

Understanding Life Systems: Growth and Change in Plants

Time: Approximately 60 minutes. Plus growth time for plants (a few weeks)

Resource(s) this is adapted from:

http://www.mrcollinson.ca/3%20science/plants/3_science_plants_seeds.pdf

Grade: 3

Context:

What do you want students to KNOW/UNDERSTAND? (What's the big idea?)

- This lesson plan is designed for students to understand seasonal produce, and the importance of eating seasonally.

What do you want students to DO? (What are the skills they will demonstrate)

- Students will demonstrate their ability to follow instruction. They will develop their ability to understand complicated ideas such as photosynthesis. They will have to demonstrate their understanding and their ability to retain information from charts and labels.

How do you want them to BE? (What behaviours are you hoping to observe?)

- I am hoping to observe care and appreciation. Students should be developing an appreciation for plants and an understanding about their importance. They will also have to demonstrate patience and commitment as they watch their plant grow from a seed to a fruiting crop.

Learning Goal: We are learning....

- We are learning about the plant growth process.
- We are learning about seasonal produce and the importance of eating seasonally.

Success Criteria (at least one for each Know, Do, Be):

- I can label the different stages of plant growth.
- I can identify what kind of seasonal produce I have.
- I can understand the importance of patience and respect, especially with plants.

Smaller Inquiry Questions to guide student learning:

Why do we need plants?

Curriculum Expectations:

- **1.1 assess ways in which plants are important to humans and other living things, taking different points of view into consideration (e.g., the point of view of home builders, gardeners, nursery owners, vegetarians), and suggest ways in which humans can protect plants**

Additional Curriculum Expectations Teachers Can Focus On:

- 2.2 observe and compare the parts of a variety of plants (e.g., roots of grass, carrot, dandelion; stem of cactus, carnation, tree; leaves of geranium, spider plant, pine tree)
- 2.3 germinate seeds and record similarities and differences as seedlings develop (e.g., plant quick-growing seeds – nasturtium, morning glory, sunflower, tomato, beet, or radish seeds – in peat pellets to observe growth)
- 3.5 describe ways in which humans from various cultures, including Aboriginal people, use plants for food, shelter, medicine, and clothing (e.g., food – from rice plants; houses for shelter – from the wood of trees; medicines – from herbs; clothing – from cotton plants)
- 3.7 describe the different ways in which plants are grown for food (e.g., on farms, in orchards, greenhouses, home gardens), and explain the advantages and disadvantages of locally grown and organically produced food, including environmental benefits

Vocabulary:

Seasonal Produce: fruits and vegetables that are grown according to the season that best suits its growing needs. Because of Ontario's seasonality, different crops are harvested at different times during the year.

Germinate: when a seed begins to grow

Food security: when a person has access to safe and healthy food at all times.

Teaching Resources:

<https://youtu.be/D1Ymc311XS8>

Groupings/Classroom Setup:

As a class, you will discuss all material prior to beginning activity. You can work collectively through the worksheets and material.

Students will work independently to identify what kind of seed they have, when it can grow, and how long it takes to germinate.

Learning Materials:

Handouts

Diagrams (posters)

Worksheets

Videos

Seeds

Universal Design for Learning Strategies:

Multiple means of Engagement

- Have students listen, read, fill in the blanks, draw, and work independently and collectively
- Allow them to make connections between things around them, in their life, or something they have seen.
- Have students get up and act out the plant growth process

Multiple Means of Representation

- Students will have the opportunity to listen to descriptions, watch videos, reference diagrams, answer questions, colour, and act out the information
- Growing the plant will help them understand the growth cycle of plants, and drawing, labelling, and describing the different processes will give them several opportunities to grasp the material.

Multiple Means of Action & Expression

- Students will have many opportunities to voice their thoughts and ask for clarification. They will be able to express themselves through writing, drawing, reading, and listening. They will have opportunity for movement and talking but will have some down time for independent work.
- Students will act out the plant growth cycle, they will colour in the photosynthesis process, they will be able to read aloud, move, talk, and express themselves through art.

