

Field Enhancement 2: Observing Forest Interactions

NUTSHELL

In this lesson, preferable in a well-forested site, the class explores the living and nonliving parts of a forest while on a hike. Students spend individual quiet time observing and drawing parts of a forest. The lesson concludes with opportunities for students to act out and share what they observed.

ENDURING UNDERSTANDING

- Forests differ in composition and structure. These are both affected by biotic (e.g., animals, plants, humans) and abiotic (e.g., soil, moisture, sunlight, climate) factors.

ESSENTIAL QUESTION

- How do living things interact with other living things and with nonliving things?

OBJECTIVES

Upon completion of this lesson, students will be able to:

- List the two main parts of an ecosystem: living parts and nonliving parts.
- Identify how living things interact with their nonliving environment.

SUBJECT AREAS

Arts, Science

LESSON/ACTIVITY TIME

Total Lesson Time: 50 minutes

- Introduction.....15 minutes
- Activity20 minutes
- Conclusion.....15 minutes

STANDARDS CONNECTIONS

Standards for this lesson can be viewed online at the LEAF website (www.leafprogram.org).

CLASSROOM LESSON CONNECTIONS

This lesson ties closely with **Classroom Lesson 2, What Makes a Forest?** **NOTE:** Doing the field enhancement first may help prepare students for the classroom lesson.

BACKGROUND INFORMATION

Living things are different from nonliving things. The main difference is that living things have needs and can carry out life activities. The needs of animals include water, food, shelter, oxygen, and space. The needs of plants include sun, space, nutrients, water, carbon dioxide, and soil. Living plants and animals use energy to carry out life activities. These activities include growth, reproduction, and adaptation to their environment. Nonliving things do not have needs and they do not use energy, grow, reproduce, or adapt to their environment.

Living things depend on nonliving things in order to survive. Plants need water, energy from the sun, carbon dioxide from the air, and nutrients from the soil in order to produce food. Not all plants have the same environmental requirements. The plants found in a given area are determined by the quality and quantity of water, sun, nutrients, and soil on the site. The same is true for animals.

VOCABULARY TERMS

Ecosystem: An area that contains living and nonliving things existing together and interacting. Ecosystems come in all sizes (e.g., forest, meadow, log).

These differences produce different kinds of ecosystems. An **ecosystem** is an area that contains living things interacting with their nonliving environment. Let's look at the forest ecosystem as an example. In Wisconsin, we have four seasons. This means that the trees that live in our forests must survive hot and cold weather. The soil in Wisconsin varies from area to area. The type of soil present determines which trees will grow.

Sandy soil does not hold water and nutrients very well. Trees that tolerate these conditions such as pine, oak, and aspen grow in these areas. In other areas where the soil is richer, you may find elm, maple, ash, walnut, and spruce.

Nonliving factors also determine the types of animals that you find in an area. For example, some animals require a pond, wetland, or other water source to be readily available. Others may need wide open spaces to hunt in. Animals that live underground require soil that can be burrowed into. The amount of direct sunlight in an area will also affect the animals that live there.

TEACHER PREPARATION

Visit the teaching site in advance and decide on locations for the introduction and activity. For the introduction, find a place for a short walk where you can stop frequently to point out living and nonliving parts of a forest. The area for the activity should contain trees, plants, animals, insects, etc., for students to observe and draw.

MATERIALS LIST

For Each Student

- One piece of paper (8.5" x 11")
- Pencil
- Crayons or markers
- Clipboard or notebook to use as a writing surface

For the Teacher

- A copy of the story about Steven from the activity

SAFETY PRECAUTIONS

Visit the teaching site ahead of time to locate any hazards such as hanging branches, protruding tree roots, holes, poison ivy, or stinging nettle. Encourage students to walk, not run, at all times when in a forested area.

