



STAGE 3: BECOMING PLANT EXPERTS

In this stage, students will become plant experts! Students will have the opportunity to discuss where their food comes from (food origins), learn plant characteristics, basic needs, how they get energy from the sun, and environmental conditions affecting them. Planting seeds, tracking their growth and accounting for plants needs will give them an opportunity for real-life application!

Lesson 1 - Where Does Our Food Come From?

Lesson 2 - Parts of a Plant

Lesson 3 - What a Plant Needs to Grow

Lesson 4 - Planting Your Seeds (CORE LESSON)

Lesson 2: Parts of a Plant

Overview:

This lesson introduces students to the parts of a plant using the vertical relay. It's loud and exciting, and a hit with students! Students will work together to identify different parts of plants and their roles.

Learning Goals

- Name the main parts of plants. Describe them. (Hint! root, stem, flower, stamen, pistil, leaf, seed, and fruit).
- Tell how each part helps the plant live.



Materials Needed

- Lesson Slides
- Post-it-notes

Time Frame: 40min

Curriculum Expectations

Science & Technology Curriculum Strand B Life Systems

- B2.2 Identify different parts of plants, including the root, stem, flower, stamen, pistil, leaf, seed, cone, and fruit, and describe how each part contributes to plants' survival within their environment
- B2.3 Describe changes that different plants undergo in their life cycles
- B2.4 Describe ways in which a variety of plants adapt and/or react to their environment and to changes in their environment

Language Strand B Foundations of Language

- B1.1 Use effective listening skills, including asking questions to clarify information and ideas, in formal and informal contexts and for various purposes, including in small- and large-group conversations and various classroom activities
- B1.3 Identify the purpose and audience for speaking in formal and informal contexts, and use appropriate speaking strategies, including establishing a rapport with the audience, to communicate clearly and coherently
- B1.5 Use appropriate word choice, including new vocabulary, grammar, and cohesive sentences when speaking and communicating ideas in various contexts, to support audience comprehension
- B2.4 Demonstrate an understanding of a variety of words, acquire and use explicitly taught vocabulary in various contexts, including other subject areas, and use morphological knowledge to analyze and understand new words in context

Agriculture/Agri-Food Themes

- Identify and describe the parts of plants and describe the changes during their life cycles



Media Links (embedded in the slides)

- Parts of a Plant; The Dr. Binocs Show <https://www.youtube.com/watch?v=p3St51F4kE8>

STEMterprise Teaching Notes

<p>Slide 5: Learning Goals</p>	<p>Name the main parts of plants. Describe them. (Hint! Root, stem, flower, stamen, pistil, leaf, seed and fruit).</p> <p>Tell how each part helps the plant live.</p>
<p>Slide 6: Minds On! Vertical Relay</p>	<p>Explain: We must know how to grow, nurture, and harvest the plant ingredients we need for our granola bars.</p> <p>Display the unlabelled flowering plant diagrams around the classroom/outside space (one for each business group).</p> <p>Ask students to stand in a line in front of their group's diagram.</p> <p>Explain: When you say "go," they will label the diagrams with any information they already know.</p> <p>Each child may add one piece of information before passing the pen to the next child (like a relay baton) and going to the end of the line. Encourage students to work as a team and help each other.</p> <p>Explain: This is a race, and the teams are competing to be first to label the whole diagram correctly with as much information as possible. Be clear that it does not matter if they do not know the answers yet. They will know them by the end of the lesson.</p> <p>Allow time for the business groups to share their answers with the rest of the class. Address any misconceptions and share the names of the parts of the plant in the presentation.</p>



**Slide 7:
Minds On!
Parts of a Plant**

How many parts did you label correctly?
Now that our minds are on and we're ready to go, let's learn about the parts of the plant.

REMEMBER: Entrepreneurs are curious. Learning about plants will help us understand where the ingredients come from for our granola bars.

**Slide 8:
Parts of a Plant**

Parts of a Plant video
<https://www.youtube.com/watch?v=p3St51F4kE8>

**Slide 9-10:
Roots**

Use the PowerPoint presentation slides to cover the functions of the basic parts of the plant. Address any misconceptions identified during the research and vertical relay tasks.

Say, "Let's work from the ground up!"

Some answers

Carrots, turnips, beets, parsnips, radish, celeriac, ginger, garlic, rutabaga, onion, potato, kohlrabi, jicama



<p>Slide 11-12: Leaves</p>	<p>Use the PowerPoint presentation slides to cover the functions of the basic parts of the plant. Address any misconceptions identified during the research and vertical relay tasks.</p> <p>Some answers</p> <p>lettuce, cabbage, spinach, kale, mint, parsley, radish, kohlrabi, Swiss chard, collard greens, watercress</p>
<p>Slide 13-14: Stems</p>	<p>Use the PowerPoint presentation slides to cover the functions of the basic parts of the plant. Address any misconceptions identified during the research and vertical relay tasks.</p> <p>Some answers</p> <p>asparagus, celery, broccoli, rhubarb, bamboo shoots, bok choy, green onions, chives</p>
<p>Slide 15-16: Flowers</p>	<p>Use the PowerPoint presentation slides to cover the functions of the basic parts of the plant. Address any misconceptions identified during the research and vertical relay tasks.</p> <p>Some answers</p> <p>Vegetables that are actually flowers: broccoli, broccolini, cauliflower, artichoke, capers</p> <p>Flowers with edible blossoms: pansies, clover, daisies, dandelions, violets, nasturtiums</p>



