

Problem Solvers Activity SE 3: Plant Parts

CHILDREN ARE LEARNING...¹

Science Content:

- Names and functions of different parts of plants (roots, stems, leaves, flowers, fruits) that help them survive and grow.

CHILDREN ARE DOING...

Science Practices:

- Make observations
- Ask questions
- Develop and use models (such as whole body exploration and drawings)

NOTE TO TEACHERS:

Young children can develop misconceptions (things they misunderstand) about science. You can use this activity to correct some common misconceptions children may have about plants.

Misconception 1: Plants are not alive. Actually, plants *are* alive. They need water, soil, and sunlight to live and grow. Without those three things, plants will get brown, dry, and wither. Ultimately, they may die—or no longer grow at all. Teachers can compare plants with other items in the child's world, like mulch or rocks that are *not alive*. Mulch and rocks don't grow in size and always look the same. They don't need special things (like water, sun and soil) to thrive.

Misconception 2: Trees, vegetables, and grasses are not plants. The truth is that plants can be big or small! They can look very different from one another! What makes plants the same is that they all grow from seeds, they all have roots, and they all need sun, water and soil to grow.

Misconception 3: Leaves take in water. Children often believe this because the rain touches the leaves of a plant (which they can see). Actually, plants take in water from their **roots** under the ground. The water soaks into the soil and the roots absorb it. Water is transported up the stem to the leaves of the plant.

MATERIALS NEEDED:

3 small plant(s) with roots attached. Ideally these will be three different plants so children can compare/contrast their appearance. At least one of the plants should have flowers. (Consider using one of the plants grown in Unit 2 for this activity.)

Tray for each plant

Popsicle sticks or chopsticks, 1 per child

Magnifying glasses, one per child

Paper, 1-2 pages per child

¹ Adapted from the Next Generation Science Standards (kindergarten): <https://www.nextgenscience.org/>

Pencils/crayons/markers, enough for children to share. Try to include several shades of green/yellow.

Handout 1: Plants Have Parts!

PREPARATION:

- Print **Handout 1** and glue or tape to sturdy cardboard so it's easier to share with children.
- Loosen each plant from its pot so it can be easily removed. Place each plant in a tray to help with clean-up later.
- Keep popsicle sticks/chopsticks and magnifying glasses ready for **EXPLORE** activity.

Activity Instructions

ENGAGE

Gather a group of 4 children at a table.

ASK: There are lots of plants in our community, aren't there? Who has seen a plant before? Let's talk about the plants you've seen. *(Use the questions below to encourage children to share their experiences with and knowledge of plants.)*

- Where do you see plants?
- What do plants look like?
- Part of the plant is above the soil, and part is below the soil. What does the part under the soil look like? Has anyone seen that part?
- Plants can be different colors. What colors of plants have you seen?
- Plants can be different sizes. What sizes of plants have you seen?

Facilitate a discussion of children's experience with and knowledge of plants.

EXPLAIN: Today we're going to explore plants. We're going to discover all the different parts of a plant together. Are you ready to use your **observation** skills to look really carefully at some plants?

EXPAND

Show children **Handout 1**, the picture of the plant with roots. In the discussion, guide children's observation skills through your questions.

ASK: Look at this picture. What do you notice about it? Do you see the different parts of the plant? *(Encourage children to show you different parts of the plant. See whether they know what these parts are called.)*

Facilitate a short discussion of children's experience with Unit XX where they grew plants from seeds. Focus on key messages like:

- Do you remember when we planted seeds in our class? What did we do to plant the seeds? *(Emphasize the steps of putting the seeds in soil, watering them, and making sure they have sunlight.)*
- We learned that seeds needed soil, water, and sunlight to grow.
- What happened to the seeds when we watered them and put them in the sun?
- What did our seeds become? (Emphasize **that seeds sprouted into plants.**)

EXPLAIN: Today we are going to talk about seeds that have already grown into plants. Plants have different parts, and each part helps them to grow.

*Point to each part of the plant on **Handout 1**, labeling it and asking if the children have an idea about what it does to help the plant.*

EXPLAIN: These are the roots. Does anyone have an idea about what the roots do?

Invite a variety of responses from children. Some may be incorrect, and that's okay. The emphasis here is to encourage children to share their ideas. If you wish, document children's ideas on a whiteboard or a large piece of paper taped to the wall.

