LESSON PLAN: (OAK FOREST) SURVIVAL NEEDS OF PLANTS AND ANIMALS

Observing patterns in the natural world

Lesson Overview

This lesson plan focuses on guiding students to use firsthand observations to understand the basic needs of plants, animals, and humans for survival. Through direct observation, recording, and discussion, students will identify patterns related to food, water, light, and space requirements.

Learning Objectives

- Students will be able to identify the basic needs of plants and animals (including humans) for survival.
- Students will be able to describe patterns related to how populations of a species changes based on availability or limitations of food, water, light, and space.
- Students will be able to record observations and use them to draw conclusions.
- Students will be able to engage in collaborative discussions, sharing observations and insights.

Vocabulary

- Species: a group of individuals having some common characteristics or qualities. A White Oak is one type of species of oak trees. A Brown Bat is one type of species of bats.
- Population: all the individuals of one species in a given area.
- Habitat: the natural environment of an organism; the place that is natural for the life and growth of an organism.
- Ecosystem: a system, or a group of interconnected elements, formed by the interaction of a community of organisms with their living (biotic) and non-living (abiotic) environment.
- Adaptation: any alteration in the structure or function of an organism or any of its parts that results from natural selection and by which the organism becomes better fitted to survive and multiply in its environment.

Lesson Activities

Activity 1: Oak Forest

1. **Visit the Brenton Arboretum for a field trip on our insect safari, pond exploration, and role play population dynamics of an Oak tree through our game Oak Forest.**

   Visit our website www.brentonarboretum.org/fieldtrips/

   Or we can visit your school to play Oak Forest in a gym or a large outdoor play area.

Activity 2: Classroom: Observing Animals (and Humans)

1. **Introduction:** Discuss with students what animals (including humans) need to survive. (Food, Water, Shelter
2. **Observation:** If possible, observe animals in their natural environment (e.g., birds outside the window, classroom pets).
3. **Recording:** Have students record their observations. Prompts:
   - What kind of food do the animals eat?
   - How do they get their food?
   - Where do they get their water from? How often do they drink?
   - What happens if animals or humans don't get food or water?
   - What kind of shelter or homes do they use?
4. **Discussion:** Facilitate a discussion about animal and human needs. Prompts:
   - What did you observe about what animals eat?
   - Do all animals eat the same thing? Why or why not?
   - What similarities and differences did you notice between what humans and other animals need?

Activity 3: Classroom: Observing Plants: Investigating Water and Light

1. **Experiment Setup:** Design a simple experiment to investigate the effects of water and light on plants. For example:
   - **Water:** Water one plant regularly and withhold water from another.
   - **Light:** Place one plant in a sunny location and another in a dark location.
2. **Observation and Recording:** Over several days or weeks, have students observe and record the changes in the plants. Encourage them to take pictures or draw their observations.
3. **Analysis and Discussion:** Discuss the results of the experiment. Prompts:
   - What happened to the plants that didn't get water or light?
   - What does this tell us about what plants need to survive?
   - Can we see similar patterns in other plants around us?

Activity 4: Connecting to Modern Day Designed World

1. **Discussion:** Discuss how humans design systems to meet their needs for food and water (e.g., farms, irrigation systems, water treatment plants). Also, discuss how pet owners are responsible for ensuring their pets basic needs are met.
2. **Examples:** Show examples of farming practices, water treatment facilities.
3. **Prompt:** Ask students how these designs reflect the patterns they observed in the natural world.

Activity 5: Connecting to Pre-European Designed World

1. **Discussion:** Discuss what humans lived in Iowa before the first settlers such as Julien Dubuque, a French-Canadian man who arrived at the lead mines near modern-day Dubuque in 1787.
2. www.lib.uiowa.edu/exhibits/previous/native
3. Prompt: Ask students the differences between how students lived in Iowa 9,000 years ago compared to now?
   - ☐ What were the needs of people 9,000 years ago compared to today?
   - ☐ How did the people fill these survival needs?

Assessment

- **Observation Journals:** Review student journals/ recordings for accuracy and thoroughness of observations.
- **Class Participation:** Assess student engagement and contributions during discussions.
- **Pattern Identification:** Evaluate students' ability to identify and describe patterns related to the needs of living things.
- **Problem Solving:** Assess student understanding of how to solve a problem (e.g., a plant is wilting, answer why and how to resolve it) related to meeting living thing's needs.
- **Support:** Provide sentence starters or simplified recording sheets for students who need assistance.
- **Challenge:** Encourage advanced students to research specific adaptations that plants and animals have developed to meet their needs in different environments.

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