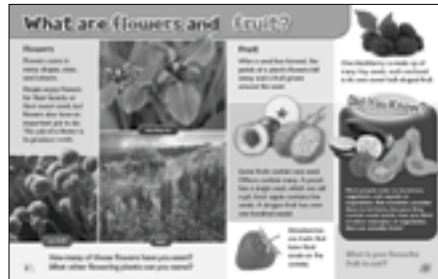


Plant Parts



Focus: Students explore the function of plant parts and practise identifying plant parts using the appropriate terminology. Teachers model scientific terminology relating to plants.

Specific Curriculum Outcomes

Students will be expected to:

- 45.0 identify and describe parts of plants and their general function [GCO 1/3]
- 2.0 communicate using scientific terminology [GCO 2]

Performance Indicators

Students who achieve these outcomes will be able to:

- draw and label the parts of a plant
- use modelling clay to create a model of a plant, label its different parts, and explain their purpose

NOTES:

Attitude Outcome Statements

Encourage students to:

- show interest in and curiosity about objects and events within their immediate environment [GCO 4]
- show concern for their safety and that of others in carrying out activities and using materials [GCO 4]

Cross-Curricular Connections

Math

It is expected that students will:

- construct, label, and interpret bar graphs to solve problems [3SP2]

English Language Arts

Students will be expected to:

- explore, extend, clarify, and reflect on their thoughts, ideas, feelings, and experiences [GCO 1]
- interpret, select, and combine information using a variety of strategies, resources, and technologies [GCO 5]

Art

Students will be expected to:

- create art for a variety of purposes and recognize there are many kinds of visual art [2.3.1]

Getting Organized

Components	Materials	Before You Begin	Vocabulary
• Student Magazine, pages 6–11 • IWB Activity 2 • BLM <i>Plant Parts at the Grocery Store</i> • IWB Activity 3 • IWB Activity 4 • IWB Activity 5 Literacy Place • <i>Hungry Plants!</i> (Guided Reading, Level N)	• several heads of celery • blue or red food colouring • students' Science Journals • clipboards • crayons • students' Science Folders • newsprint paper • construction paper • bristol board • craft supplies for model construction, e.g., modelling clay, pipe cleaners, tissue paper • fresh flowers	• Collect digital and/or magazine images of familiar items and animals for students to label (e.g., car, house, bird, cat). • Collect digital and/or magazine images of unusual plants (e.g. baseball plant, bottle tree, dragon blood tree). • Collect plant parts and items made from specific plant parts (e.g., carrot, apple, cinnamon stick). • Contact an Elder or Indigenous Knowledge Keeper from a local Indigenous group to arrange for a visit to discuss traditional uses of plants and plant parts, as well as the names of plants in their language.	• bark • branch • bulb • chlorophyll • cone • flower • fruit • leaf • needle • petal • root • seed • stem

Science Background

- Science concepts are more easily understood once students have the appropriate language with which to discuss them.
- It is important that students use the correct terminology when working in any area of science, and that they understand the errors that can occur as a result of using the wrong vocabulary.
- Most plants have the same basic parts: root, stem, leaf, flower, fruit, seed. These parts are very different across different plants and can help identify the plants. For example, the shape of leaves can be used to identify different trees.
- Not all plants have all of the basic plant parts. For example, mosses do not have roots. Ferns and coniferous trees, among other plants, do not have flowers.
- Each plant part has a specific purpose or purposes. Some of these are summarized below:

Plant part	Purpose
root	• anchor and support the plant • absorb water and nutrients from soil
stem	• support aboveground plant structures (e.g., leaves, flowers) • transport nutrients and water from roots to other plant parts • can grow tall in some plants to improve sun exposure • tree stems have thick bark to protect and help support them
leaf	• contain chlorophyll, a pigment essential for photosynthesis • carry out photosynthesis, in which plants use water, carbon dioxide, and energy from sunlight, to produce food (glucose) and release oxygen
flower	• attract insects so that pollination can occur • make seeds
fruit	• protect seeds and provide nutrition for plant embryo • attract animals, which aid in the distribution of seeds in various ways