LESSON:

Activate/Minds On (20-30 Minutes)

- Welcome the students to the class and get them to stand up and stretch as tall as they can. Get them to start small, and gradually roll their bodies up and reach for the sky. Tell them to pretend that they are tall trees. Introduce the topic of plants to the students.
- Ask the students about what kinds of plants grow around them. Explain to the students that every plant starts as a seed, and once it germinates it is able to grow into a plant.
- Handout the worksheet. There is a differentiated version which contains more opportunities to draw and copy/paste rather than just write. Take students through the plant growth cycle, being sure to clarify what stage germination is. *This is how we will know our plants are ready to be planted.*
- What is the point of germinating the plants? *Germinating is the first step in plant growth that allows the plant to take in nutrients from the soil.* Ask the class what they think plants need to survive (*water, sunlight, soil, and Co2*). Ask if anyone knows what photosynthesis is. Show the students the photosynthesis video.
- Have students take 10 minutes to colour the photosynthesis colouring page.
- Review the plant growth stages. Have students act out each stage, starting with the seed. Give opportunity for everyone to participate, with someone acting as the sun, the water, the dirt and the roots. As you move through each stage, add more students to represent different parts of the stage (i.e., the roots grow as the plant does, so more

students can be added). This activity doesn't necessarily need props, but if they feel necessary, you can add a bright yellow sun picture for example.

Working on it (35 Minutes):

- Question: Why are we learning about plants? Why is this important for us to know? Explain to the students that plants are necessary for humans to survive. What are some things that humans need in order to live?
- Explain to the students that humans use a lot of plants on a daily basis, and that they are essential for our survival. We use plants for food, clothing, shelter, and medicine – humans have been using plants forever. Explain to the students that plants are very important, and we have to take care of them in order to live. Not only do they give us many of our basic needs, but they also clean the air and provide oxygen.
- Introduce the activity to the students. Explain that the produce they will be growing is seasonal produce and can only grow at certain times during the year. Ask the students about whether they can think of a certain season that a fruit or vegetable grows in. Get them to think about any visits to a farm they may have, or the time of year they often see something like a pumpkin. Explain to the students that plants need nutrients from the soil, and the nutrients vary depending on the season.
- Refer to the worksheet. Go over questions with students and explain why some of the “benefits” in the box are not actual benefits, and why some are. Review the seasonal availability guide as a class. You can either print it as a poster to hang up/pass around, or you can project it on the screen.
- Handout *Plant Growth Progress* and have students pull a popsicle stick to select their plant. Have students write their name on the stick, then hand out seeds, paper towel (about two sheets each, and a plastic bag. Have students write names on the bag, then put their seeds in the damp towel and then in the bag. Students will have a choice between tomato, spring onion, beans, and beets. Each plant grows very differently, so the growth process is going to be different for the students as well.
- Work through the worksheet independently. As a class, review the answers.

Consolidation/Debrief (2-3 Minutes):

- Tell students that they are going to be taking care of their plant throughout the unit, and they will be documenting its growth. This is to ensure they understand the different stages of plant growth as it happens.

There are many opportunities for students to develop their learning and express themselves through multiple means. Due to COVID-19, students are at varying levels of literacy. There is a differentiated worksheet for students who are struggling with reading and writing, as it gets them to draw and copy/paste more than just write. The differentiated worksheets encourage students to challenge their literacy by giving them the opportunity to label and write, but it is designed to be primarily a drawing/copying exercise.

Teachers are encouraged to post information on the board so students can copy down what is written (i.e. the definition of photosynthesis can be written on the board, and students can copy it down on their paper. This way students can develop their reading and writing skills through the help of the teacher. If students are still struggling, the teacher can print off the definitions and any additional writing segments and have students glue them to their sheet.

