



PLANT SURVIVAL: SUPERPOWERS AND NEEDS * 2021

Grade Level: 1st grade

Setting: Prairie, field trips at Magpie Meander, North Shields Ponds, Red Fox Meadows or any other Natural Area

Theme/Bottom line: Plants have specific needs for survival and have unique parts (adaptations) that help them to survive.

Description: Students will discover that plants have unique characteristics (adaptations) that help them survive and have basic environmental needs for survival.

BIAS: **Biology**

Time: 30 – 40 mins

Recommended group size: 10-15

FOSS Kit: New Plants

State Standards: Life Science 2.2 Analyze the relationship between structure and function in living systems at a variety of organizational levels, and recognize living systems' dependence on natural selection. An organism is a living thing that has physical characteristics to help it survive.

Materials:

- Pictures of Plants and Plant Parts
- Set of Bags with plant needs inside (4 bags: each containing one of the following items: model of the sun with mirror, bottle of water, balloon filled with air, small bucket of soil- collect soil from the base of the plant or area around it and fill the cup as part of the set up)
- Jug of water to refill water bottle, extra balloons
- 5 Flags to mark the plants (choose the path to travel and the plant prior to the lesson beginning). Mark 4 plants along the route that clearly show the different plant parts and choose one plant at the end of the route to flag as the plant "friend"
- Plant Clues for each plant's survival need (4)
- Examples of plant parts: Roots- Carrot, Stem-Celery, Leaves- leaf, Seeds- Sunflower Seeds or Acorns

***Nat Note:** Set up bags with plant needs along the trail from the starting point (1. Sun 2. Air 3. Soil 4. Water). Choose a plant or tree at the end point of your walk that will be the plant "friend" to give the plant need gifts to. Choose a plant in an area where students can gather around it and that has other plants nearby if possible. Mark the plant with the flag. Flag 4 other plants along the way to stop at (see above).*

Welcome students and introduce yourself and any other volunteer. Encourage Adults to participate by giving them each a task. Remind them of the difference between a Natural Area and a Park. Explain the theme of the lesson and begin.

ENGAGE

- Ask the students what do they need to live? (Food, water, air, etc.) Plants need some of these same things to survive too.
- Tell the students that today they are going to learn about some of the things that plants need to survive and share these “nature gifts” with a plant “friend”. We will also learn about the different plant parts (adaptations) that help them to survive (plant superpowers).
- Ask the students to pretend they are a plant. What are some of the parts of the plant? Show a picture of plant parts or an example from the natural area if available).
 - Roots- Pretend you are a plant rooted into the ground... feel your roots growing down out of your feet and holding you to the ground. Reaching deep into the soil to suck up moisture and nutrients. (Make sucking sounds and have them pretend to suck up water through their roots). How does this make the plant strong? What does it do for the plant?
 - Stem- Stand with your body straight and tall like a strong stem of the plant. Imagine the water and nutrients flowing up and down your body, just like a plant. (Students stand tall and don't bend their arms or legs.) How does this make the plant strong? What does it do for the plant?
 - Leaves- Stretch your hands out and pretend they are leaves, soaking up the warm sunlight and helping the plant make food for energy. (Stretch up your arms and palms, look up and feel the sunlight on your hands and face.) How does this make the plant strong? What does it do for the plant?
 - Seeds- Imagine that you are using all the nutrients you are sucking up from the soil and making from the sunlight to grow flowers, fruits and seeds. (Students imagine their favorite flower or animals or birds eating their seeds. Pretend to drop their seeds on the ground to grow new baby plants. Have a few students share their thoughts.) How does it make the plant strong? What does it do for the plant?
- Explain that not only do plants have special parts (superpowers) that help them survive, but they use these parts to help meet their survival needs by accepting gifts from nature. Today we are going to explore and find these “nature gifts” that help plants survive.

Nat Note: Establish clear boundaries before beginning the walk. Students must stay behind the leader on the trail. You will choose a student who is waiting quietly to read the clue and choose another student to open the bag and take out the gift. Another student will get to carry the bag to the plant friend. Make it clear that you will do your best to give every student a job to do, but not everyone will get to open the bags. On the way back you can have students help you collect any flags or materials left near plants.

