

Gardening

Overview

In this activity, students will explore the life cycle of plants and their role in the environment by learning about heirloom gardening and germinating their very own seeds. They'll connect the importance of plants to their daily lives and express scientific findings in creative ways.

Georgia Standards of Excellence*

- LS1.A Structure and Function
 - Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive, grow, and produce more plants.
- LS1.B Growth and Development of Organisms
 - Plants and animals grow and change.
- LS1.C Organization for Matter and Energy Flow in Organisms
 - Plants need water and light to live and grow.
- LS2.A Interactions, Energy, and Dynamics
 - Plants depend on air, water and light to grow
- LS2.C Ecosystems Dynamics, Functioning, and Resilience
 - When plants and animals cannot find enough food, water, or air, they may die.
- S2L1. Obtain, evaluate, and communicate information about the life cycles of different living organisms.
 - Plan and carry out an investigation of the life cycle of a plant by growing a plant from a seed and by recording changes over a period of time.

Materials

- pencil
- colored pencils or crayons
- soil
- pot/jar/plastic bag
- water
- paper towels
- plastic wrap
- rubberband
- writing paper
- miscellaneous art supplies

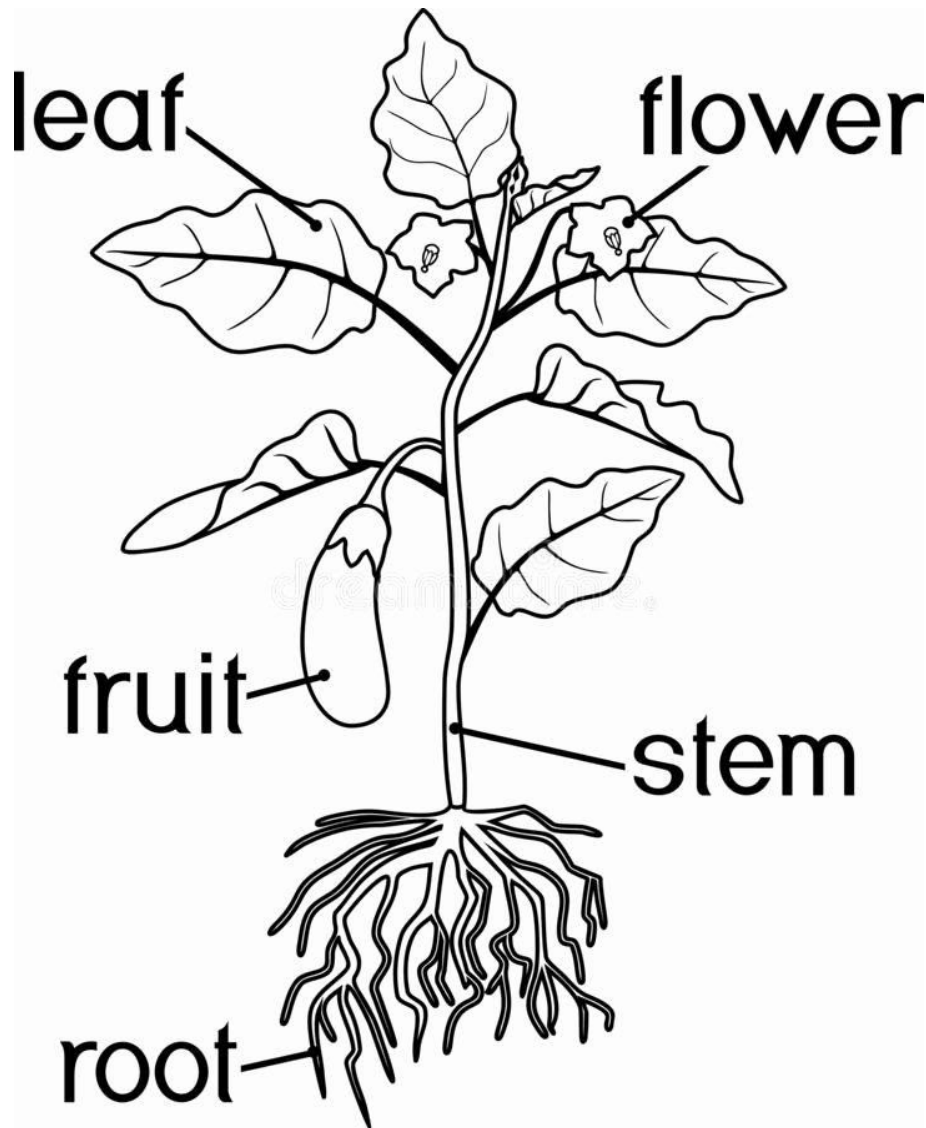
Vocabulary:

- **flower:** the reproductive part of a plant, usually surrounded by petals
- **fruit:** the seed-bearing part in flowering plants
- **germinate:** the process by which an organism grows from a seed
- **heirloom gardening:** old type of a plant used for food that is grown and maintained by gardeners and farmers

*Note: Adapt to your context as needed

- **leaves:** one of the usually flat green parts that grow from a plant stem and that functions mainly in making food by photosynthesis
- **organism:** a living thing made up of one or more cells and able to carry on the activities of life
- **photosynthesis:** the process by which plants make their own food using carbon dioxide, water and sunlight
- **roots:** the leafless underground part of a plant that absorbs water and minerals, stores food, and holds the plant in place
- **stem:** the main part of a plant that grows up from the ground and supports the branches, leaves, flowers, or fruits that may grow from it