Point out the stem: What do you think the stem's job is?

Point out the leaves: Why do you think plants have leaves?

Point out the flowers: What do you think flowers do to help a plant?

TRY IT: Invite the children to use their bodies to recreate the parts of the plant on the floor of your classroom. You will need 4-5 children at a time to do this.

- Begin by inviting one child to lay down on the floor, straight *like a pencil* to be the **stem**.
- Next invite a child to lay below and be the **roots**, with their arms and legs spread out like a starfish.
- Two (or more) additional children can act as a **leaf** and **flower** at the sides and top of the stem.
- Emphasize these names by "telling the story" of the plant: *Child A is pretending to be the roots. Child B is our stem. Child C is the leaf. Child D is our flower.*
- Take a photo of the "plant" to post in the classroom at child-level and share with families.
- Have the children stand up and take a different part this time. Ask each child which part they'd like to be. Encourage them to name "their" part of the plant and point to that part on **Handout 1**.
- Emphasize these names by "telling the story" of the plant once again.

EXPLORE

Have the plants (each in a tray), popsicle sticks/chopsticks, and magnifying glasses close by.

Place children in pairs for this activity so they have room and time to explore the plants.

PREPARE: Talk to the children about carefully exploring the parts of the plant:

- Plants are fragile. Fragile means they can be easily broken or damaged. So let's take a minute to talk about how to explore the plants.
- You can use the popsicle sticks as a tool to loosen the roots in the soil. (*Demonstrate.*) Notice how I'm working gently and carefully.
- You can use the popsicle sticks to move the leaves or flower petals to get a better look. (*Demonstrate.*)
- Do you think we should use the popsicle sticks to touch our friends? No, that's right. We only use them to touch the plant. They are tools to help us discover different parts of the plant. (*Distribute one to each child.*)
- You can use these tools—magnifying glasses—to look really closely at the different parts of the plant. (*Distribute one to each child.*) Magnifying glasses make small things look bigger. (*Demonstrate.*) You can also look really closely at the plant *without* the magnifying glass. (*Demonstrate.*)

IMPLEMENT: Give each pair of children a plant in a tray. Let them explore together. Follow children's lead and avoid the temptation to rush this process. As children work, you may want to ask questions that promote **observation skills** like:

- *What do the leaves look like up close?*
- *What does the stem feel like? Hard or soft? Smooth or a little rough?*
- *Is the stem of your plant long or short?*
- *Are the roots hard or soft?*
- *What have you discovered about your plant?*

Encourage the children to talk with each other as they explore. Invite them to share how the plant feels, how it smells, and what color(s) it is.

If time allows: Let children switch plants so they have the opportunity to explore a different plant. Encourage comparisons (what is the same/different); this also supports the development of **observation skills**.

EXPLAIN: As children explore, review the parts of the plant and their functions:

- Leaves absorb, or take in, sunlight to help the plant grow. (Who can find the leaves on their plant?)
- Roots absorb, or take in, water and minerals (food) for the plant to grow. (Show me the roots on your plant.)
- The stem transports, or moves, water around to all the different parts of the plant. (Where is your plant's stem?)
- The stem helps to support the plant and keep it standing upright.
- The flower has pollen, which is a very fine powder that plants use to make seeds. (Who has a flower on their plant? Where is it? What is important about seeds? Why does a plant need to make seeds?)

TRANSITION: When children are finished with their hands-on exploration, distribute the paper and pencils/markers so they can draw the plants they explored.

ASK: Ask children to tell you about their drawings. Can they point to the roots, stems, leaves, and flowers on their picture? If they are interested, offer to label those parts of their drawings.

- *For children aged 2 ½ to 3:* Drawings and photographs (of the children acting as plant parts) can be put together to help children connect to these ideas. In addition, dry erase boards and markers can be used for the drawings as they are easy to write on and can be erased as needed.
- *For children aged 3-4:* Have plant part labels written on cards/dry erase board for children who may want to try labeling their plant picture independently. Encourage children to use **observation skills** to select colors that they see in their plant.

REFLECT

To close the activity, use reflective question/s – like those below – to prompt children's thinking about the parts of plants.