EXPLORE/EXPLAIN

- Gather the students into a group and have them review some of the things plants need to survive. Tell them that they are going to look for gifts to collect to help a plant meet its needs for survival. Head down the trail and look for “gift bags” along the route. We will collect some gifts to bring to a special plant friend waiting for us in the natural area.
- Along the trail there are four stops, each one at a plant that is flagged and has a gift bag next to it with a clue. Each stop is outlined below. Choose a different student at each stop to read or solve the clue, one to open the box, then choose another student to carry the gift to the plant friend at the end of the trail.
 - Stop 1- Sun-Stop at a plant that has visible leaves (if possible) Have a student read the clue and they can try to guess what the gift is. Open the bag and take out the sun model. Ask what is this? How does it help the plant survive? Do you feel the warmth of the sun shining on you? Do you see plants around you that are soaking up the sun’s light and energy? Point out the leaves on the plant that are soaking up the sunlight. Let’s bring this gift to our plant friend. “Shine” the sun onto the plant using the light reflected from the mirror to shine onto the plant. Allow a few students a turn to try.
 - Stop 2- Air- Stop at the second flagged plant. Read the clue and have students guess what is in the bag. Have a student open the bag and take out the balloon. Ask what is this balloon filled with? Air. Plants need air to survive. They breathe in Carbon dioxide and breathe out oxygen, just the opposite of humans! Let’s bring some air to our plant friend. Have the kids take a deep breath in and out to feel the air moving through their lungs. Look around the area and find plants for the children to give air to. They can talk, sing or blow on a plant to give it air.
 - Stop 3- Soil- Read the clue and have the students guess what’s in the bag. Have a student open the bag and take out a cup of soil. Plants need soil to survive. They use their roots to get nutrients from the soil to help them grow. What do you think is in the soil? Ask the students and clarify that soil is made up of organic material (decaying plants and animals, minerals and particles of rock. Have students find leaves or soil on the ground to crush up and turn into soil for nearby plants. This soil acts like the food you eat and the vitamins you take to help you grow big and strong. Let’s bring this gift to our plant friend.
 - Stop 4- Water- Read the clue and students guess what’s in the bag. Have a student open the bag and take out a bottle of water. How is water important to survival? Where are some places that plants can get their water from? (rain, ground water, the stream, etc.) Water is found in all living things, and is the basis of all life on earth. What parts of the plant help it to get the water it needs? (roots, stem to move the water up to the leaves, leaves can collect water). Do you see any water nearby? Look for water or visible tree roots that

help bring water to the tree or plants. Let's take this gift of water to our plant friend.

- The group moves down the trail, carrying the gifts to their plant friend, which has been selected and marked with a flag prior to the lesson.
- When you arrive at the flag, have the children look at the plant and describe its plant characteristics. Have them point out the plant parts, roots, stems, leaves, and seeds or flowers if applicable.
- Give the plant the gifts that we brought to it. Have a student hold the sun over the plant and shine down the gift of light onto the plant. The students can tilt their faces up and feel the sunlight. Imagine that the light is helping the plant to make food. The plant uses its leaves to help collect sunlight to make into food (photosynthesis). Show an example of a leaf. Have the students look closely at it to see its characteristics. (note the veins, color, shape, texture, pores on the back of the leaf, etc.) How do you think these help the plant to collect sunlight?
- The student with the balloon will give the plant the gift of air. Have the students exhale together and give the plant air (Carbon dioxide) to help it grow. Take a deep breath to breathe in the oxygen that the plant is giving to us and the environment. Plants help people and animals to breathe better by providing oxygen. Plants use their leaves to take in air from the environment. Look closely at the leaves... they have tiny pores that allow the plant to take in air (stomata).
- Have the student with the cup of soil gently pour a little bit of soil around the plant's roots... pass the cup around so a few other students can give the plant some soil. We are giving the plant some extra nutrients or vitamins to help it to grow. The plant uses the nutrients to make flowers, fruits and seeds. We can use these things as food for people and animals. What are some foods that come from plants? Show the example of a carrot, which is a root that stores nutrients for the plant. Show the example of the acorns or sunflower seeds, which are made by the plant and provide a good food source for animals and people. Do you see any signs of ways that the plants have given the gift of food to animals in the natural area? Have them look for signs of animals eating plants (holes in leaves, nut shells from squirrels, seeds, deer browse, etc.)
- Have the student with the water bottle gently sprinkle some water over the soil along the plant's roots. Explain that the water will help the plant grow and will help the nutrients in the soil to travel down into the soil so the plant can use its roots to suck up the nutrients. The stem of the plant is a lot like a drinking straw... the water and nutrients travel through the stem like water travels up and down a straw when you are drinking. Imagine that the stem is like a big straw carrying the water and nutrients from the leaves to the roots and back. The stem also helps the plant to stay upright. Show the celery stalks. Have the kids look closely at the ends to see the round "straws" that help the plant to move nutrients up and down. Find a plant nearby and feel its stem. How does the stem feel? Is it smooth or rough? Strong or flexible?

There are many kinds of stems. Point out a tree and explain that its trunk is a really big stem.

ELABORATE/EVALUATE

- Have students remind you what the plant needs to survive. (Sun, air, water, soil, space, etc.) What are the superpower parts of the plant that help it to get what it needs to survive? (roots, stem, leaves and seeds). What are some gifts that plants give to animals and people to help them survive? (air, food, shelter, etc.)
- Invite them to come back with their family and teach them about the different plants and plant parts. See how many different parts of plants you can identify as we walk back.



naturally yours