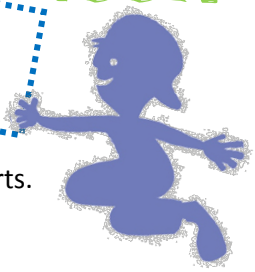
Stems & Leaves
day two

Learn, Grow, Eat & Go!
EARLY CHILDHOOD
week 3

Experiment with straws, baking soda and vinegar to observe movement up and down a "stem."



LESSON A: Up & Down Stem Science

Objectives: Students will observe that stems have a dual purpose of carrying water up to the rest of the plant parts as well as carry nutrients down from the leaves to other plant parts.
Time: 15 minutes

Materials/Prep:
Box of baking soda, food coloring, vinegar (16 oz) , straws, baking pan (9x13), plastic flower or a picture of a flower (to show children which part is the stem), pipettes, tooth picks or spoons, tall glasses (Glasses should be shorter than the straws. Cut the straws to make them shorter if needed.

- Pour a box of baking soda into a 9x13 pan. Pour vinegar into a cup. Place a straw on the table next to the ingredients. Teacher will demonstrate this science experiment.

Lesson Narrative:

1. Today we are going to learn about the part of the plant known as the stem.

Hold up plastic flower or picture and point to the stem. What do you notice about the stem? Responses might be the color, length, shape, feel, etc.

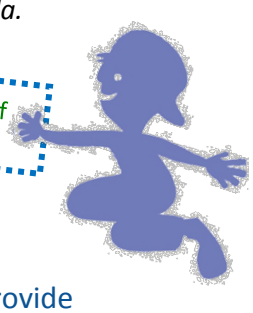
2. What do you think the stem does for the plant? Responses might be: make it taller, hold the flower up, an area of the plant to hold in our hand, etc. Stems do two things for plants. They carry water up from the ground, from the roots of the plant and into the top of the plant.
3. But, did you know that stems also do something amazing?! Would anyone like to guess? If someone gets it, respond with excitement. Stems are really special. Stems carry water up (hold the picture and show them by moving your finger up the stem) and they also carry nutrients down from the leaves at the top of the plant down to the rest of the plant parts all the way down to its roots. Neat, right!?
4. Hold up the straw. Who knows what this is? (wait for responses). When someone says a straw, reply with enthusiasm. What do we do with straws? Allow students to share things that we do with straws. We use straws to carry liquid up from the cup to our mouth without having to tip the cup over!
5. Today, we will do an experiment to see how a mixture travels up the straw and back down the straw.
6. Have activity set up at a table in advance. Place a pan with a baking soda with a thin layer of baking soda covering the bottom. We can use baking soda when we make certain foods, like baking cakes or cookies, but today we are going to use this baking soda in a science experiment.
7. Have vinegar on the table. We use vinegar in the kitchen too. Sometimes we use vinegar to clean. Can you smell the vinegar? What does it smell like? Do we drink vinegar? YUCK!!
8. Let's explore the baking soda. (Students may color the baking soda with food coloring with toothpicks or spoons
9. I want you to experiment with the straws. Let's dip them into the vinegar. (Demonstrate putting your thumb on top of the straw and then lifting up.) Look how this traps the liquid into the straw.
10. Raise the straw up out of the cup of vinegar. Do you see the liquid inside the straw? Release your thumb, and out shoots the water. This is similar to what the plant does. It releases the nutrients down the stem into the roots.
11. Let's see if we can get the straw to bring the powder up to the top, just like the plant brings water up to the flower. Demonstrate and explain. Stick the straw into the baking soda (approximately 2 inches).

12. What do you see? The combination of the vinegar touching the baking soda should create a reaction and bubbles should come up the straw and over flow the top of the straw. Stems are like straws. Liquid can move both up and down inside of the straw. The plant moves water and nutrients to the top of the plant and to the bottom of the plant.

Teacher note: An extension of this lesson would be to use pipettes to carry the vinegar to the straw, then release the liquid down into the straw resting in the pan of baking soda.

LESSON B: Stems We Eat

Explore & taste an assortment of edible stems.



Objectives: Student will identify foods that are edible stems.
Time: 10 minutes

Materials/Prep:
Gather various stems from the playground, such as weeds and flowers. Provide edible stems such as celery, rhubarb and asparagus.

Lesson Narrative:

1. Today we are going to eat some stems. Do you remember the edible stems that we explored yesterday? I have washed them and have them ready for us to eat.
2. Stems can be eaten by themselves or dipped in something. I have peanut butter and ranch for you to dip your stem. Taste and tell me what you think about your stems. How does it taste?
3. .Pass out paper plates with stems and dips.
4. You can begin tasting your stems. While the students are eating ask the following questions.
5. Do you have a favorite? Do you like the stems better with or without dip? Do you think this is a healthy snack? Why or why not?
6. Remind me. What part of the plant we are eating? What is the job of a stem? What two parts of a plant does a stem connect?

Students will find cylinders around the classroom.

ACTIVITY: Cylinder Hunt

Objective: Students will notice the similarities between cylinders and plant stems.
Materials/Prep: Plant stems, Cylinders (pool noodles, crayons, markers, macaroni noodles, discovery tubes, paper towel roles, cylinder-shaped blocks, straws, etc.)

- Place cylinders around the room for students to find.

1. Show the plant stems that were gathered. What am I holding in my hand? What shape do you think the stem is? (Direct students toward the answer "cylinder".)
2. Today we are going on a cylinder hunt around our classroom. We are going to see how many cylinders we can find. Show a few examples like a crayon or paper towel roll.
3. Walk around the room with a small group of students and look for cylinders. Offer hints and scaffold the learning experience if necessary, but allow students time for exploration and to find a cylinder on their own.
4. Once cylinders have been found and collected, discuss each one and compare them with the stems.
5. Before calling your next group of students, return the cylinders back to their place for the next group to find.

today's garden journal prompt:

Draw a picture of what you think a seed and root look like planted in the ground.