

# The Plant and Me



**LEVEL:** Grades PreK-3  
**SUBJECTS:** Science, Health, Language Arts  
**SKILLS:** Comparing similarities and differences, developing vocabulary, discussing, identifying, listening, observing, role-playing, valuing

## MATERIALS

Potted plant; plant that has been “pulled” up with bare roots; plant or part of a plant sealed in a plastic bag without air; water in a small cup; a cracker for each student; two different colors of construction paper strips for headbands; four cards, each labeled either Air, Food, Light, or Water; stapler; transparency of **Parts of a Plant** sheet located in the Appendixes.

## VOCABULARY

food, leaves, photosynthesis, roots, stalk, stem

## RELATED LESSON

Seed Surprises

## SUPPORTING INFORMATION

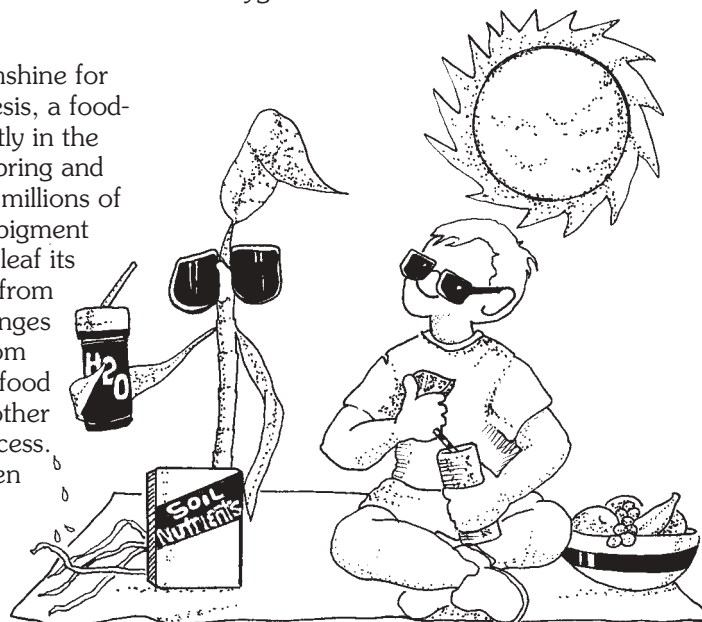
People and plants have the same basic needs for survival: air, food, light, and water. Through their roots, plants take up water and minerals (substances in the soil needed for growth). Most plants take in air through tiny openings in their leaves (stomata). Air, water and minerals mix and flow into the plant cells.

Most plants need light or sunshine for photosynthesis. Photosynthesis, a food-making process, occurs mostly in the leaves of plants during the spring and summer. The leaves contain millions of tiny cells. In these cells, the pigment chlorophyll, which gives the leaf its green color, absorbs energy from sunlight. Photosynthesis changes water and carbon dioxide from the air into a form of sugar (food for the plant). Oxygen is another product of this chemical process. The plant releases this oxygen into the air.

In the fall, partly because of changes in temperature and the length of daylight, leaves stop their food-making process. The chlorophyll breaks down, the green color disappears, and the yellowish colors become visible. Other colors can appear in leaves because of other chemical changes.

Also, sunshine is important to people. When people’s skin is exposed to sunlight, vitamin D forms. Vitamin D protects the body from diseases such as rickets, a deficiency disease characterized by soft or deformed bones. The sun also warms Earth and its people as well as all living things. Doctors suspect that without sunshine some people become severely depressed. The shorter days of winter are often regarded by some people as “the winter blues.”

Lacking roots, people take in air, water and food through their mouths and noses. The human body cannot survive more than three or four minutes without oxygen. Breathed through the nose and mouth, oxygen enters



## BRIEF DESCRIPTION

By discussing, observing, and role-playing, students learn that plants and people have similar needs for survival.

## OBJECTIVES

The student will:

- identify four survival needs that are similar for plants and people; and
- compare and contrast how plants and people meet their needs for air, food, light, and water.

**ESTIMATED TEACHING TIME**  
30 to 45 minutes.

the lungs. Circulating blood picks up oxygen and carries it to all parts of the body. The blood carries carbon dioxide, a waste product, to the lungs, from which it is exhaled.

Water makes up 65 to 70 percent of the human body. It aids digestion of food, carries essential nutrients throughout the body, helps control body temperature, eases movement and reduces friction between internal organs, and transports waste out of the body. Ten days is the longest any person can expect to live without water.

