Parts of a Plant

Outdoor Classroom Field Journal Activity Teacher Tips

Students will explore the outdoor classroom to investigate the internal and external structures of different plants and collect evidence as to how those structures function to support survival, growth, behavior and reproduction.

Outdoor Classroom Connection: As the students explore the outdoor classroom, they can identify how different plants have different types of flowers, stems, leaves and roots that all function to support survival.

Duration: Intro Discussion – 20 min. | Outdoor Exploration – 20 min. | Review Observations – 20 min.

Materials: Copies of the "Parts of a Plant" Field Journal Activity Page, Clipboards, & Pencils, field identification guides such as *National Audubon Society's Field Guide to the Southeastern States*

Background Info & Resources

The internal and external structures of plants serve specific functions and they work together as part of a system to support survival, growth, behavior, and/or reproduction.

Roots: Just like us, plants need to take in water and nutrients (food) to stay alive. Of course, plants don't have mouths to eat and drink, so they draw nutrients and moisture in through their roots. Tiny root hairs stick out of some roots, helping in the absorption. Because roots have the ability to spread throughout the soil, they anchor the plant to the ground. This prevents the plant from getting whisked away when the wind blows or the rain water runs. The roots also store food for the plant for future use. Sometimes we eat these roots such as a carrot.

Stem: The stem is the stalk or trunk of a plant. Like the roots, stems also help the plant survive. They act like the plant's plumbing system, conducting water and nutrients from the roots and leaves to other plant parts. Stems can be **herbaceous** like the bendable stem of a daisy or **woody** like the trunk of an oak tree. The stem or trunk also provides support for the branches and leaves in heavy winds and rain.

Leaves: Most plants' food is made in their leaves. Leaves are designed to capture sunlight which the plant uses to make food through a process called photosynthesis. In addition, leaves take in carbon dioxide that the plant needs to survive, and then they release oxygen into the environment.

Flowers: Flowers are the reproductive part of most plants. Flowers contain pollen and tiny eggs called ovules. After pollination of the flower and fertilization of the ovule, the ovule develops into a fruit. The fruit provides a covering for seeds that can be fleshy like an apple or hard like a nut. The seeds contain the new plants.

Thorns & Other Adaptations: In addition to the internal and external structures in a plant, plants also survive throughout time by adapting. For instance, think about a plant that is in the forest. If deer or other herbivores like eating this plant, then the plant might have limited growth or be unable to reproduce. However, if this plant developed thorns then the plant has a greater chance of survival to grow and reproduce. Plants have a wide variety of adaptations to help them survive.

Technology Connection: Internet access to PBS Learning Media: Plant Structure
This on-line video from KET's Think Garden collection examines plant structure by taking a closer look at the roots, stems, leaves, flowers, seeds, and fruit through engaging illustrations and animations.
https://www.pbslearningmedia.org/resource/5dea21b4-6c92-46ff-982c-8650f9429c01/think-garden-plant-structure/#.Wp2GmOjwY2w

Literature Connections: *Amazing Plant Powers: How Plants Fly, Fight, Hide, Hunt, & Change the World* by Loreen Leedy AND *From Seed to Plant* by Gail Gibbons

Example Discussion Questions & Answers:

Q: What do plants need to survive? What do they need to grow and reproduce?
A: Just like us, they need food, water, air, and sunlight. They also need shelter or a way to survive bad storms.

Q: How do plants get food?
A: The plant's leaves use sunlight to convert carbon dioxide and water into food through a process called photosynthesis. The plants also pull in nutrients from the soil using their roots.

Q: How do plants get their water?
A: Their roots also pull in water from the soil.

Q: How does the water get from the roots to the rest of the plant?
A: The water is transported to different parts of the plant through its stem or its trunk and branches.

Q: If the plant is healthy, how does it reproduce?
A: The plant's flower contains pollen and tiny eggs called ovules. Butterflies, bees and other insects carry pollen from flower to flower, which fertilizes the ovules through a process called pollination. The ovule develops into a fruit, and the fruit provides a covering for the seeds that contain the new plants.

Q: So, why do all plants have similar internal and external structures like the roots, stem, leaves, and flowers?
A: They exist to assist the plants survive, grow, and reproduce.

Q: Where are some potential places in our outdoor classroom to observe different types of plants?
A: We can look in the gardens, along the tree trail, and in grassy areas.

Procedure

1. Use the Background Info & Resources (*on pages 1 & 2*) including the video, books and discussion questions to introduce the internal and external parts of a plant and how they function.
2. Explain the directions for the OC Field Journal Activity.
3. Review the rules for visiting your outdoor classroom with the students, including the rule about not harming any living thing that lives in the outdoor classroom.
4. Go to the outdoor classroom and carefully look for two different types of plants. Record their observations.
5. Review their data and observations. Confirm that they understand the various parts of plants and they function together to help the plants grow, survive and reproduce.

 **Alabama Course of Study Standards for Fourth Grade**
Language Arts (2016): 12.) Explain the relationships or interactions between two or more scientific concepts. 13.) Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a Grade 4 topics. 16.) Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. 23.) Write informative or explanatory texts to examine a topic and convey ideas and information clearly.
Science (2015): 9) Examine evidence to support an argument that the internal and external structures of plants (e.g., thorns, leaves, stems, roots, colored petals, xylem, phloem) and animals (e.g., heart, stomach, lung, brain, skin) function to support survival, growth, behavior, and reproduction.