- What did you observe (or see) when you were exploring plants today?
- What surprised you about the plants?
- Which part of the plant do you think is the most important? What is its job?
- What did you discover about plants today?

SUMMARIZE: Today we have been exploring and observing the parts of the plant. Plants have roots, stems, leaves, and flowers. Each of those parts work together to help a plant grow strong.

Individualizing the Activity

Make it more challenging:

- Invite children to explore different kinds of plants and make observational drawings of each plant they explored. Teachers can facilitate a discussion where children compare and contrast their drawings to look for similarities and differences.
- Create a simple chart with 3 columns. Label each column with the name of the plants children explored today. Ask children to share their observations of each plant and write them in each column. Prompt for observations of: root size, stem length/width, flower size/color, leaf size/color.

Make it less challenging:

- For toddlers (2 ½-3 years), be sure that an adult is nearby as they explore the plant(s). This will help slow their movements and encourage some talk about what they are seeing.
- Offer only one type of plant to explore, instead of 2-3 options. Focus on plant parts and basic observations of color/size.
- At this age, representational drawing skills are still emerging. While it is worthwhile to allow children the opportunity to draw their plant, teachers can also engage the children in a group drawing experience. Using a whiteboard or large piece of paper, the teacher can start with the roots and ask children to share their observations of what they saw in their plant and then draw what children describe. Asking them "Is this right?" honors their sharing/observations as you move through drawing the entire plant.

MAKING CONNECTIONS ACROSS THE DAY:

- When you take walks around the community, point out the various plants that you come across and label the parts with the children.
- Talk with children about the fruits and vegetables they eat for lunch or snack in the classroom. If possible, notice and point out when these might have a stem or leaf visible (bananas, strawberries, apples, carrots, peppers, tomatoes are good examples).
- Post the photo of children using their bodies to make the parts of the plant. Try to post it at child-level, in a part of the classroom with open floor space. Encourage children to try this activity again during whole-group or free-play times over the next few weeks to reinforce the plant vocabulary in this unit.
- Play a game during outdoor time where you challenge children to "find a leaf", "show me a stem", "point to a tree root" or "take me to a flower you see."

Song: *Plants!*

| | |
|--------------------------|----------------------------|
| Some plants are short | (Crouch down low) |
| Some plants are tall. | (Stand and reach up high) |
| Some plants have flowers | (Wiggle hands around face) |
| And some none at all. | (Shake head "no") |

| | |
|-------------------------|--|
| Let's take a short walk | (March in place) |
| To see what we see | (Place your hand to your forehead and look around) |
| Observing is fun | (Point to your smile) |
| For you and for me! | (Point to you and me) |

(Short Interlude)

| | |
|---------------------------------|---|
| Let's slide our bare feet | (Slide to the side) |
| Through the short, green grass. | |
| It tickles our toes | (Hop in place like your toes are being tickled) |
| and feet as we pass. | |

| | |
|----------------------------|--|
| Let's look at some flowers | (Place your hand to your forehead and look around) |
| A rainbow of colors | |
| Red, orange yellow | |
| And little purple petals! | |

(Short Interlude)

| | |
|-------------------------|---|
| Look how the stems | (Reach up high) |
| reach for the sky | |
| See how the leaves | (Hold arms out to the side and wiggle them) |
| catch rays of sunshine. | |

| | |
|-----------------------|----------------------------------|
| And under the ground | (Reach down low) |
| the roots in the dirt | |
| Take in the water and | (Spread fingers wide and wiggle) |
| food from the earth. | |

(Short Interlude)

| | |
|----------------------|-----------------------|
| We took a short walk | (March in place) |
| To see what we'd see | (March in place) |
| Observing is fun | (Point to your smile) |
| For you and for me! | (Point to you and me) |

BUILD ON THE SONG:

For each stanza, perform the movements noted in the right column and encourage children to join in.

Making Literacy Connections

Share the following book with children as an opportunity to deepen their understanding of plants.