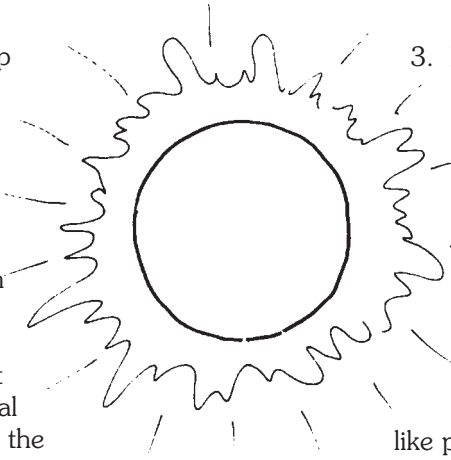
People may get very hungry, but they can survive for 30 to 45 days without food. However, if the time is too long, they will starve. The body stores only a limited amount of extra nutrition and energy to carry on breathing and other necessary bodily functions.

## GETTING STARTED

Make a transparency of **Parts of a Plant** sheet. Gather the plants (potted, root exposed, air-starved) and one cracker per student. Fill the cup with water. Cut construction paper into strips. Staple together for headbands. Every student needs a headband. Half the class gets one color, the other half the different color. Make the Air, Food, Light, and Water cards.

## PROCEDURE

1. Have students sit in a circle. Join the students seated in the circle. Put the plants and water in front of you. Holding the potted plant, ask:
  - What is this? (*A plant.*)
  - Is the plant alive? How can you tell?
  - What does the plant need in order to stay alive?
  - Are you alive? How can you tell?
  - What do you need to stay alive?
2. Show the **Parts of a Plant** transparency. Discuss the parts of the plant and ask:
  - What do the roots do? (*Hold the plant in place; take up water and minerals.*)
  - What happens in the leaves? (*Most plants take in air through tiny openings in the leaves; they make food in the leaves.*)
  - Do people have parts similar to roots or leaves?



3. Encourage students to list similarities between plants and people. Plants and people need some of the same things, but they get and use them in different ways. Ask:

- Do people stay rooted in one place and wait for their air, food, light, and water to come to them, like plants do? What if we did?

- Can plants go shopping to buy food like people do?

- In order to find air, food, light, and water, is it better to be able to move around or to stay in one place? Why?

4. Give each student a headband, half the class headbands of one color, the other half headbands of the second color. Divide the class into two groups by headband color. One group is plants, the other group is people.

Hold up the Air card. Addressing the people group, ask:

- Do people need air?
- How do you get air? Show me with your bodies. (They all breathe deeply.)
- How does it feel when you don't get air? (Have students hold their breath briefly - no more than five seconds - then describe what they felt.)
- How will people look if you don't get air?

To the plant group, ask:

- Do plants need air?
- How do you get it? (They may need prompting. *It comes through tiny holes in your leaves.*)
- How will plants look with no air? Show me. (After they've role-played, show the air-deprived plant for the "real" look. Have a volunteer describe this plant for the group.)

Hold up the Food card. Ask:

- Do plants and people need food?
- How do people get food? (People mimic eating gestures.)

- What happens to people when you don't get enough food?
- Plants make food. What do plants need to make food? (Most groups will need prompting. *Air, light, water, and minerals from the soil.*) Explain that the minerals serve as food and provide nutrients that plants need to grow.
- How do plants make food? (Most groups will need prompting. *Water and minerals move up the stem [stalk] and into the leaves. Through photosynthesis, green plants make food in their leaves. Sunshine combines with chlorophyll in leaf cells and carbon dioxide [from the air] and water are made into sugar [food for the plant].*)
- What will happen if plants don't get enough food (minerals)? Show me.

Hold up the Light card. Ask:

- Do plants and people both need light and sunshine?
- How can you tell if a plant is not getting enough light? (*Its leaves turn yellow.*)
- How do people feel if they need sunshine? (*Maybe sad or depressed.*)
- How do plants and people get sunshine? Show me. (The plants may stretch arms out like leaves to capture the sunlight. The people may face the light, hug themselves as warmed by the heat of the sun, and smile.)



Hold up the Water card. Ask:

- Do plants and people both need water?
- How can you tell if a plant is not getting enough water? (*It gets droopy; leaves may change color.*)
- What will happen when the root dries out and there is no water? (Show the pulled-up plant.)
- How do people feel if they need water? (*thirsty*)

Have a volunteer give the potted plant a drink from the cup of water and then take a few sips of the water.

