TEACHING KATE
TEACHING KIDS ABOUT THE ENVIRONMENT

THE PLOT THICKENS...

Grade Level: 5 but appropriate for all upper elementary grades Time Required:

SC Science Standards

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

Grade 5:
- I. A. 1. a
- I. A. 3. a
- I. A. 4. a
- II. B. 1. b
- II. B. 2. b
- II. B. 4. a, b, d

Grade 6:
- I. A. 1. a 1
- I. A. 1. c. 1
- I. A. 1. d 1
- I. A. 3. a
- I. A. 7. a
- II. C. 1. d

Grade 7:
- I. A. 1. a. 1
- I. A. 1. c. 1
- I. A. 1. d 1
- I. A. 3. a
- I. A. 7. a
- II. B. 1. a
- II. D. 1. c

Purpose

Students will identify the species of plants and animals found in and environment. They will compare these findings to plant and animal species found in an unlike environment. Students will learn basic sampling procedures. They will acquire and compare soil samples from the two sites chosen.

Skills

Collecting specimens, communicating, comparing, concluding, describing, identifying, inferring, measuring, observing, predicting.

Concepts

Identification and characteristics of plants and animals, awareness of populations and ecosystems, understanding species and their habitats.

Materials Needed

2 Soil Probes	Magic Markers
Rope or Twine	2 Meter Sticks
8 Wooden Stakes	Small Shovels or Trowels
Several Specimen Jars	Magnifying Lenses (Hand Lenses)
Field Identification Guides	White Paper for Each Group
Pencils	Bug Spray (Repellant)
Notebooks	Chart Paper

Definition of Terms

Community	All the plants and animals that live and interact with each other in an area.
Ecologist	A scientist who studies ecology.
Ecology	The study of how living and non-living things affect each other.
Ecosystem	A group of living things and their non-living environment. It includes all the ways the living things in a group interact with each other or with their non-living environment.
Environment	Everything, living or non-living, that surrounds and affects living things.
Habitat	The specific surroundings within which an organism, species or community lives. The surroundings include physical factors such as temperature, moisture and light together with biological factors such as the presence of food or predators.
Niche	The role an organism plays in its community.
Population	All of the members of a single species that inhabit a defined geographical area.
Species	The members of a group of organisms that successfully interbreed with each other under natural conditions.

Before the Session

Scout out school grounds for areas to study. Try to find an area with trees and no (or very little) vegetation underneath and a grassy area within close proximity to each other. Have your materials ready for each group to transport out to the study site. Be sure the areas chosen for study are free from poisn ivy, poison sumac, poison oak or fire ants. Be sure students spray, especially their legs, before going outdoors.

Background Information

The world contains living and non-living things which affect, or interact with, each other. These living things exist in an environment. An environment can range from the immediate surroundings of a living thing to the entire planet.

An ecosystem includes all the ways the living organisms in an area interact with each other and their non-living environment. An ecosystem can be as small as where an earthworm lives or as large as a forest or ocean. A large ecosystem is made up of many smaller ecosystems. Usually the term ecosystem is applied only when referring to some part of the earth that is relatively self-sufficient.

Every type of organism can be found in a certain kind of locality. This place where the organism lives is called its habitat. One can think of the habitat of an organism as its community where it eats, sleeps, plays, reproduces, etc. Within an organisms habitat exists its home range. Every organism has a special job, or role, it plays in its community. This role is called its niche.

All the plants and animals that live in an area interact with and affect each other. This is called a community. Communities are made up of groups of living things called populations. Members of the same species make up a population. The populations within a community interact with each other. There are many habitats within a community.

Animal and plant populations affect one another's survival. The study of this is called ecology. Ecologists are interested in studying existing interrelationships as well as predicting the future survival of species and long term effects that outside influences may have on them.

Suggested Lesson Plan

1. Before going outdoors, have a general discussion on types of environments existing on the school grounds. Have students predict what type of animal and plant species might be found there.