Possible Misconceptions

- The everyday use of the terms “fruit” and “vegetables” may confuse students. For example, many people would say that red peppers are a vegetable, not a fruit. But from a scientific perspective, the pepper is the fruit of the pepper plant. The everyday term “vegetables” may refer to a variety of different plant parts, including the stem (celery), leaves (lettuce), fruit (eggplant), and roots (carrots).
- Students may have preconceptions about how certain plant parts look. Show students a wide variety of images so they can appreciate how diverse plant parts can appear.
- Students may believe that generalizations about plants and plant parts are immutable rules that are true for all plants. Be sure to point out exceptions. For example, most plants have chlorophyll and make their

own food by photosynthesis. But the ghost plant (so-called because it is almost completely white) does not make its own food—it does not have chlorophyll and does not carry out photosynthesis. Instead, it gets all its food from nearby plants such as trees. Nevertheless, it is classified as a plant. Another “rule” students learn is that coniferous trees, i.e., cone-bearing trees, keep their needles all year round. Coniferous trees do drop their needles, but at a steadier, slower rate throughout the year compared with how deciduous trees lose their leaves. Larches are an exception and drop all of their needles each fall.

ACTIVATE

What Part Is It?

Begin by showing students pictures of familiar items such as a car, house, bicycle, phone, and chair, and familiar animals such as a bird, cat, and fish. Ask:

- **What is this called?**
- **What are its different parts?**
- **What is the purpose of each part?**
- **Why is it helpful to know the correct name for each part?**

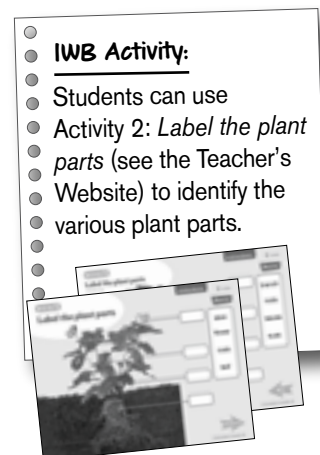
Tell students that they will be learning about the different parts of plants. Bring the class plant to the front of the class and have students identify the parts that they can see. Write the parts on the board or on a chart as students identify them. (Most likely the class plant will at least have visible stems and leaves.) Ask students what plant parts are not visible or present on the class plant. For example, fruit and flowers may not be present and roots may not be visible. For each plant part students identify, ask:

- **What is the purpose of this part of the plant?**
- **What words could you use to describe this plant part?**

Record students’ responses. Then, share pages 6–7 and 8–9 of the Student Magazine with students. Have students describe the plant parts they see on the pages and record any questions students have on the I Wonder Wall. Add terms such as “roots,” “stems,” “leaves,” “flowers,” “fruit,” “petals,” “seeds,” and “chlorophyll” to the Word Wall.

Invite students to make a bar graph to represent favourite fruits to eat.

Allow students time at the Curiosity Centre to explore images of plants and samples of different plant parts.





Weird Plants

Share pages 10–11 of the Student Magazine, which explains how a variety of plants have leaves, flowers, or stems with unusual characteristics that help the plant survive in specific conditions. Show students additional digital images of other unusual plants, such as the baseball plant, the bat plant, the bottle tree, the dragon blood tree, and the rafflesia corpse flower. For each example, challenge students to identify the basic (visible) parts of the plant (stem, leaf, flower). Ask students:

- **What is unusual about this plant?**
- **How could the plant's unusual parts help it grow and survive?**



Have students record questions that arise on the I Wonder Wall.



Literacy Place Connection:

Hungry Plants! (Guided Reading, Level N) provides more information about plants with some unusual parts. Discuss with students why some plants need to get nutrients by digesting animals. (They live in places where there aren't enough nutrients in the soil for them to survive.)

CONNECT

Thirsty Celery

Show students a head of celery. Have them identify the parts of the plant that they can see. Explain to students that the celery sold in grocery stores has the stems and leaves of the celery plant but not the root of the plant. If possible, bring in a celeriac root and tell students that celeriac is a type of celery that is grown for its large, edible root, not its stalk and leaves.

Point out that the individual stems of the celery plant are also called “ribs” and the head is called a “stalk.” However, some people use the term “stalk” to refer to individual ribs. You may wish to point this out to students as an example of the importance of using clear, unambiguous terminology. A soup containing a chopped rib of celery would taste very different from a soup containing an entire head of celery!

Ask students what the purpose of a celery stalk is. Draw out that stems support the leaves of a plant and bring nutrients and water from the roots. Tell students you will be investigating the structure of a celery stem.

Cut a centimetre or two off the end of several celery stalks. Place each stalk in glasses with water and food colouring. Red or blue work best. Have students make predictions about what they think will happen to the celery. Leave the stalks in their glasses overnight.

The next day, have students observe what has happened to the celery stalks. Cut the stalks open and ask students to describe and draw what they see in their Science Journals.





