitat</u>	Place where a plant or animal lives.
<u>Soil Horizons</u>	Major zones or layers of soil, each with its own particular structure and characteristics.
<u>Soil Profile</u>	Distinctive layering of horizons in the soil.
<u>System</u>	Set or collection of interdependent parts enclosed within a defined boundary; the outside environment provides input and receives output transmitted to it by the system.

Before the Session

Divide the class into teams. Team members should live in close proximity since much of the activity will be conducted after school. Assemble maps, materials and reference books.

Background Information

Ecological relationships are the way that things in an environment interact with each other. Prior to a general study of world biomes, students will look at a small part of a system close to home and observe and record specific relationships. Students will also be able to observe other factors affecting the environment, especially the impact of man, and predict possible outcomes of this impact. By observing this first hand, students will be aware of man's impact on world biomes, both positive and negative.

Suggested Lesson Plan

Week 1- Selection and Mapping

1. Each team will select a site to be studied based on the following criteria:
 - a. the site should be natural occurring (not landscaped) with some identifying physical feature,
 - b. the site should have some recognizable boundaries (field, stream, wind break, etc.),
 - c. the site can be public or private land, but if private land you must obtain permission from the land owner,
 - d. the site should be approximately 1-2 acres in size and accessible to all team members.
2. Teams will map the area chosen and make a scale drawing marking directions.
3. Teams will turn in written directions to the site and a brief description of the site.

Week 2- Soil

1. Each team will take at least 4 soil samples from different areas of the site. The location of each sample will be marked on the map.
2. Teams will determine the predominant soil type(s) of their site using the soil survey for their county.
3. Teams will turn in soil samples and a brief report of soil type.

Week 3- Vegetation

1. Teams will survey plant populations of their site to determine dominant types. (Example: pine, oak, hickory, hardwood forest, mixed pine hardwood, etc.)

2. Teams will collect various plants or plant parts (ie. leaves, stems, fruit, seed, bark), if too large, and identify common and scientific names. Large trees or large areas of similar vegetation must be marked on the map.
3. Teams will turn in a scrapbook containing at least 12 different plants characteristic of their site properly identified and including a rendition of each as it looks growing.

Week 4- Animals

1. Teams will observe and list all animals seen on the site and all evidence of animal activity. This list should include:
 - a. insects, birds and other animals observed,
 - b. nests, burrows, spider webs, ant hills, or other homes,
 - c. droppings or tracks,
 - d. any other evidence of animal activity including man's.
2. Areas of intense or unusual activity must be marked on the map.

Week 5- Ecology

1. Teams will observe and study the relationships among the animals, plants and environment and draw conclusions about the interrelationships within the site.
2. Teams will photograph (at least 12 photos) various aspects of their site that best represent these interrelationships. The photos must be displayed on poster board with descriptive captions stating conclusions.
3. Teams will make presentations to the class using the photos, map, scrap book and soil profiles.

Application

Students will be able to understand the balance of components in landscapes of other environments throughout the world. By observing the delicate balance of interdependence, students will be aware of the need for conservation and protection or management of our resources. The class will discuss world wide environmental issues such as deforestation and desertification.

Students should become aware through this exercise that any action to an environment will produce a reaction. By knowing what reactions normally are generated, areas can be managed for certain goals. These goals maybe to sustain a harvestable timber crop, certain wildlife, a combination of both or some other goal of the landowner. By careful management we can go a long way toward preventing occurrences such as the Great Dust Bowl.

Extension

Students can research past ecological disasters. They should include the cause of the event, how it affected the area, how the event could have been prevented, an updated status report on the area affected and their forecast for the future of the area. (Examples: the Great Dust Bowl, the fire at Yellowstone Park.)

Resources Available

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

Prepared by: Patricia Shealy