

Educators Guide - Plant Pets (STEM To-Go)

<u>Grade(s)</u> : Grade 3	<u>Time needed</u> : 30 minutes
<u>Curriculum Area(s)</u> : Life Systems	<u>Lesson Topic</u> : Plant Pets
<p><u>Learning Goal(s)</u>: By the end of the activity, students will be able to:</p> <ul style="list-style-type: none"> - Describe the main parts of a green plant - Explain the different stages of the plant life cycle - Describe what a plant needs to grow - Use the scientific research procedure to create a prediction and write or draw observations 	

<p>Overall Expectation(s) <i>Take this directly from Ontario Ministry of Education documents.</i></p> <p>A1. STEM Investigation and Communication Skills use a scientific research process, a scientific experimentation process, and an engineering design process to conduct investigations, following appropriate health and safety procedures</p> <p>B2. Exploring and Understanding Concepts demonstrate an understanding of characteristics and uses of plants and of plants’ responses to the natural environment.</p>	<p>Related Specific Expectation(s)</p> <p>A1.1 use a scientific research process and associated skills to conduct investigations</p> <p>A1.2 use a scientific experimentation process and associated skills to conduct investigations</p> <p>A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes</p> <p>B2.1 describe the basic needs of plants, including the need for air, water, light, heat, nutrients, and space, and identify environmental conditions that may threaten plant survival</p> <p>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</p> <p>B2.3 describe changes that different plants undergo in their life cycles</p>
<p>Safety It is not recommended that you or your pets eat this plant.</p>	



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Instructions For the Activity

1. Attach the googly eyes or draw eyes on the cup.
2. Draw a face on the cup!
3. Empty your soil into the cup.
4. Sprinkle the seeds on top of the soil. Cover with a thin layer of soil. Add 3 spoonfuls of water.
5. Record the data in the Observation Log.
6. Add 1 spoonful of water every day.

Tip: Move your Plant Pet near a window to make sure your Plant Pet is growing!

Tip: Make sure to observe the process! You might be able to see the roots against the side of your cup!

Materials

- Clear Cup
- Soil to fill the cup halfway
- Googly eyes
- Pinch of red clover seeds (available at garden stores)
- Water
- A sunny location
- Marker
- Spoon
- Observation Log (Appendix B)

Videos

Play the video to show your students how the plant will grow.
<https://www.youtube.com/watch?v=E933DSpP9Ds>

Play the video to learn more about the life cycle of plants.
<https://www.youtube.com/watch?v=mZ3fRX1yqvM>

Appendix A

STEM To-Go Activity Sheet - Plant Pets

Appendix B

Observation Log

The Science Behind It All

Use Appendix A as a handout. There are provided illustrations to help further explain the content.

What your plants need to grow:

Water: Water helps move nutrients from the soil into the plant.

Sunlight: Plants use light energy to make a type of sugar called **glucose**. They use glucose as their energy source.

Air: Plants take carbon dioxide from the air, and use it to make glucose.

Soil: Plants use soil to get the nutrients it needs to grow.

Play the video to show your students how the plant will grow.

<https://www.youtube.com/watch?v=E933DSpP9Ds>

Parts of a plant:

While the plant grows, observe all the parts of a plant - roots, stems, leaves, and seeds.

Leaf: The leaf uses sunlight to make food.

Roots: Roots give the plant support by anchoring the plant and absorbing water and nutrients needed for it to grow.

Stem: The stem holds the plant up and carries water to the rest of the plant.

Seeds: The seed will grow into a new plant.

Life cycle of a plant:

The life cycle of a plant shows the different stages from the beginning of its life until the end.

1. Seed: The plant cycle starts with the seed.

2. Sprout: The roots are first to push out of the seed to absorb water and nutrients.

3. Leaves: The leaves make food for the plant, and the plant can use this to make new seeds.

4. Seedling: The seedling (new plant) grows. The stem and leaves reach toward light.



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Play the video to learn more about the life cycle of plants.

<https://www.youtube.com/watch?v=mZ3fRX1vqvM>

Extensions

Extension #1

Grade(s): Grade 3

Curriculum Area: Earth Sciences

Overall Expectations

E2. Exploring and Understanding Concepts

demonstrate an understanding of the composition of soils, of different types of soils, and of processes and practices that can affect the health of soil

Specific Expectations

E2.1 identify the living and non-living components of soil, and describe the characteristics of healthy soil

E2.2 identify different substances that are commonly added to, or absorbed by, the soil, and describe their effects on soil health

E2.5 identify various strategies used to maintain and improve soil health in Ontario

- Each group of students can add different liquids to the soil (water, milk, juice, vinegar, etc.) and then compare with other groups of what changes occurred during the growth of their plants.

Resource: <https://science-u.org/experiments/can-you-water-plants-with-other-liquids.html>

Extension #2

Grade(s): Grade 3

Curriculum Area: Life Systems

Overall Expectations

B2. Exploring and Understanding Concepts

demonstrate an understanding of characteristics and uses of plants and of plants' responses to the natural environment.

Specific Expectations

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

- Dissect different types of plants and flowers to learn about the different parts.

