

“Pondering Pests”

This unit is aligned with the Target Standards from the Pennsylvania Academic Standards for Environment and Ecology that are designed to teach students the importance of knowing about pests and pest control as well as understanding society’s need for Integrated Pest Management (IPM). The students learn the steps and importance of IPM using the fruit fly as a model pest. Using the model pest throughout the unit, the students learn how to identify the organism, the biology of the fruit fly, when/where the fruit fly is/is not a pest, and the best pest control methods for the fruit fly.

Students begin the unit with a neighborhood walk to identify and classify pests relevant to their lives such as those present in the neighborhood and those that affect the food supply. Students then complete a food web activity to learn about the natural and important role that these so called “pests” play in the environment. Next, students learn about pest control methods and how to classify them into the three categories of pest control including chemical, biological, and physical. Examples of each method are brought into the classroom. For the chemical method, the students learn how to read a pesticide label and are given a chance to create their own pesticide label demonstrating their knowledge of the important parts of the label. In addition, the students create a pesticide timeline to reveal the affects of the chemicals on the environment and food chain. The biological method is taught using the class model pest, in which the students write hypotheses and record results. In conclusion, Integrated Pest Management is introduced as a safe and effective way to decide how to control pests. It combines your knowledge about the pest, the pest control, and the effects the pest control will have on you and the environment. At the end of the unit students should conclude that pests are phenomenal! They are required to complete a research project on a pest that demonstrates their knowledge of IPM.

Soil

This unit is aligned with the Target Standards from the Pennsylvania Academic Standards for Environment and Ecology that are designed to teach students the interaction of abiotic and biotic components in an ecosystem, the role of cycles in the environment, and that different soil types determine the characteristics of the ecosystem. Students will begin by discussing the importance of soil in the environment. They investigate the components of soil by observing two different types of soil, conducting a soil jar settling experiment, and investigate a mystery soil for the different components using a smear, smell, and roll test. Next students begin unit-long experiments to learn about processes that occur in the soil, such as decomposition. Students also learn the difference between composting and decomposition. During the decomposition experiments students learn about the different types of decomposers (Microbes and Macrobes). Students are given a chance to learn in depth about and observe fungus, bacteria, and worms. The students pull all of their knowledge together in the last week as they compose a soil cycle poster.

The Wonderful World of Weather

This unit is aligned with the Target Standards from the Pennsylvania Academic Standards for Environment and Ecology that are designed to teach students the basic weather elements, the basic landforms and earth history, as well as recognize the earth's different water resources. Throughout the unit students make a variety of weather instruments and construct a weather station at the end of the unit. Students begin the unit by discussing the different seasons and acting out the reason for the seasons including the structure of the universe and the earth's place in it. From this, the students make a connection between sun and temperature on the earth. The students conduct an experiment with a balloon and hair dryer to further connect the concepts of temperature and moving air. An anemometer is constructed to learn how meteorologists measure wind speed. Next the water cycle is introduced with experiments on evaporation, condensation, and precipitation. The students make their own clouds in a bottle and discuss the different types of clouds. Now that the students have learned about many forms of weather, the students assemble their weather stations including the thermometer, anemometer, and rain gauge.

After learning about the basic elements of weather, the students learn how non-living things are affected by weather. The students conduct several erosion and weathering experiments to learn the effects of weather on land. Different size rocks and pictures of the Grand Canyon are brought in to facilitate the discussion on erosion and weathering. The students conduct experiments that show chemical, mechanical and biological weathering. Students also investigate how wind and water play a role in erosion. Lastly, the idea of weather affecting non-living things will be applied to the student's lives. They hypothesize what will happen if they leave their bike outside for a long time and then conduct a series of experiments to observe the formation of rust under different environmental conditions.

Plants!

This unit is aligned with the Target Standards from the Pennsylvania Academic Standards for Environment and Ecology that are designed to teach the similarities and differences of plants, the plant cycle, and that living things are made up of parts that have specific functions. The students begin by learning the characteristics of plants by observing different living organisms and determining whether or not they are plants. They investigate how seeds come in all different shapes and sizes and hypothesize the methods of dispersal. The students are also given the opportunity to dissect a seed and observe the different parts of the seed (cotyledon, embryo, seed coat, and leaves). Several experiments determine what conditions a seed needs to grow into a plant. At the end of the unit, the students are guided through a series of experiments that demonstrate the functions of the different parts of the plant and how these functions are essential to the survival of the plant.