Name: _____

Date: _____

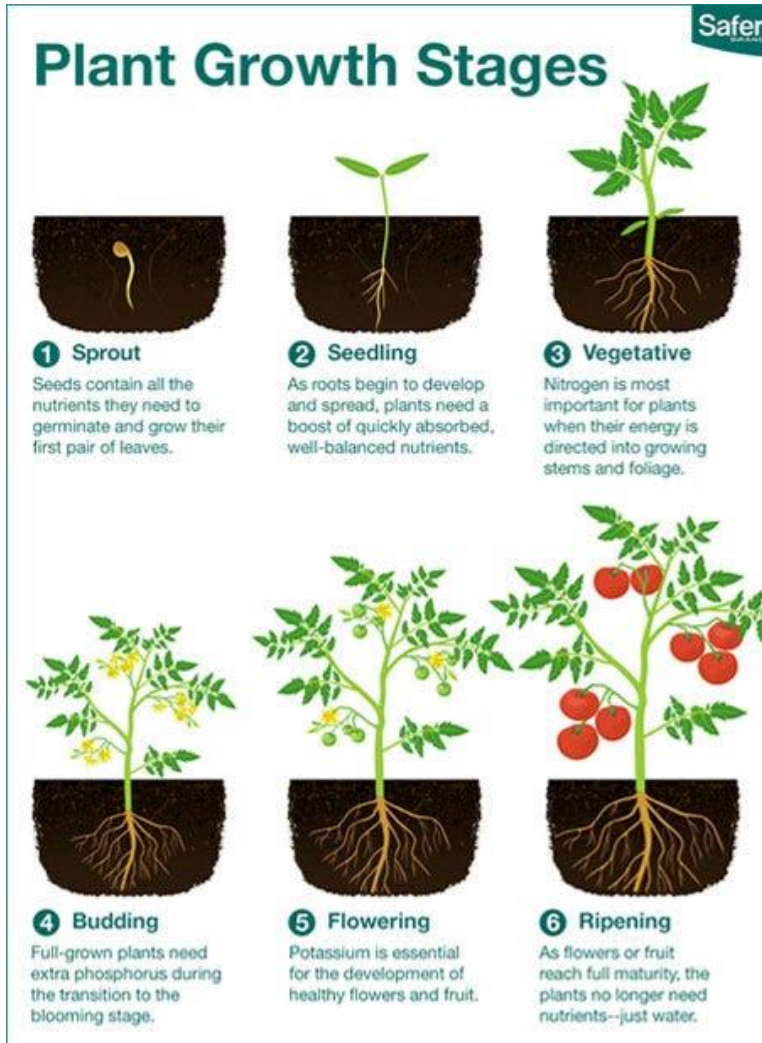
Understanding Life Systems – Growth and Change in Plants

DEFINITIONS:

SEASONAL PRODUCE: FRUITS AND VEGETABLES THAT ARE GROWN ACCORDING TO THE SEASON THAT BEST SUITS ITS GROWING NEEDS. BECAUSE OF ONTARIO'S SEASONALITY, DIFFERENT CROPS ARE HARVESTED AT DIFFERENT TIMES DURING THE YEAR.

GERMINATE: WHEN A SEED SPROUTS AND BEGINS TO GROW.

FOOD SECURITY: WHEN A PERSON ALWAYS HAS CONTINUOUS ACCESS TO SAFE AND HEALTHY FOOD



What do plants need to grow? Do they eat? Do they need to drink? Write down some of your ideas to share with the class.

Photosynthesis:

1. What is photosynthesis?

Flip to your photosynthesis colouring sheet and begin to colour for 10 minutes. After you are done, we will discuss seasonal produce.

Seasonal Food

1. What are some things you need to survive? Draw them! Label them if you can

2. What are some uses for plants? (i.e., eating)

Seasonal eating has many benefits! Circle some of the benefits you see:		
Tastes better	More fresh	Supports local farmers
Cheaper	Easier to eat	Better for the environment
Has less bugs	Supports your body's nutritional needs	Can be healthier

Check out the seasonal availability guide.

1. Draw one kind of produce that grows in each season. Label the produce.

Spring	Summer
Fall	Winter

2. What is a produce that grows all year long?

_____.

Answer the following questions **after** you have received your produce.

