

PLANTS

First Grade Science Action - May
Last Updated: Thursday, September 17, 2015

Objective:

Students will...

1. Learn how important plants are.
2. Learn what a plants need to grow.
3. Discuss the different ways to propagate plants.
4. Learn the roles of the roots, stems, leaves, flowers and fruit of a plant.
5. Make a "Plantenstein" using plants exhibiting different types of propagation.

Materials:

Activity #1 - Parts of a Plant

1. Plant posters with descriptions of each part behind "doors".
2. Green onions with stems intact. Celery if have.
3. Carnation that has been sitting in colored water for three days.
4. Flowers with stems intact.
5. Fruit sample: apples. Cut apple to show seeds.
6. Knife to cut open fruit and plate.
7. Laminated pictures of roots, stems, and seeds we eat (3 types).

Activity #2 - Making New Plants

1. Lima beans soaked in water for 48 hours prior (2/child).
2. Set of 3 jars (or clear plastic cups) containing soil and 6 lima beans planted along the edge of the jar (so they are visible from the outside of the jar) that have been growing for 2 weeks, 1 week, and 3 days. (1 set of 3 jars/group).
3. Paper plates (1/child)
4. Toothpicks (1/child)
5. Sharp knives (1/adult)
6. Hand magnifying lenses (1/child).
7. Onions (preferably with sprout on top) and flower bulbs (1/group - need a new sample for each classroom = 25 total)
8. Whole seed potato with eyes (1/group) - purchase from garden supply store.
9. African violet leaves that have been rooted (hopefully 1/group = 5 total). Can use begonia leaves, other plants that root easily.

Activity #3 - Plantenstein

1. Clear plastic take-out container with top and bottom (donated by Wegmans). Drill three holes in top of each container. (1/child).
2. Potting soil (2-3 cu ft).
3. Cup or spade to transfer soil.
4. Paper towels
5. "Hair" = Grass or alfalfa seed. (Handful of seeds/child).
6. "Eyes" = Pieces of potato cut with eyes in each piece (use seed potatoes from garden supply store). (2/child).

7. “Nose” = onion bulb (from garden supply store). (1/child).
8. “Mouth” = Radish seeds. (few for each child).
9. Misting bottles. (1/group).
10. Labels or masking tape to label plastic containers with child’s name. (1/child).
11. Black markers. (1/group).
12. Plastic grocery bags for taking their Plantenstein home. (1/child).
13. Plantenstein Handout. (1/child).

Pre-lab (optional, have done this for past 3 years, a few days/the week before actual lab date). Takes approx 10-15 minutes per class. One parent volunteer

Materials:

- Carnation (white) or other white flowers
- Celery
- Clear plastic cups
- Food coloring (red works well)

Large group. Introduce yourself to the group. Mention that soon we will be doing a Science Action lab about plants in their classroom. Today we’re going to do an experiment to start us thinking about what jobs the different parts of plants might have. Ask students to name parts of plants (stem, roots, flowers, etc.). Tell them that today we’re going to start thinking about what jobs the stem does for the plants. Show them the celery (stem) and flower (stem). Ask students for their ideas. (Accept all answers, usually students will mention: Hold up the plant to the light, help bring water up from the roots to the rest of the plant.) Tell the students that today we’re going to test the idea (hypothesis) that the stem helps bring water up the plant.

How will we test this? If we just put the flower and the celery in clear water, how could we tell if the water is going into the plant? (Mention water could just go into the air, we need to see if the water goes into the plant.) Allow students to come up with suggestions. Show the students the food coloring, and explain that we are going to use food coloring to track the water. Ask the students: “What should we see if the water is going into the plant?” (Help students come to the prediction that the color will travel up the plant.) So, if the food coloring travels up the plant, that suggests that water can travel up the stem as well. Set up food coloring water in cup, and place samples in them. Tell the students their job is to check the flower and celery every day to see if the color travels up. You’ll check the results of the experiment with them when we come back to the plant lab in a few days.

Introduction: (full group)

Introduce parent volunteers. Today, we are going to talk about plants, what their different parts are and how you can make new plants. If there were no plants on earth, would there be life of any kind? Without plants, there would be no life. Can you think of things that plants do for us that make our life possible? (produce air that we breathe, provide food

and we can use the plants to make clothing, medicines, trees to build shelter and they are just plain pretty to look at). Can anyone tell me the things you need to make a plant grow? Accept all answers. Plants need many of the things you and I need to grow: air, food, water, light, time, the right temperature and plenty of room to grow. As part of the lab today, you will have the opportunity to make one of these. Hold up sample Plantensteins that have been growing for 2 weeks. How many of you have heard of Frankenstein? He was a being made from many different parts. You will be making Plantenstein using the different ways new plants can be made.

Break into small groups. **(If completed pre-lab, discuss the results of the experiment with the students.)**

Activity #1: Parts of a Plant

We are going to look at all the different things that together make up a plant.

ROOTS: Hold up a green onion and point to the roots and ask if anyone knows what they are. These are the roots of the plant. What do you think they are for? The first thing they do is hold the plant in the ground, kind of like the foundation of your house. Their most important job is to get the water and nutrients from the soil. Even though they are not hollow, they are kind of like a straw because they draw the things the plant needs from the soil and take them up into the plant. Without roots, a plant cannot grow. Can you think of some plant roots that we eat? (carrots, beets, turnips, parsnips).

