

Session 3: Biodiversity

The pre-lesson video for the Biodiversity VFT prepared students to explore *NGSS* standard 2-LS4-1, “Make observations of plants and animals to compare the diversity of life in different habitats.” Exploring animal diversity through diet classifications, a FDC educator reviewed characteristics that shape herbivore, carnivore, and omnivore diets. Students observed animal teeth, beaks, and other physiological features to demonstrate how these adaptations allow for each animals’ survival in their respective habitats. Teachers facilitated a discussion connecting the video to students’ own lives by asking, “Are there carnivores, herbivores, or omnivores in your own home or habitat”? In preparation for the VFT, guiding questions are used to help focus the discussion on the role of plants and animals that support ecosystems, like pollinators. Students considered guiding questions such as, “What does a plant need from its habitat? Do you know of any animals or plants that are needed to help your food grow?”

With FDC educators, students crafted a model of a bee pollinating flowers in alignment with *NGSS* standard 2-LS2-2, “Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants” (National Research Council 2012). The VFT began when a FDC educator introduced a rabbit living at the ISLE. We gathered initial student observations of the rabbit and asked students, “What do rabbits eat?” Because rabbits depend on plants for their diet, the FDC educator communicated the importance of pollinators such as bees, butterflies, bats, and other insects for an herbivore’s survival. To model how pollinators pollinate, students used a piece of black construction paper and chalk to draw one flower with a colored inner circle and one flower with an empty circle (Figure 1). Next, students assembled a bee out of pipe cleaners by twisting it into shape (Figure 2). After assembling the pipe cleaner bee, students modeled a bee collecting pollen by rubbing the bee onto the flower with the colored inner circle, transferring chalk onto the bee. The chalk visible on the bee represents pollen, and students model the transfer of pollen from one flower to another by rubbing the bee on the flower with an empty circle. This activity visualizes the transfer of pollen between flowers and simply models the process of pollination for students.



Figure 1. Students created chalk flower drawings to represent the process of pollination.



Figure 2. Students assembled a bee shape out of pipe cleaners.

In the post activity, students received materials to conduct a germination experiment with radish seeds. Two plastic bags, paper towels, seeds, and paper rulers were used to investigate standard 2-LS2-1, “Plan and conduct an investigation to determine if plants need sunlight and water to grow” (National Research Council 2012). By growing radish seeds under different light conditions, students determined how light exposure affects seed germination. Labeling one bag

“light” and another bag “dark,” students placed five seeds in each bag and monitored the growth of the seeds daily for five days. The bag labeled for the light condition was placed by a bright window, while the bag labeled for the dark condition was stored in a shady area. Students recorded daily observations and measured the length of the germinating seeds to compare the treatments for their investigation.