1. What kind of produce did you get?

_____.

2. What season does this produce grow in? What months?

_____.

3. What is one thing you can use your vegetable for? If you are unsure, ask your teacher!

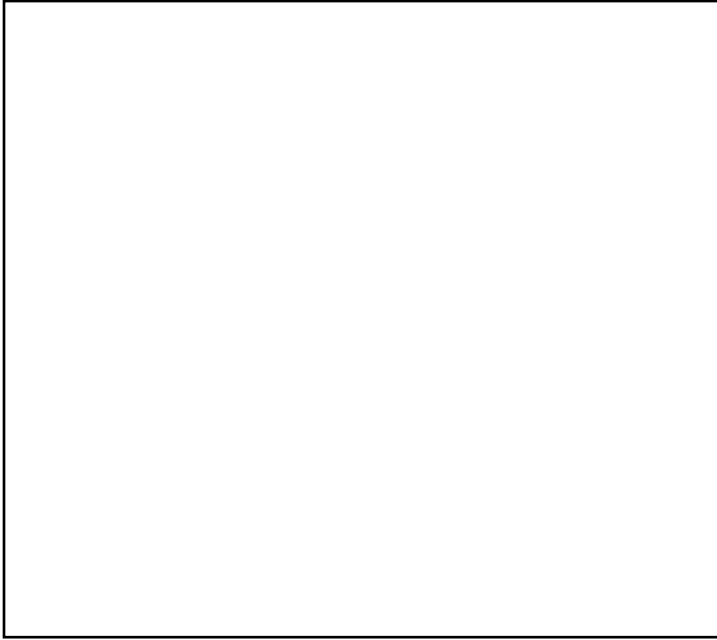
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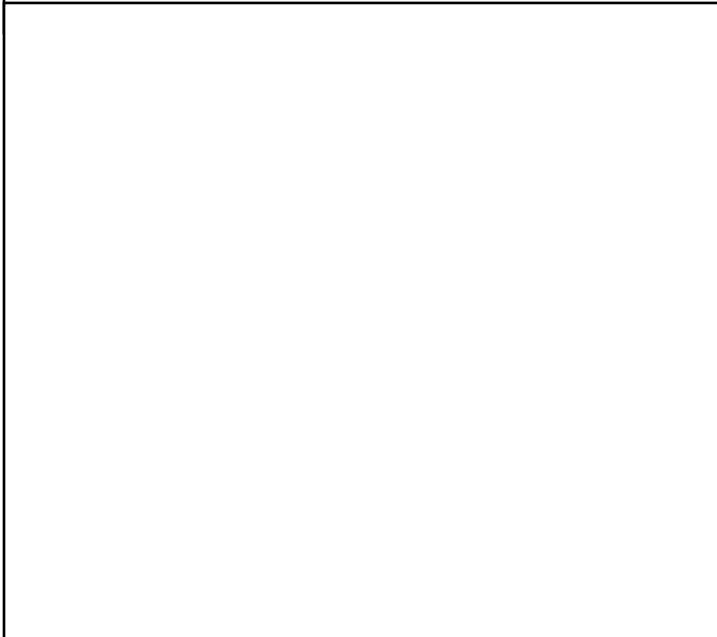
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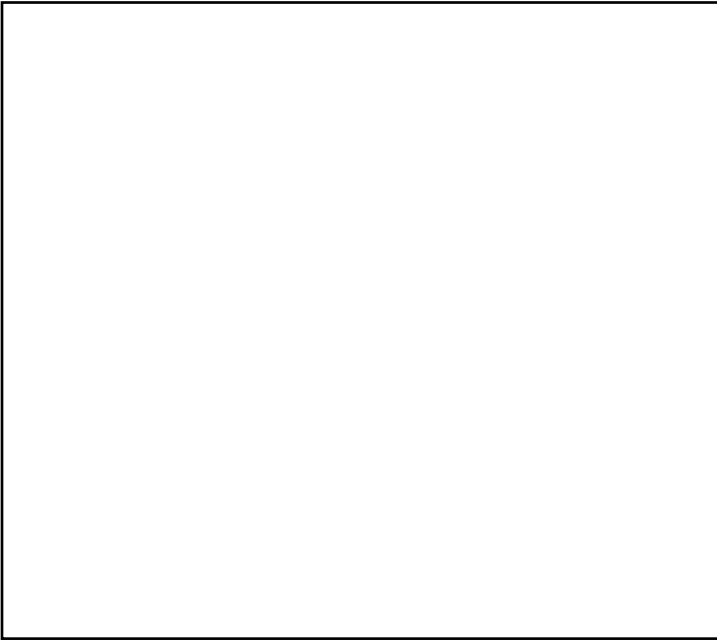
Plant Progress:

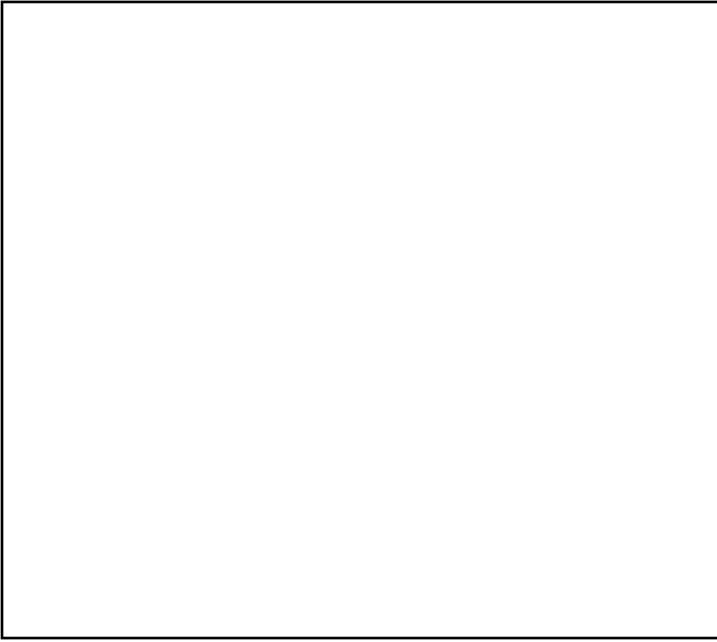
This page is for you to document your plant's growth. Draw a picture of the different stages of growth, label the stage, and note any significant changes in your plant (i.e., my seed has sprouted; I have planted it in the dirt).

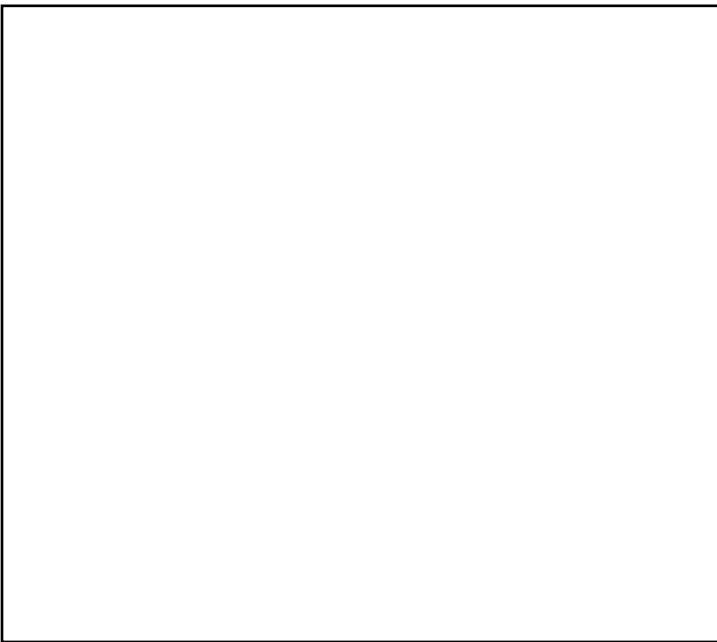












Name: _____ Date: _____

How to Germinate a Seed:

Today you will set up a seed to germinate. Then, over the next few weeks (and maybe even beyond) you will watch your plant grow.

Equipment:

- 4 Seeds
- Paper Towels
- Water
- Plastic cup

Procedure:

Stage 1 – Set-up – Do this today

1. Draw a picture of one of your seeds.
2. Wet your paper towels.
3. Place your paper towels into your cup.
4. Carefully place your seeds between the paper towel and the cup.
5. Keep your paper towel moist and the cup in a warm area.

Stage 2 – Germination – Follow this procedure once every day

6. Add water to wet your paper towel – the cup should not be filling with water.
7. Check your seeds to see if there have been any changes.
8. Draw a picture of one of the seeds; label the picture with the date.

Stage 3 – Planting – Follow these steps when told to do so by your teacher.

9. Cut one of your sprouts open and draw what you see.
10. Plant the other sprouts in soil.
11. Every week measure the height of your plant and draw what the plant looks like, label the picture with the date.
If your plant grows underground, ignore this step.