<p>Slide 17-18: Seeds</p>	<p>Use the PowerPoint presentation slides to cover the functions of the basic parts of the plant. Address any misconceptions identified during the research and vertical relay tasks.</p> <p>Some answers</p> <p>Seeds we eat as seeds: sunflower, pumpkin, sesame, poppy, flaxseeds, corn, peas, quinoa, rice</p> <p>Seeds we use to make flour or as an ingredient: barley, corn, oats, wheat, soybeans</p>
<p>Slide 19: Vertical Relay (Again!)</p>	<p>Let's find out how much you have learned about the parts of a plant and what they do.</p> <p>Repeat the vertical relay activity.</p> <p>This time, the students should be able to complete the activity more confidently using what they have learned.</p> <p>Encourage them to fill the diagrams with all their learning from the lesson.</p>
<p>Slide 20: Reflective Thinking</p>	<p>In your business groups, discuss:</p> <ul style="list-style-type: none"> • Why do farmers want to know about the parts of a plant? • How can knowing the parts help them grow healthy plants? • How does knowing about plants apply to our granola bar business?
<p>Slide 21: Check In - What's Next</p>	<p>Tell students - next lesson we will be exploring what plants need to grow.</p>



<p>Slide 22: Extension: Plant Research</p>	<p><i>Teacher Tip! This would ideally be done before each slide about the plant parts. Students could then present their findings on each plant part before you viewed the slide to consolidate their learning.</i></p> <p>Explain: We are going to learn even more about the jobs that each part of a plant does.</p> <p>Give each business group an area to focus on during their research (root, stem, flower, leaf, seed, and fruit).</p> <p>Challenge the groups to research the functions of their part of the plant and some of their uses using several sources (e.g. nonfiction books, the internet, and the information sheets provided).</p> <p>Give each group a different colour of Post-it notes. Ask them to write each new fact on a Post-it note and run to the other end of the classroom/outside area to stick it on a display.</p>
<p>Slide 24: Extension: Presenting Your Research</p>	<p>Once teams have collected enough research, give each team two minutes to summarize and present their findings to the rest of the class.</p> <p>To reinforce the learning, you could ask the students to visit the display they have created and make their own notes on all parts of the plant using the facts their peers have found.</p>

Assessment Resources. Coming soon!

Please check the STEMterprise webpage at <https://goodineverygrain.ca/ontario-farming-stemterprise/>

Amazing Plant Facts from Around the World

Liana plant

A liana plant's stem works like a vacuum cleaner in the hot rainforest, sucking water up the plant at a rate of one metre a minute!



Monkey Flower

A monkey flower is like an airport runway. The flower's markings show the bees where to land and find the tasty nectar. These markings are only visible to bees!

Rafflesia Plant

One of the largest flowers in the world is the gigantic rafflesia. It grows up to one metre wide and has no stem or leaves!



Redwood Tree

Redwoods are the world's tallest trees they can grow up to 111 metres tall- that's taller than the Statue of Liberty



Baobab Tree

An African baobab tree has a bulging trunk that can grow up to 15 metres wide. This tree is also very useful. People eat the fruit and the flowers and they make cloth and paper from the leaves and roots!



About Flowering Plants (Angiosperms)

Flowering plants are the largest group of plants! They make up include trees and flowers. Their main parts are the flowers, leaves, stem and roots.

Leaves have a chemical inside which helps to make food.

Many flowers have bright colours and a strong smell. They attract insects to the nectar inside.

Looking at leaves

Leaves contain a green chemical which absorbs sunlight to help make food. When leaves die, the green chemical fades away and they change colour.

Flowers

Flowers help make seeds, which will grow into new plants.

To make the seeds, a yellow dust, called pollen, has to be carried from one flower to another. The wind and small animals do this job.

Fruit

When petals fall off, flowers grow into fruits. Fruit contain seeds that can grow into new plants.

The fruit on a soybean plant is known as a "pod" and contains many seeds. Pods change from green to tan when they are fully grown.

Stems

Stems hold the leaves above the ground. There are lots of different types of stems, for example strawberry plant stems grow along the ground and ivy plant stems grow along other plants.

Roots

Hidden underground, the roots hold the plant firmly in the ground. Water and dissolved minerals enter the roots through the tiny root tips. The more roots a plant has, the more water and minerals it can take up.

The stem supports the plant. Water and food travel from the roots, through the stem and then to all the other parts of the plant.

Roots hold up a plant upright and take in water and minerals.

Making Food

Green plants use the sun's energy to make food in their leaves. They turn water and minerals from the soil and carbon dioxide gas from the air into sugar. Sugar is food for plants. This process is called photosynthesis.

Sunlight

Plants are arranged to get as much sunlight as possible. the greater the amount of sunlight each leaf recieves, the more sugar the plant can make.

Research Notes - Parts of the Plant

Directions: Use this grid to keep track of your knowledge and new facts about parts of the plant.



Leaf Function: Uses:	Flower Function: Uses:	Stem Function: Uses:
Seed Function: Uses:	Root Function: Uses:	Fruit Function: Uses:

Parts of a Plant

Directions: Use the word bank to label the different parts of the soybean plant.



The diagram shows a soybean plant with several parts labeled by arrows pointing to empty boxes:

- Top right: 6 boxes
- Middle right: 5 boxes
- Left side (middle): 4 boxes
- Right side (middle): 4 boxes
- Bottom left: 4 boxes
- Bottom right: 4 boxes
- Bottom right (word bank): 6 boxes

Word bank:

seed	leaf	root
flower	stem	fruit