2. Split the class into two groups and pass out supplies. The teacher may want to increase the number of groups, groups of 4 would allow more individual involvement. If so there must be a commensurate increase in supplies. One-half of the groups would go to one area and one-half to the other. Spray on insect repellant.

3. Take each group to their predetermined area. Have them measure a square meter of area, mark the four corners using the wooden stakes, and tie string on them to "rope off" or enclose the area for study. Remember, one group is studying a grassy area and the other group is studying a non-grassy area under trees.

4. Have each group make observations about their area and record them in their notebooks. Tell them to look for insects or animal life. Instruct them to use a hand lens to study small plants or insects.

5. Have students in each group collect a sample of each type of plant or animal they find and put them in specimen jars.

6. Have someone in each group use the soil probes to collect soil samples from both areas. Tell them to record observations about the soil's color and texture. Be sure they keep samples of the soil to take inside.

7. Take all the specimens back to the classroom. Have each group use guidebooks to identify their specimens.

8. Have students examine their soil samples with a hand lens, looking for living material, on a whit sheet of paper and record their observations.

9. Have each group organize their findings into the headings: Animals, Plants, Soil and record this information on a chart.

10. Display both charts along with each group's specimens for discussion. Discuss what the groups observed. Discuss ways the two group's specimens were alike and different. Talk about reasons for the similarities and differences.

11. Discuss ways the species, within each of their environments, interact with one another. Have students predict how their findings may be different if it were a different season. Discuss why it might be important to be able to identify species. Have them infer why ecologists would want to study environments and the species contained within them. Discuss why the soil plays an important role with the living organisms in the environment.

12. Discuss how environments are made up of ecosystems, ecosystems of communities and communities of populations.

NOTE:

This lesson plan would be a good precursor to studying factors that affect population size and how succession can change communities.

Application

All living things are interrelated with non-living and other living organisms. Survival of species often depends upon human intervention and management. For this reason, we must understand and appreciate how living and non-living things interact with and affect each other.

Resources Available

Science. 1987. Mallinson, Mallinson, Smallwood and Valentino. Silver Burdett and Ginn, Inc.

What's ecology? 1986. McCombs and Rosa. Addison-Wesley Publishing Company.

Prepared by: Susan W. Reynolds

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WORKSHEET — ...THE PLOT DISCOVERED

Name: Date:

I. List types of animal species found:

II. List types of plant species found:

III. Describe the soil sample:

WORKSHEET — ...THE PLOT DISCOVERED CONTINUED

Name: Date:

IV. How might these plants, animals and soils affect one another?

V. What would happen to the animals if all the plants in this environment died?

VI. Why is it important to study the above relationships and interactions?

VII. What other factors could affect the environment besides types of plants, animals and soil?

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THE PLOT THICKENS...

WORKSHEET — ...THE PLOT DISCOVERED

Name: Date:

I. List types of animal species found:

Answers will vary

II. List types of plant species found:

Answers will vary

III. Describe the soil sample:

Answers will vary

WORKSHEET — ...THE PLOT DISCOVERED CONTINUED

Name: Date:

IV. How might these plants, animals and soils affect one another?

The soil type helps to determine what kind of plants will grow in that environment. Plant species provide food for some animal species which helps determine what types of animals are found. Also, some animal species feed on other animal species.

V. What would happen to the animals if all the plants in this environment died?

The plants' death would eliminate food, some water and shelter that animals need. Thus, the animals would either move to a new location or not survive.

VI. Why is it important to study the above relationships an interactions?

All living things depend upon non-living or other living things for survival. We must first understand these interrelationships on a small scale and build on that to encompass a larger scale. Hopefully, this knowledge will cause us to think and result in responsible decisions and actions.

VII. What other factors could affect the environment besides types of plants, animals and soil?

Other factors might include: climate, temperature, weather, people, geographical location, etc. People are a special factor in a grassy area around a school. In most cases large earth moving equipment prepares a site before the school is built. Soil profiles are usually destroyed. If that is the case, the forest area will really contrast with grassy site.