- How do plants and people get their water? Show me. (The plants may stretch out their legs as roots and make spongy, slurping noises to mimic roots taking up water. The people may make drinking gestures.)
- What happens if you don't get water at all? (*Plants and people "wilt" and die.*)

5. Have students return to their desks. Review the lesson using the **Parts of a Plant** transparency. Have students answer the following questions individually and then discuss them as a class.

- What are four things that both plants and people need to survive? (*Air, food, light, and water.*)
- What would happen to plants and people if there were not enough air, food, light, or water? (*Both might die.*)

- How do plants and people help each other stay alive? (*People take care of plants. Plants are food for people and for animals that people eat. They need each other.*)

6. Invite students to breath deeply, eat a cracker, enjoy some sunshine, and get a drink from a water fountain. As they do each, ask them to compare plant parts to human parts. (For instance: Roots are like feet or mouths. Leaves are like lungs or skin. Stems are like skeletons, and so on.)

### EVALUATION OPTIONS

1. Have students draw or name four things that plants and people need to live.
2. Ask students to fold a piece of paper in fourths. In each section have them draw and write one of the factors (air, food, light, and water) used and needed by both plants and people for survival.
3. Have older students write a story about the interdependence of plants and people. They can focus on a plant that helps people (such as a vegetable or a fruit tree). The story should include plants' and people's need for air, food, light, and water.

## EXTENSIONS AND VARIATIONS

1. Students design their own experiments to show the impact of different variables on plants. Compare how plants of the same kind grow when one plant gets more or less air, food, light, or water than another plant. Other experiments might include temperature (heat or freezing), planting in sand or clay, or crowding plants in small pots. Compare what effects these elements would have on people. Ask, for example:

- What happened to the plant kept in the dark? (*Its leaves turned yellow.*) Why did this happen? (*Lack of sunlight.*)
- Do people also need sunshine? (*Yes. They especially need it to warm Earth and to help plants grow. People cannot survive without heat from the sun and without plants. When people's skin is exposed to sunlight, vitamin D forms. Vitamin D protects the body from diseases such as rickets.*)

2. Have students talk at home with an adult or family member about how they take care of plants.
3. Adopt a class plant and/or plants on the school ground and have students volunteer to care for it on a rotating schedule. (See the FLP lesson "School Ground Caretakers" for suggestions.)
4. See the FLP lesson "Seed Surprises" to learn about growing plants from seeds.
5. Play "The Enchanted Garden" from *Mother Goose Suite* by Maurice Ravel. Have the students draw plants they would find in their garden.

## ADDITIONAL RESOURCES

Visit a nursery, botanical garden, or farm and/or invite a nursery grower, horticulturist, or farmer to the classroom.

Carle, Eric. *The Tiny Seed* reissued edition. Simon and Schuster (Juv). 1987. ISBN: 0887080154.

Gibbons, Gail. *From Seed to Plant*. Holiday House. 1993. ISBN: 0823410250.

Hewitt, Sally. *Plants and Flowers (It's Science)* American Edition. Children's Press. 1999. ISBN: 0516211765.

Hickman, Pamela and Heather Collins. *A Seed Grows: My First Look at a Plant's Life Cycle*. Kids Can Press. 1997. ISBN: 1550742000

Jordan, Helene. *How a Seed Grows* revised edition. Econo-Clad Books. 1999. ISBN: 0833585452.

Jordan, Helene. *How a Seed Grows*. HarperCollins Juvenile Books. 1992. ISBN: 0064451070.

Kottke, Jan. *From Seed to Pumpkin (How Things Grow)*. Children's Press. 2000. ISBN: 0516233092.

Kuchalla, Susan. *All About Seeds (Now I Know)*. Troll Communications. 1989. ISBN: 0893756598.

Legg, Gerald. *From Seed to Sunflower (Lifecycles)*. Franklin Watts, Inc. 1998. ISBN: 0531153347.

Lerner, Carol. *My Indoor Garden*. Morrow. 1999. ISBN: 0688147534.

Medearis, Angela. *Seed Grows! (My First Hello Reader)*. Cartwheel Books. 2000. ISBN: 0590379747.

National Gardening Association. 180 Flynn Ave. Ste 3, Burlington, VT 05401. (802) 863-1308.

Pasco, Elaine. *Seeds and Seedlings*. Blackbirch Marketing. 1996. ISBN: 1567111785.

Taylor, Helen. *Plants Feed on Sunlight*. Copper Beech Books. 1998. ISBN: 0761308148.

## MUSIC

Cawley, W. Jay. *All Living Things*. 1992.

Mallett, David. *Garden Song*. Cherry Lane Music Company, Inc. 1975.

Palmer, Hap. *Growing*. Hap-Pal Music.