Resource: <https://www.scientificamerican.com/article/dissect-a-flower/> (Specific to Red Clovers)

Resource: <https://www.sciencebuddies.org/stem-activities/flower-dissection>

Extra Resources

Growth and Changes in Plants - Unit Resources:

http://www.mrcollinson.ca/3%20science/plants/3_science_plants_complete.htm

Growth and Changes in Plants - Lesson Plans & Activity Sheets:

<https://www.torontozoo.com/educationandcamps/elementary/teacherresources/grade%203-%20growth%20&%20changes%20in%20plants.pdf>

3rd Grade Life Science Plants Unit - Lesson Plans & Activity Sheets:

https://ie.unc.edu/wp-content/uploads/sites/277/2019/09/3rd-Grade-Plants_Final-Version_Web.pdf

Curriculum Connections - Hands-On Activities:

<http://www.flowerscanadagrowers.com/uploads/2016/04/grade%20three%20module.pdf>

Appendix A: STEM To-Go Activity Sheet - Plant Pets

Activity sheet includes materials, instructions, tips and the science behind this activity.

Plant Pets Activity - Blog Post: <https://www.stemovation.org/post/plant-pets>



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Educators Guide - Plant Pets (STEM To-Go)

Plant Pets Activity Sheet - Student Copy:

https://www.stemovation.org/_files/ugd/8444cc_c71e4344851a4d63a5be3e8ab6b2600a.pdf

Appendix B: Observation Log

Observation Log is provided for students to observe the process. They are able to write or draw what they see according to the students specific expectations.

Observation Log - Student Copy:

https://8444cc5c-82a2-4fe8-844a-2131bc9088e3.usrfiles.com/ugd/8444cc_b042a59f9db449a09299430dfabf02ca.pdf



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STEM TO-GO ACTIVITY

PLANT PETS

MATERIALS

- Clear Cup
 - Soil (1 cup)
 - Googly Eyes (1 pair)
 - Observation Log
 - Seeds (Plant Species: Red Clover)
- Find at Home**
- Water
 - A sunny location
 - Marker
 - Spoon



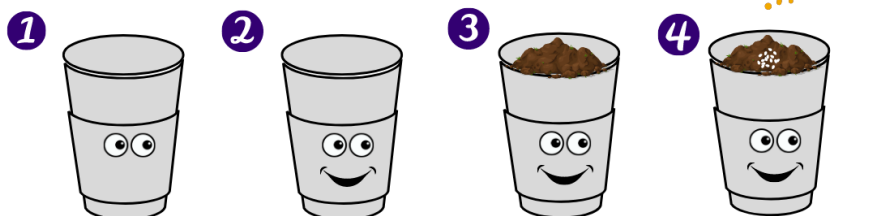
INSTRUCTIONS

1. Attach the Googly Eyes onto the cup.
2. Draw a face on the cup!
3. Empty your soil into the cup.
4. Sprinkle the seeds on top of the soil. Cover with a thin layer of soil.
Add 3 spoonfuls of water.
5. Record the data in the Observation Log.
6. Add 1 spoonful of water every day.



Watch this video to see how your plant will grow!

<https://www.youtube.com/watch?v=E933DSp9Ds>



WHAT YOUR PLANTS NEED TO GROW

TIP!

Move your Plant Pet near a window to make sure your Plant Pet is growing!



WATER

Water helps move nutrients from the soil into the plant.



SUNLIGHT

Plants use light energy to make a type of sugar called **glucose**. They use glucose as their energy source.



AIR

Plants take carbon dioxide from the air, and use it to make glucose.



SOIL

Plants use soil to get the nutrients it needs to grow.

STEM TO-GO ACTIVITY

PLANT PETS

THE SCIENCE BEHIND IT ALL

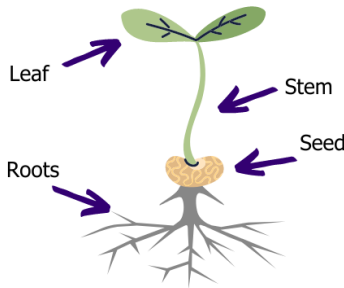
While the plant grows, observe all the parts of a plant - roots, stems, leaves, and seeds.

LEAF

The leaf uses sunlight to make food.

ROOTS

Roots give the plant support by anchoring the plant and absorbing water and nutrients needed for it to grow.



STEM

The stem holds the plant up and carries water to the rest of the plant

SEEDS

The seed will grow into a new plant.

LIFE CYCLE OF A PLANT

The life cycle of a plant, shows the different stages from the beginning of its life until the end.

1 SEED

The plant cycle starts with the seed.



2 SPROUT

The roots are first to push out of the seed to absorb water and nutrients.



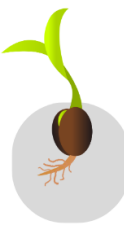
4 LEAVES

The leaves make food for the plant, and the plant can use this to make new seeds.



3 SEEDLING

The seedling (new plant) grows. The stem and leaves reach toward light.



TIP!

Make sure to observe the process! You might be able to see the roots against the side of your cup!



Learn more about the life cycle of plants!

<https://www.youtube.com/watch?v=mZ3fRX1yqyM>

STEM TO-GO ACTIVITY
PLANT PETS
OBSERVATION LOG

SCIENTIST NAME	DATE PLANTED	PLANT SPECIES Red Clover The scientific name is: Trifolium pratense
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PREDICTIONS: (What I think the plant will look like)

Date Observed:
Drawing: **Observations:**

Date Observed:
Drawing: **Observations:**

Date Observed:
Drawing: **Observations:**

Date Observed:
Drawing: **Observations:**

Date Observed:
Drawing: **Observations:**

Date Observed:
Drawing: **Observations:**

Definitions

Predictions: what do you think will happen in the future?

Observations: recording what you notice (ex. colour, height, amount)