7th Grade: From Plant to Predator to Prey

Course description: Over the course of this lesson, students will learn how energy and matter move through ecosystems highlighting key points such as food webs, food chains, and ecological pyramids. Students will discuss new ideas like allometry and the 10% rule to understand the energy needed to sustain life and how energy flows through ecosystems.

Day 1: During this lesson, students will learn how energy is entered into an ecosystem through photosynthesis in plants and understand the sun as the source of energy for all life on earth. Through this lesson, students will be able to identify the different parts of the plant, the basic components of photosynthesis, and why plants are important.

Demonstration: It's time to plant seeds! In order to understand how photosynthesis works and conclude that solar radiation powers ecosystems. Students will get to plant their own bean seeds that they will be able to take home with them. We will bring in an herbivorous species to show at the end of the class to get the kids excited about consumers.

Day 2: For this lesson, students will be focusing on consumers in an ecosystem. They will learn about primary, secondary, and tertiary consumers. This will begin with an introduction to food chains and the ecological pyramid to look at different trophic levels and discuss the 10% rule of energy transfer among organisms. Students will look at the concept of allometry, as creatures increase in size, they require ¾ power x calories.

Demonstration: We will talk about different food chains and how energy is transferred within an ecological pyramid. Students will go outside and be able to walk on a life-sized food chain and food pyramid. Students will learn about the different types of consumers and how energy is transferred. We will bring in insects with different diets to talk about how energy is transferred through ecosystems and how allometry affects the amount of energy they require to sustain life. Once students have walked around on a few food chains, they will have to categorize them on the food pyramid to understand how energy flows through a food chain.

Day 3: On this day students will focus on decomposers. They will learn about the importance of decomposition for matter to cycle through an ecosystem.

Demonstration: Students will learn about different types of insects that aid in breaking down dead and dying organic matter. Our educators will show them several different detritivores and decomposers while talking about how they aid in recycling matter in an ecosystem.

Day 4: On the final day of this unit, students will focus on the food web as a whole and how all organisms are connected. Building on the knowledge students have of food chains, ecological pyramids, and their components, students will now learn about food webs through two interactive activities.

Demonstration: First the students will have cards on their heads that label them as a different part of the food web and long strings of yarn that they will use to make the different connections and be a part of a physical food web. Next, students will again have cards on their foreheads, and they will need to find out from other classmates through clues whether they are a consumer, predator, or producer based on clues from their classmates. We will bring in some different insects and talk about their involvement in the food web.