

Material Preparation

MATERIALS

- cloth big enough to cover the flower
- watering can
- pitcher of water
- thriving, potted plant in dry soil
- newspaper
- masking tape
- fresh flower with a long stem (carnations work best)

For each child:

- magnifier
- set of *Plant Puzzle Cards* (one root, one stem, one flower, and two leaf cards)
- plastic drinking cup
- two standard, **not flexible** drinking straws
- *Ask Me About Plants* sticker

PREPARE IN ADVANCE

- Make copies and cut out the *Plant Puzzle Cards* for each child in the group.
- Just before the lesson, fill the plastic cups with clean drinking water.

SET UP THE LESSON AREA

- Cover a small floor space or table top with newspaper.
- Place potted plant, watering can, and one magnifier for each child on the newspaper.
- Cover the fresh flower with cloth and set aside.
- Set aside a cup of water, two straws, and set of *Plant Puzzle Cards* for each child.



For each child

TEMPLATES

Plant Puzzle Cards

OBJECTIVE

Children will learn how roots and stems work together to carry water and help plants stand up.

EXCITE

1. Gather the children in the ECHOS lesson area, seated around the plant. **Here is a plant.** Point to the leaves on the plant. **We usually see this part of the plant, but today we're going to look at the part that grows in the *soil*.** **What do you think we will see?** Listen to the children's responses.
2. **I am going to gently lift the plant out of its pot so you can observe it.** Gently lift the plant out of its pot. Carefully shake the plant over the newspaper and use your fingers to loosen the soil so the roots are exposed.



INTRODUCE

1. **Let's take a closer look. I'll give you each a magnifier.** Give each child a magnifier. **When it's your turn, come close and very carefully and gently look at the *roots* with your magnifier.** The roots help the plant get the water it needs from the ground. Water moves up through the roots and into the *stems*. Collect the magnifiers.
2. **Can anyone point to a stem on this plant?** Prompt the children to make observations describing how the stem looks and feels.
3. **We will need to put this plant back in the dirt soon. After we put it back, we will need to give it a little water. The water will move through the roots and the stems to help the plant grow.** Replant the plant, packing it in the soil. Use the watering can to model how to water the plant. **There, that's better!**



4. Place the plant aside. **Sometimes there is another important part of a plant.** Pick up the flower, keeping it under the small cloth. **Can you guess what is hidden under this cloth? I will describe it to you and you can try to figure out what it is. It has *petals*.** Point to the petals. Pause to listen to the children's guesses. **It is colorful and pretty and may have a nice smell. What is it?** Listen to the children's responses. If needed, prompt them to say *flower*.
5. Reveal the flower from under the cloth. Hold up the flower and point to the long, main stem. **This is the stem of the *flower*.** Point to the other stems of the flower that connect the small leaves. **Each leaf also has a small stem.**
6. **This stem helps the flower stand up tall. The stem carries water from the roots to the *leaves* and the flower. What do you think would happen if the stem was bent or broken?** Listen to the children's responses.



EXPLORE

1. Invite the children to sit at a table. **Let's do an experiment. I will give each of you a cup of water.** Distribute the cups. **I will also give you a straw, but don't put it in your cup yet. Pretend your straw is a plant stem. Now bend your straw in the middle.** Model how to bend the straw in the middle. Assist children as needed.
2. **Now put it in your cup of water and try to drink with it.** Observe the children. Some straws may need to be bent more for the experiment to work well. **Can you drink the water? It's not very easy to do.**



3. **Can water travel to the leaves and flower if the stem is bent?** Listen to the children's responses. **If the stem is bent, then the water can't travel through the stem to the flower.**
4. **If the stem is bent, can a flower still stand up straight?** Listen to the children's responses. **Let's observe.** Bend the stem of the real flower. **What do you observe? Yes, the flower flops over. It can't stand up.**
5. Collect the bent straws. Give each child a new straw. **Now you may finish drinking your water with a stem that is not bent.** Collect the cups and straws and discard. **We learned that the stem and roots work *together* to carry water and to help a plant to stand up.**
6. **Let's see if you can remember the parts of a plant. I have puzzle cards for each of you. When you put them together they will make a picture.**
7. Give each child one set of *Plant Puzzle Cards*. **Look closely at your cards.** Use these suggested prompts to guide the children as they create their *Plant Puzzle*.
 - **What grows in the soil?** Prompt the children to say roots.
 - **What grows from the roots?** Prompt the children to say stem.
 - **What grows from the stem of a plant?** Prompt children to say leaves.
 - **What grows at the top the stem?** Prompt the children to say flowers.
8. **Let's look at our *Plant Puzzles* carefully.** Review the parts of the plant with the children. **Great job, botanists!**



INTERACT

Interact to accommodate children's individual needs and strengths. Use these suggested strategies as needed.

- Supervise children so that they are only drinking from their own straw.
- Some children may need help with the *Plant Puzzle*. You can help them by using the real plant as a model.

OUTCOMES

1. Regroup the children in the ECHOS lesson area. **What did we discover today?**
Listen to the children's responses. If needed, use suggested prompts to elicit key concepts and vocabulary. Encourage responses from everyone.
 - **What parts of the plant did we talk about today?**
 - **How does a stem help a plant?**
 - **How do roots help a plant?**

!

2. Give each child an *Ask Me About Plants* sticker.



Remind the children to tell their family something they have learned about plants.

3. After you have completed *Lesson #3: Roots and Stems Together* with all the children in your classroom, add the ECHOS materials suggested below to your science area to encourage exploration.

VOCABULARY

- flower
- leaves
- roots
- soil
- stem(s)
- together
- petals



watering can

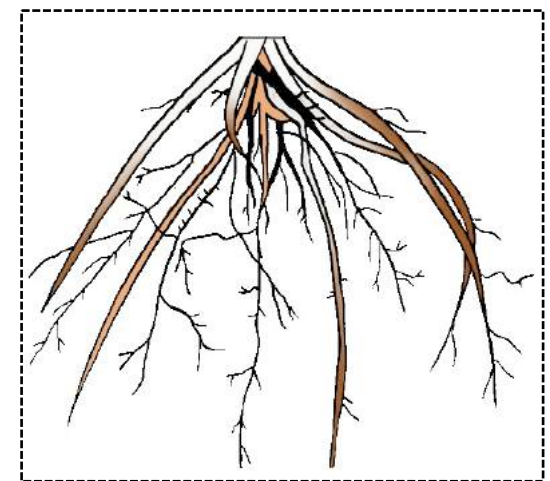
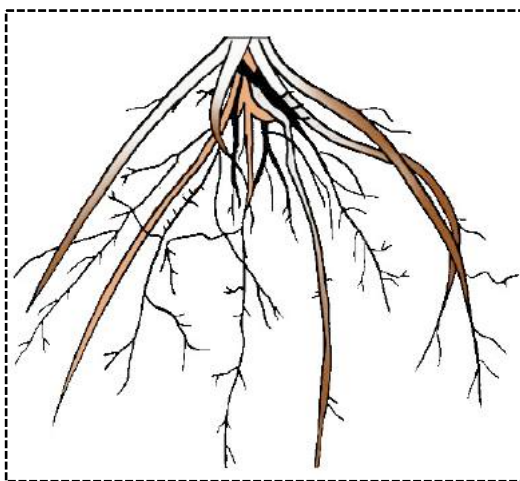


living plant



Plant Puzzle Cards

Plant Puzzle Cards



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