Ask students to explain what they observe. Ask:

- **Why is the inside of the celery coloured?**
- **What does this tell you about how water moves in the celery stalk?**

Ask students what this suggests about how plants get water from their roots to their leaves. Record further questions for the I Wonder Wall.

If you wish, extend the investigation by trying the same process with a white flower, such as a carnation, and a large leaf with prominent veins, such as a maple leaf. Have students record their predictions about what will happen. Lead students to reflect on how their experience with the celery informed their predictions about the other plants.

Leaf and Bark Rubbings

Take students to a park or other location with a variety of trees. Provide students with clipboards, paper, and crayons. Working in groups, students can make rubbings of a variety of fallen leaves and bark that they find. Help students identify the different trees so they can label their rubbings. Students may also collect fallen leaves and bark and other parts of trees to bring back to the classroom. Remind students not to damage living trees.

Back in the classroom, make a display of the rubbings. Ask students:

- **What words would you use to describe tree bark?**
- **What does tree bark do for the tree?**
- **How would you describe leaves?**
- **What do leaves do?**
- **How can you identify a tree by its leaves? By its bark?**

Write students' answers on slips of paper and add to the display. Record any questions that arise for the I Wonder Wall.

Grocery Store Field Trip

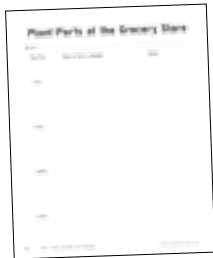
Arrange for a visit to a local grocery store. Have students use BLM *Plant Parts at the Grocery Store* to identify and record plants and their parts (roots, leaves, stems, flowers, and fruit) that they observe while on the trip. Remind students to store their completed BLMs in their Science Folders.

Class Visit

Invite an Elder or Indigenous Knowledge Keeper from a local Indigenous group to visit the class and describe traditional uses of various parts of local plants (e.g., roots, berries, leaves). He or she could also share the names of the plants and plant parts in his or her language.

● **IWB Activity:**

- Challenge students to identify foods as particular plant parts using Activity 3: *Fruit, root, leaf, or stem?* (see the Teacher's Website).



CONSOLIDATE

IWB Activity:

Using Activity 4: *Whose seeds?* (see the Teacher's Website), students can match seeds with the plants they will grow into.



IWB Activity:

Students can identify leaves and the plants they come from using Activity 5: *Whose leaves?* (see the Teacher's Website).



Plant Parts Booklet

Have students make a booklet to show what they have learned about plant parts. Students can fold a piece of paper in half vertically and draw a flowering plant, including leaves, stem, roots, and flower, on the outside cover, making sure the drawing goes from the very top to the bottom of the page. They can then cut the image into quarters, making flaps. Behind each flap, students can name the plant part and write a sentence about its purpose.

Class Vegetable Collage

Refer students to the two cross-section images on pages 6–7 of the Student Magazine. Explain to students that a cross-section diagram shows what the inside of something would look like if a cut were made through it. Ask students:

- **Where else have you seen a cross-section diagram?**
- **Why are cross-section diagrams useful?**

Tell students that they will be making a giant cross-section collage to show what we would see if we could cut a slice through the soil of a vegetable garden. Use bristol board or construction paper to create a large, long backdrop with brown on the bottom half and blue on the top half. Assign students different vegetables, such as the following:

- carrots
- beets
- beans
- tomatoes
- potatoes
- turnip
- onions
- broccoli
- squash

Students should research to find out what their plant looks like both above and below the ground, and then create a flat image using the medium of their choice to add to the collage. Students can then label the parts of their plant. Help students make connections back to the soil unit and add appropriate elements to the soil, such as worms and pebbles.

Plant Model

Set up a station with craft supplies. Have students choose a plant and make a labelled sketch of it in their Science Journals. Then have students use modelling clay or other materials to make a model of their plant. Put students in pairs and have each student describe their plant and its parts to their partner.

EXPLORE MORE

Pressing Flowers

There are a variety of different ways to press flowers. Have students investigate the different methods and choose one to try. Students should press several flowers of their choice. Once the flower is pressed, have them make a display by mounting the pressed flowers. Students can research the plant and label the parts of their flower, or write a few sentences explaining the significance of a flower's appearance (e.g., bright colours to attract pollinators).

Plant Parts at the Grocery Store

Name: _____

Plant Part	Name of fruit or vegetable	Sketch
Leaf		
Fruit		
Stem		
Root		