Suggested Book: *Plant the Tiny Seed* by Christie Matheson

AS YOU READ:

- This is an interactive book that prompts children to perform different actions (touch an illustration, wave their hands, clap, etc.) at different points in the book. Encourage children to join in as you read.
- On the first page, can children find the seed? What do they observe—is it big or small? What color is it? Does it look like the seeds you planted in class? Why/why not?
- When the watering can starts sprinkling water, ask children what else seeds need in order to grow (water, sunlight, soil).
- As the illustrations begin to show the plant sprouting and developing a stem, leaves, buds, and flowers, be sure to label these parts and/or ask children to show you where they are.
- Can children spot the worm? Do they have ideas about what worms do in the soil? Are worms an important part of the plant's environment? (Worms make the soil healthier. When they eat dead plants and fallen leaves, they recycle this material in the soil – which creates healthy nutrients to feed the plants.)
- Plants grow their own seeds. When children “jiggle the plants to scatter the seeds,” the seeds will fall into the garden soil. What do they predict might happen next?
- This book shows hummingbirds feeding on plant nectar. If the children in your class are curious about hummingbirds, you might consider sharing this video which shows the tiny hummingbird building a tiny nest: <https://www.pbs.org/wnet/nature/animal-homes-hummingbird-builds-tiny-nest/11692/>
- Children may ask why they “snip snip” the stem of the purple flower. This is done to encourage plants to keep blooming throughout the growing season. (And, in fact, the next page shows a new bud starting to grow.)