STEM: Hold up a flower and point to the stem and ask the students to identify that part. What do you think a stem does for the plant? The stem does two things: it holds the plant up and most importantly, it takes the water and nutrients that the roots picked up and moves them to the other parts of the plant. Stems can be very tiny or huge. Can you think of a plant that has a huge stem? (tree trunk). Show a carnation with the leaves attached. This is a carnation. This part is the stem of the plant. Show the carnation, that has been in colored water. This is a carnation that was in a cup of food coloring/water. You can see how the colored water has traveled up the stem and into the leaves just like nutrition that the roots picked up travel up the stem. Can you think of stems that we eat? (asparagus).

LEAVES: Hold up the flower and point to the leaves and ask them to identify that part. What do you suppose the leaves do for the plant? For one, the leaves catch the sunlight for the plant. The plant needs light to help make its food. The leaves are a very busy place. This is where the food for the plant is manufactured. This is called photosynthesis. A very important part of photosynthesis is that as the plant makes its food, it gives off oxygen into the air. Do you know what oxygen is? It is what we need to breathe so the plants are very important for all living things to help us survive! Can you think of some leaves that we eat? (lettuce, cabbage, spinach).

FRUIT: What is fruit? (A fruit is the part of a plant that holds the seeds. Many kinds of fruits are good to eat.) What kinds of fruit are good to eat? Fruit can grow on trees, bushes and vines. Show apple and laminated card.

FLOWER: Point to the flower itself and ask them to identify that part. What do you think a flower does for the plant? They are not only pretty to look at but they are important in making seeds and seeds are one of the ways we get new plants. Are there seeds that we can eat? (peas, corn, nuts, sunflower).

Activity #2: Making New Plants

Can you think of different ways we can get new plants? How do you get plants to grow in your gardens at home?

BULB: Hold up an onion or other type of bulb and ask the children if they know what it is. These show you another way new plants can be made. This is called a bulb. This time of year you can see many plants that have grown from bulbs. Ask if anyone can name one. (Tulips, daffodils, crocus, etc). A bulb is a kind of “promise”. Each bulb has a complete miniature plant inside along with its food. Cut the onion and/or bulb in half lengthwise. Inside the bulb is everything the plants need to grow. Show the different layers inside the onion/bulb. These are actually thick leaves that surround where the stem of the new plant will grow. The most important thing the bulb does is store food for when the plant starts to grow, kind of like your food pantry at home! Show the bottom of the onion or bulb. This is where the new roots will grow to help feed the new plant.

TUBER: Hold up a whole potato and ask the student to identify it. Did you know if you planted this potato, it would grow into a potato plant and make lots of new potatoes? Even though the part of the potato we eat grows in the ground, it is not the root of the plant. It is the underground part of the stem that has thickened. This specialized type of stem that grows underground is called a tuber. Tubers thicken and grow big because they store the food supply for the leafy part of the plant above ground. Point to the eyes on the potato. This is where the new plants develop. The eyes are actually buds of new plants.

ROOTING FROM A LEAF: Hold up the African violet leaf that has rooted. Sometimes new plants can grow just from a leaf or a cutting of a plant. This is an African violet leaf. We placed it in water and roots grew. You can then plant that stem and get a new plant.

SEEDS: One way to grow plants is to use seeds. Give each child a seed (lima bean – use paper plates) that has been soaking in water overnight. Use a toothpick to show them how easily the skin (seed coat) comes off. Next, have the children do it. Then open the seed and show children the “embryo” or tiny plant inside. Have them look closely with their magnifying glasses. Explain that this is the part that will grow into a big plant when the seed is put in the soil and watered. The rest of the seed (the cotyledon) provides food for the tiny plant. All seeds have some kind of hard outer layer called the seed coating. Some are very thick (coconut & walnut). It protects the seed inside from disease, drying out and sometimes from being eaten. Some seed coatings are very thin. Can you think of any? (Nectarine, plum). The seed coating holds food for the new plant to use until it grows leaves and can make its own food.

Show students the lima beans that have been growing in 2 jars. Have them compare the amount of growth that has occurred in each. Point out the various parts of the plant that have emerged at different stages (roots, embryo, cotyledon, leaves). .

Activity #3: *Plantenstein- Garden like a face!*

Now that we have had the opportunity to see how many ways we can make new plants, we are going to take all these and make a Plantenstein. Remember we talked about how Frankenstein was made from many parts? Well Plantenstein is made of many parts too. We will use seeds to make his hair (grass), onion bulbs (nose), potato tubers (eyes), radish seeds (mouth). We will then place these on you windowsill and you will watch all these different parts take root and start to grow into your own monster Plantenstein.

1. Label the containers with their name.
2. Put two shovels of soil in each container.
3. Make a face: Grass (hair), Potato (Eyes), Onion (nose), radish seeds (mouth).
4. Water lightly when done by spritzing with the water bottle and close the top

Place in plastic bag. These will remain in the classroom and the teachers have a handout to track their growth.

CLOSURE:

1. Why do we need plants?
2. What do plants need to grow?
3. How can you make new plants grow?