Activity/Procedures



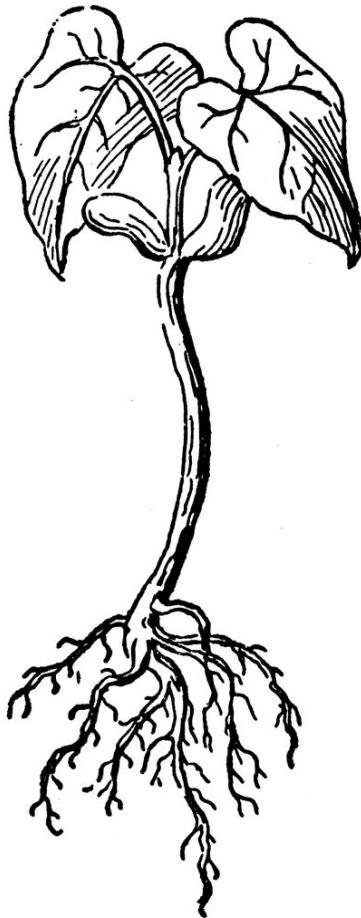
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I. Plant parts

Just like you, plants have different parts that make up the whole **organism**. The roots are like your feet and toes, the stem is like your body, with leaves and flowers reaching out like your head and arms! Color each part of the plant diagram above with a different color.

- The **roots** grow beneath the ground, and help support the plant while also absorbing water and nutrients from the soil.
- The **stem** carries the nutrients from the roots to the leaves, and helps the plant grow tall and strong.
- **Leaves** use the sun's light to make more food for the plant. This process is known as **photosynthesis**.
- While **flowers** are pretty, they are also an important part of the reproductive cycle of plants. Flowers help the plant produce fruit (like apples or nuts).
- **Fruits** protect the seeds of the plant, and also make the plant appealing to animals who will help spread the seed so the plant can grow in new places!

Now, label each part of the bean plant in the picture below! Which parts grow above ground? Which parts grow below the ground?



II. Heirloom Gardening

Plants are important not only in nature, but also at home! Think about what you had for breakfast this morning. Maybe you had a waffle with maple syrup! The waffle is made from a grain (wheat), which is the nutritious seed of the plant. The syrup is boiled sap from a maple tree. Sap is a watery substance that carries nutrients to different parts of the tree. If you didn't have waffles, maybe you had cereal with berries! The cereal is also made from grains, the milk comes from cows who eat grains, and the berries are the fruit of the plant. Are you starting to see a theme? Growing plants is important to every meal we have, whether you realize it or not!

In the old days, people in the mountains didn't have supermarkets to go to, so they had to make or grow their own food. The best way to do this was to grow a garden! Can you think of some plants they might have grown to feed themselves? List your top five ideas below:

1. _____
2. _____
3. _____
4. _____
5. _____

Great suggestions! If you wrote down things like corn, potatoes, cabbage, onions, apples, carrots, beans, beets, peppers, you are on the right track.

But how did they get the seeds to grow all these different foods? Remember, people didn't have stores like we do now. We know each plant produces seeds as part of its fruit, but how do you think they were able to grow new plants from these seeds?

Families relied on seed saving and sharing to grow their gardens. Each year, they would not harvest fruit or vegetables from a few plants. Instead, they would let those plants create seeds that they would keep for the next year's planting. Known as seed selection, this process is similar to **natural selection**. Farmers would collect seed from plants with the best produce. They would often share these seeds with their relatives, especially children. Known as **heirloom gardening**, these special seeds were passed between generations, just like precious family heirlooms!

III. Grow Your Own Plant

1. Time to grow your own garden! Open the seed packet and follow [these instructions](#) to germinate your seed.

*Note: Adapt to your context as needed

2. Once you've got your seed ready, put it in a warm, sunny spot.
3. Now let's start working on our observation journal. As scientists, it's important for us to record detailed notes about our experiment. For the next week, make a daily entry recording the growth of your plant.

a. Example: Day 1, August 10, 2020

"Today I put 5 black bean seeds in a jar with paper towels, and covered the top with plastic wrap. I put the jar in my window."

b. Day 2, August 11, 2020

"I checked on my seeds at 9:15 am this morning. So far, there is no growth, but I noticed lots of water droplets collecting on the inside of my plastic-wrap lid. The paper towels are still damp, and it seems to be right in the sun."

4. Has your plant **germinated** yet? This is when the seed opens up and we can see small green shoots making their way out. This means your plant is growing and that you can put it in soil soon! Review the drawing above to help identify the parts of your seed.

5. Now it's your turn! Draw a picture of what one of your seeds looks like. Can you label the parts?

6. Let's plant our seed so it can continue to grow. Do you remember the recipe for good gardening? Grab a pot, a shoebox, or even a cardboard eggshell carton. Fill your container with healthy soil, then gently transfer one seed to the pot. Place about ½ inch below the surface, so that the shoot can continue to grow up. Water it well and place it in a sunny spot. Keep taking notes in your journal, checking every other day on it's growth.

IV. Get creative! Let's draw your plant

1. Gather your favorite art supplies and be creative! Draw, color, collage, sculpt your plant. Find a creative and artistic way to show what your little plant looks like.
2. Now let's label it. Using the diagram above, can you identify the parts of your plant? Does it have flowers? Where are its leaves? What does the stem look like?

V. Write a story

1. Using your journal entries, write a short story about your plant. When did you plant it and where did it grow? How long did it take for it to grow? How many leaves does it have? Use a ruler to measure how tall it is now. Can you remember what a plant needs to grow? Share your story with a teacher or parent!