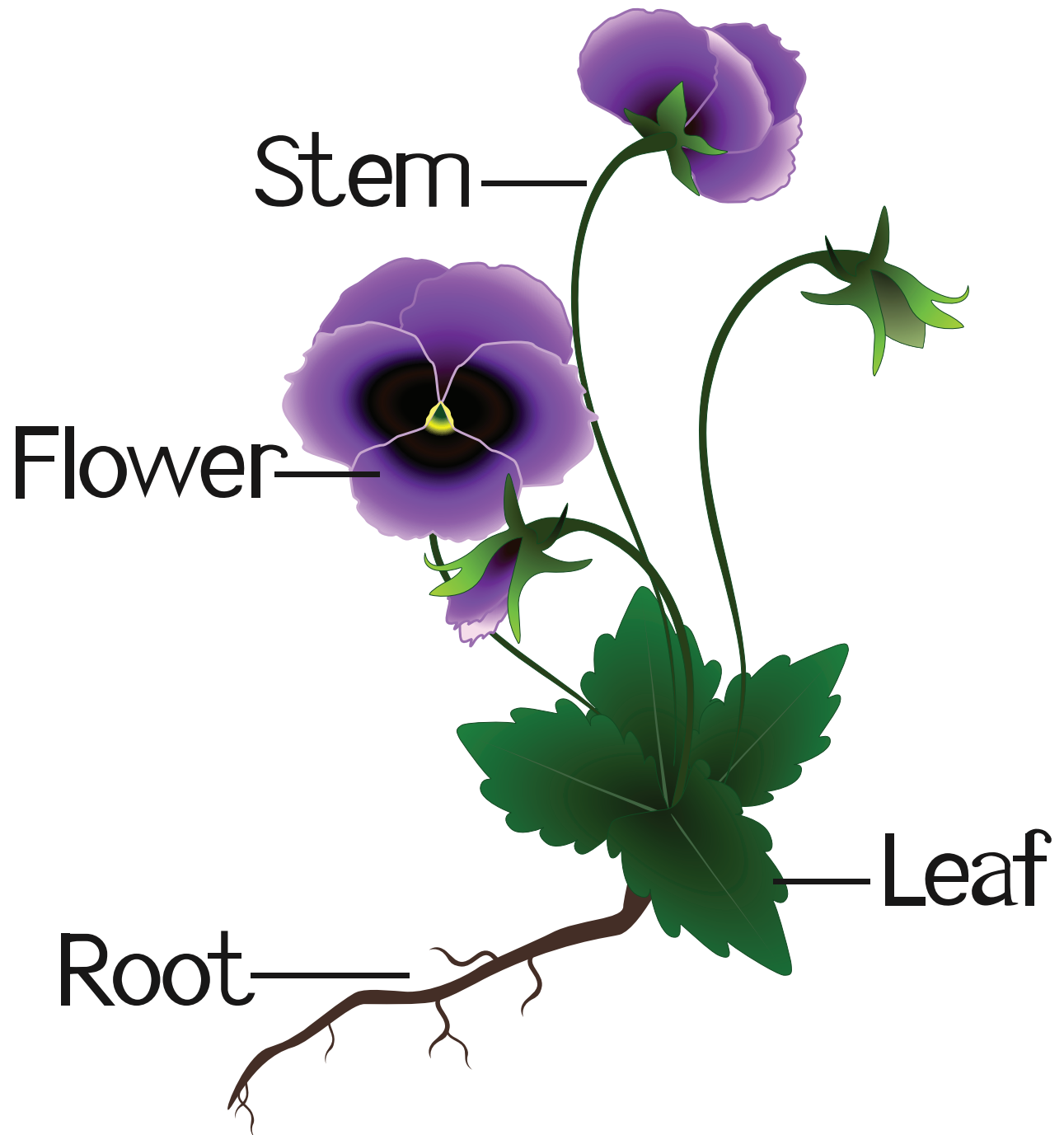
BUILD ON THE BOOK: TAKING A PLANT WALK

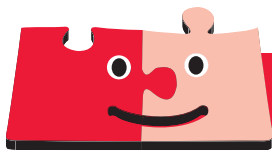
Materials: None...but you can bring a phone or camera to capture the plants the children identify.

Take children on a walk around the school grounds or an area near the school to look for different types of plants.

1. As children find plants, pause as a group to observe them and label the parts they can see. Snap a photo of each plant that children discover.
2. Encourage children to name the plants if they are able. If you know the name, you can share it too. (If you wish, you can use the photos of any unknown plants to search for their names on the Internet once you're back in the classroom.)
3. Post photos from the plant walk at children's level in the classroom to promote discussion about plants and their parts. Consider making a classroom book featuring these photos and include labels of the different plant parts.
4. Consider making this walk a seasonal tradition. Taking a plant walk at different times of the year – winter, spring, summer, and fall – will allow the children to see different plants as well as the same plants in different growth cycles.

Handout 1: Parts of a Plant





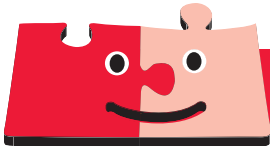
Plants Have Parts!

This week, children learned about the different parts of a plant. Together with your child, notice the plants in the world around you.

Here are some ideas to try:

- Take a walk outside and ask your child if they see any plants. If they do, ask them to point to and label the different parts they see: the **flower**, the **leaves**, the **stem**, and possibly the **roots**. If they're not sure, you can help.
- While you are preparing food, show your child the **stem** and **leaves** on fruits and vegetables like apples, bananas, tomatoes, peppers, and more.
- If you have a plant in the house, encourage your child to look closely (or **observe**) the plant. Ask what they see. What plant parts do they see? What color are the **leaves** or **flowers**? Is the **stem** tall or short? Then give your child some paper and crayons. They can draw what they see on the plant. You can too!
- If you are at a garden store, let your child look at the variety of plants that is available. Ask your child to tell you what plant parts they see. Compare the different plants. Talk about how plants are the same in some ways (they have the same parts) and different in others (they are different colors and sizes).





Solo para familias

¡Las plantas tienen partes!

Observe con su hijo las plantas que se encuentran en el mundo a su alrededor.

Estas son algunas ideas que puede probar:

- Salgan a pasear y pregúntele a su hijo si ve alguna planta. Si dice que sí, pídale que señale y nombre las distintas partes que ve: la **flor**, las **hojas**, el **tallo** y, posiblemente, las **raíces**. Si no está seguro, puede ayudarlo.
- Mientras prepara la comida, muéstrela a su hijo el **tallo** y las **hojas** de las frutas y las verduras como manzanas, bananas, tomates, pimentones, etc.
- Si tiene una planta en casa, anime a su hijo a mirarla de cerca (u **observarla**). Pregúntele qué ve. ¿Qué partes de la planta ve? ¿De qué color son las **hojas** o las **flores**? ¿Es el **tallo** alto o bajo? A continuación, dele papel y lápices de colores. Puede dibujar lo que ve en la planta. ¡Usted también puede hacerlo!
- Si está en una tienda de jardinería, deje que su hijo observe la variedad de plantas que hay. Pídale que le diga qué partes de la planta ve. Compare las distintas plantas. Hable de cómo las plantas son iguales en algunas cosas (tienen las mismas partes) y diferentes en otras (son de distintos colores y tamaños).

