Vernal Ponds Program

Intermediate Level Science
Core Curriculum Grades 5-8

Overview:

- Standard 1, Key Idea 1, 2, 3
- Standard 2, Key Idea 1
- Standard 4, Key Idea 1, 3, 4, 5, 6, 7
- Standard 6, Key Idea 1
- Standard 7, Key Idea 1, 2

Note: The blue text explains how the standard directly applies to the program.

Standard 1: Analysis, Inquiry, and Design
Scientific Inquiry

Key Idea 1: The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.

Students will explore the different elements of a vernal pond and investigate what makes these ponds unique and important to the Pine Bush ecology.

Key Idea 2: Beyond the use of reasoning and consensus, scientific inquiry involves the testing of proposed explanations involving the use of conventional techniques and procedure and usually requiring considerable ingenuity.

Students will use technology to test the water quality of the pond and collect data. Students will also observe and identify different plants and animals existing in the pond and record their findings in a journal.

Key Idea 3: The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provides new insights into phenomena.

Students will reflect on their observations, why their research is important and answer the question, “what is unique about a vernal pond, and why are they important?”

Standard 2: Information Systems

Key Idea 1: Information technology is used to retrieve, process, and communicate information as a tool to enhance learning.

Water quality probe equipment will be used to assess the pond and students will record their data.

Standard 4: The Living Environment

Key Idea 1: Living things are both similar to and different from each other and from nonliving things.

Students will identify plant and animal species by observing their external characteristics and determining their classification from a field guide.

Key Idea 3: Individual organisms and species change over time.

Students will learn the role of plant and animal adaptations in a changing environment and how these adaptations improve the survival chances of the organism. They will also learn how pictures of a location over time can show the changes that take place in the area.

Key Idea 4: The continuity of life is sustained through reproduction and development.

Students may observe animals at different stages in their life cycle (ex. larvae, tadpoles, etc).

Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life.

Each animal in a vernal pond is part of an intricate food web and relies on other organisms to survive. Students will learn about this delicate balance and how organisms in the vernal pond are interconnected.

Key Idea 6: Plants and animals depend on each other and their physical environment.

Students will see how animals interact with the physical environment in and surrounding the pond, as well as how they interact with other animals.

Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environment.

By examining the water quality of the pond, students can see how human impact is influencing the quality of vernal ponds and why conservation is so important.

Standard 6: Interconnectedness: Common Themes

Systems Thinking

Key Idea 1: Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.

The different components to a vernal pond ecosystem interact and influence each other. This will be discussed, as well as how external influences (pollution, human disturbance) can impact such a delicate wetland system.

Standard 7: Interdisciplinary Problem Solving

Connections

Key Idea 1: The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.

Students will analyze the importance of vernal ponds to Pine Bush ecology and consider the cost of human influences on this delicate ecosystem as well as what can be done to protect these areas.

Strategies

Key Idea 2: Solving interdisciplinary problems involves a variety of skills and strategies, including effective work

habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.

Students will work together in small groups to collect data and identify and research specimens.