



Theme: Plants (Grades 3-5)

Pre-Visit Activity #2 Plant Adaptations

Overview:

Students will examine pictures of desert plants and brainstorm characteristics of desert plants. Desert plants have two main adaptations in order to survive in our desert, the ability to collect and store water and the ability to prevent water loss.

Objectives:

- Students will understand that plants need to make adaptations in order to survive in our desert.
- Students will learn about specific adaptations of some desert plants.

Materials:

- Photos of desert plants:
 - Creosote bush
 - Saguaro cactus
 - Cottonwood tree
 - Cup leaf sage
 - Old man cactus
- Drawing paper
- Colored pencils or crayons

Background:

Adaptations have occurred in order for plants to survive in our desert. The cacti usually have special means of *storing and conserving water*. They often have *few or no leaves*, which reduces transpiration. The stem of the saguaro stores all of its water. You will notice that after a rainfall the saguaro stem has expanded like an accordion.

Some plants have adapted by growing extremely *long roots*, allowing them to get moisture at or near the water table. The cottonwood tree is a great example of this.

Other desert plants, using behavioral adaptations, have adapted to the seasons. Desert perennials often survive by remaining dormant during dry periods of the year, then coming back to life when water appears.

Some plants like the creosote bush have *pin-like leaves or small leaves* to reduce water loss.

Activity:

1. Brainstorm ideas with the students about plant survival in our desert. Ask: How do you think plants grow in a place that is very hot and receives approximately 4 inches of rainfall a year?
2. Divide students into five groups.
3. Provide each group with a picture of a native desert plant.
4. Have each group make at least three observations about their plant.
5. Come together as a class sharing observations.
6. As a class, discuss how these observations are adaptations which allow these plants to live in the desert environment. Some adaptations of the plants are:
 - Creosote Bush - Small, waxy leaves reduce water loss
 - Saguaro Cactus - Stores water by expanding like an accordion
 - Cottonwood Tree - Deep root system taps into ground water
 - Cup Leaf Sage - Cupped leaves provide shading
 - Old Man Cactus - Hair on the spines acts as protection from the sun
7. Brainstorm ideas with the students about plant survival in other areas. Ask: What sort of adaptations do you think plants have in other climates?
8. Have students create and draw their own desert plant with unique characteristics/adaptations.
9. Have the students present their creation to the group.

Suggested Reading:

1. ***Eddie's Garden*** by Sarah Garland. Eddie learns all of the things plants need in order to grow as he and his family create their own garden.
2. ***The Gardener*** by Sarah Stewart. In the middle of the Great Depression, little Lydia Grace finds happiness in a new home by gardening to create beauty.
3. ***Jack's Garden*** by Henry Cole. Readers get an up-close look at a garden and its inhabitants as it is planted and grown by Jack.
4. ***Ladybug at Orchard Avenue*** by Kathleen Weidner Zoehfeld. Readers follow a ladybug through a garden as it prepares for the cold winter ahead.
5. ***Miss Rumphius*** by Barbara Cooney. A woman discovers the splendor of plants and the wonders of seed travel while on a quest to make the world more beautiful.
6. ***A Packet of Seeds*** by Deborah Hopkinson. Annie's mother is upset about having to move away from their home, but finds comfort in creating a garden full of plants from home.
7. ***A Place to Grow*** by Soyung Pak. A father teaches his daughter about the importance of a proper environment, both for plants to grow, and people.

8. ***Plantzilla*** by Jerdine Nolen. Mortimer Henryson and his family learn about the importance of caring for a plant when Mortimer brings Plantzilla home from school.
9. ***Tops & Bottoms*** by Janet Stevens. A clever hare tricks a lazy bear out of his share of the harvest until the bear understands the value of hard work in the garden.
10. ***Weslandia*** by Paul Fleischman. A boy creates his own civilization entirely based on his garden with unusual plants.
11. ***Whose Garden Is It?*** by Mary Ann Hoberman. Mrs. McGee learns about the great amount of impact a garden and the plants within it have on many different creatures.