**"Trees are sanctuaries.
Whoever knows how to speak
to them, whoever knows
how to listen to them,
can learn the truth.
They do not preach learning and
precepts, they preach,
undeterred by particulars,
the ancient law of life."**

★ *Hermann Hesse* ★

PROCEDURE

Introduction - Living/Nonliving Walk

1. Take students to the forested area you have chosen for a short walk.
2. Discuss how forests have different parts: some parts are living and some are nonliving. Ask your students to tell you how living things are different from nonliving things. (*Living things eat and move, nonliving things do not. Living things have needs like food, water, and space. They can also change food into energy. They grow, reproduce, and adapt to their environment. Nonliving things do not have needs, they cannot reproduce, nor can they adapt to their environment.*)
3. Tell students that you are going to take a short walk together and that on the walk, you will point out different parts of the forest. The students must tell you whether each part is living or nonliving. Explain that they will not use their voices to do this. They will use two different signs to communicate with you. If you point to a living thing, the students will hold their arms up over their heads and shake their hands like the leaves of a tree shaking in the breeze. If you point to a nonliving thing, they will wrap one hand around the fist of the other to look like a rock.
4. Stop frequently to point out living and nonliving parts of the forest. What you point out will vary depending on your site. For living things, you might find trees, grass, plants, squirrels, birds, and insects. For nonliving things, you might find soil, air, rocks, water, dead insects or animals, fallen trees and branches, and dead plants. For each item, ask students to make one of the signs.
5. After the hike, gather students in a circle. Ask them to review the living and nonliving items they saw on the hike. Discuss how nonliving things determine what living things will be able to survive there. Ask students how many of them like cold and snow. Ask how many like it hot. Tell them that all living things have preferences. They survive best in a certain environment with certain conditions. If the conditions are not right, they may not survive there. Ask students if they think they could survive in the cold and snow if they didn't have a coat. Just like with other living things, if the conditions are not right, survival in an area is challenging.

Activity - Quiet Observation

1. With students still standing in a circle, tell the story below about a second (or third) grader named Steven.

STEVEN

One day, Steven went into the woods to find a place to sit quietly and watch the forest around him. He saw the sun and the soil. He noticed the warm breeze and the stream flowing through the forest. After he sat very still and very quietly for several minutes, he started to notice more things about the forest. The trees were filled with green leaves, and little plants nearly covered the soil on the forest floor. He saw how the sunlight shined on the green leaves and thought about how plants need sunlight in order to grow. Then a squirrel came scurrying by. The squirrel stopped to bury a nut in the soil and then scurried away. Just then, he heard a soft splash coming from the stream. He looked over to find three turtles sunning themselves on a log in the stream. A fourth turtle swam away slowly. After a few more minutes, Steven quietly got up and walked home.

2. After telling the story, ask students to list the ways that living things interacted with nonliving things in the story. (*Trees need **sunlight** to grow, the squirrel buried a nut in the **soil**, turtles need to live in the **water**, turtles also like to sit on **dead trees** and warm their bodies in the **sun**.)*)
3. Tell students you would like to give them an opportunity to have an experience like Steven's. Explain how they will sit quietly, watch living things interact with nonliving things, and draw pictures to record their observations. This could include a drawing of the trees, plants, and animals around them or a picture of a living thing interacting with a nonliving thing. Make sure they understand that in order to see living insects and animals, they need to sit very still and very quietly. Give each student a piece of paper, a pencil, crayons or markers, and a clipboard or notebook to use as a writing surface. Ask them to face the outside of the circle, take 10 large steps, sit down, and begin observing and drawing.
4. Allow up to 10 minutes for students to make their observations and drawings. To bring them back together, walk around the inside of the circle and quietly ask them to return to their small circle facing the center.

Conclusion - Charades

1. Once your group is gathered back together, allow everyone the chance to share something about their picture. During this discussion, be sure to bring out how living things interact with nonliving things.
2. Finally, ask someone to volunteer to act out something he/she saw that shows how living things interact with nonliving things. (This could include a squirrel burying a nut in the ground, a turtle sunning itself on a log, a tree blowing in the wind, etc.) Have the student perform the charade in the center of the circle. Afterward, ask the rest of the group what the volunteer acted out. Discuss the interaction between living and nonliving things that the volunteer portrayed in the charade. If time allows, ask several others to volunteer.

SUMMATIVE ASSESSMENT

Have students describe the nonliving things they interact with and that help provide for them.

SOURCES

Webster's New Collegiate Dictionary. (1953). Springfield, MA: G. & C. Merriam Co.

NOTES
