

The Plant Life Cycle

Objective:

Students will learn about the plant life cycle by hands-on observation and planting of bulb vegetables and/or plants. The experiments will be used to encourage student to think about the importance of the Plant Life Cycle and its benefits to humans.



LS1.B: Growth and Development of Organisms

- Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)
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Docent Lab Guidelines:

1. **Schedule a date and time with your teacher to have the students come into the lab. Allow 45 minutes to 1 hour of class time.**
 2. **Input the day and time into the Science Lab Master Schedule. Please make sure you add set up and clean up time to the class time.**
 3. **Allow 30 minutes to set up and 30 minutes of clean up time.**
 4. **Give a brief discussion on the plant life cycle. There will be some books available if you would like to read the class a book. The books will be placed in the vertical files. Or you can opt to show the class a video.**
 5. **Check with the teachers to see if they would like to take their plants back to the classroom or leave them in the Science Lab.**
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General Docent Information

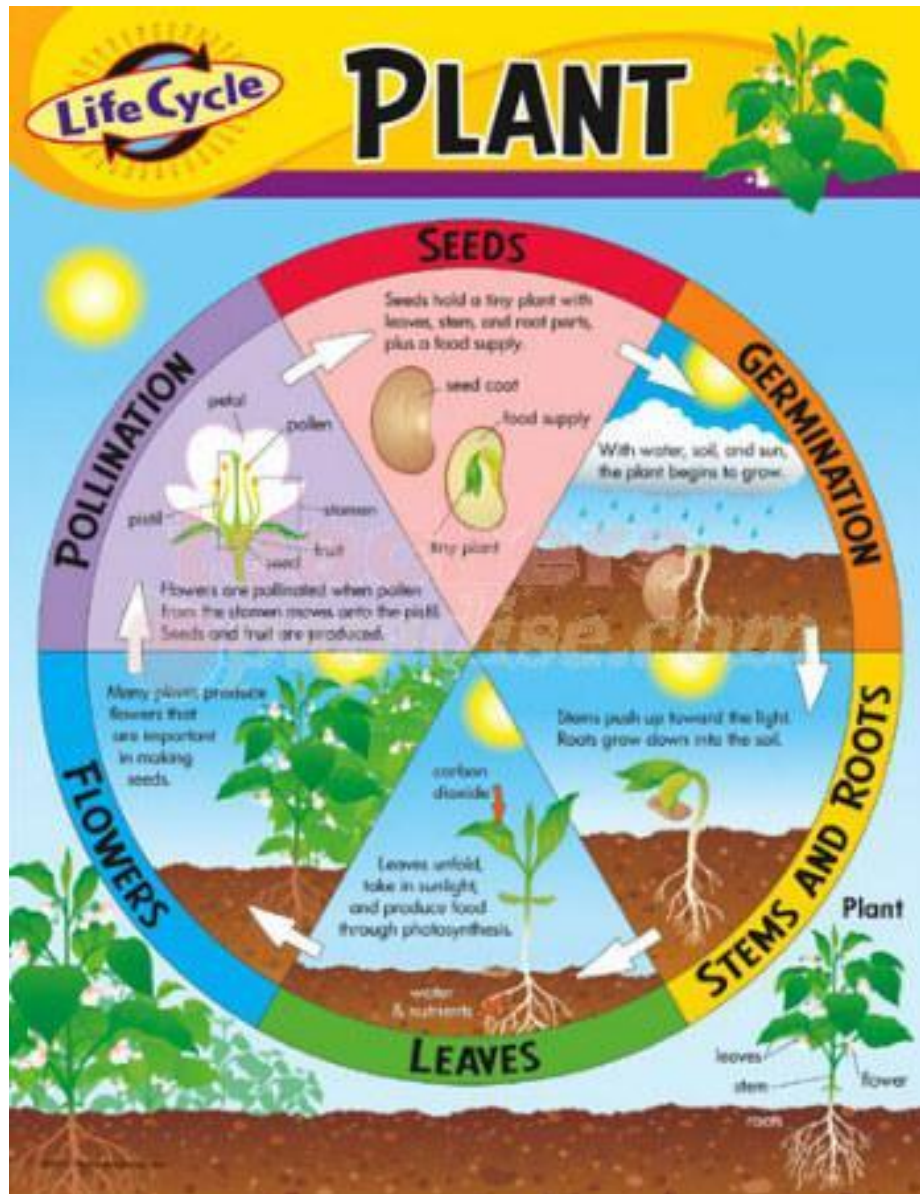
There will be a children's book available on how plants grow. In lieu of a formal discussion you can choose to read this book or incorporate it into the class discussion before you start the experiments.

The experiment portion will involve planting some bulb vegetables and/or plants.

Feel free to put the Parts of a Plant diagram and / or Plant Life Cycle on the overhead projector if needed for discussion purposes.

As an option (not required) the docents can choose to do Experiment #2. Use magnifying glasses to observe different type of plant leaves and seeds. Also if a magnifying glass is taped to the camera lens of the iPad it can be used as a make shift microscope.

The Plant Life Cycle Diagram:



Parts of a Plant

FLOWERS

attract pollinators and
make seeds that
will someday grow
into new plants



LEAVES

are food factories.
Leaves have little
openings that let air
and water come and
go. Leaves catch energy
from sunlight and use
it to turn the air and
water into food.

STEM

The stem
supports the plant
and carries water,
nutrients and plant
chemicals up and
down to all parts
of the plant.

The part of the flower
that holds the seed is
called the ovary. After
pollination, the petals
fall away and the
ovary develops into a

FRUIT.

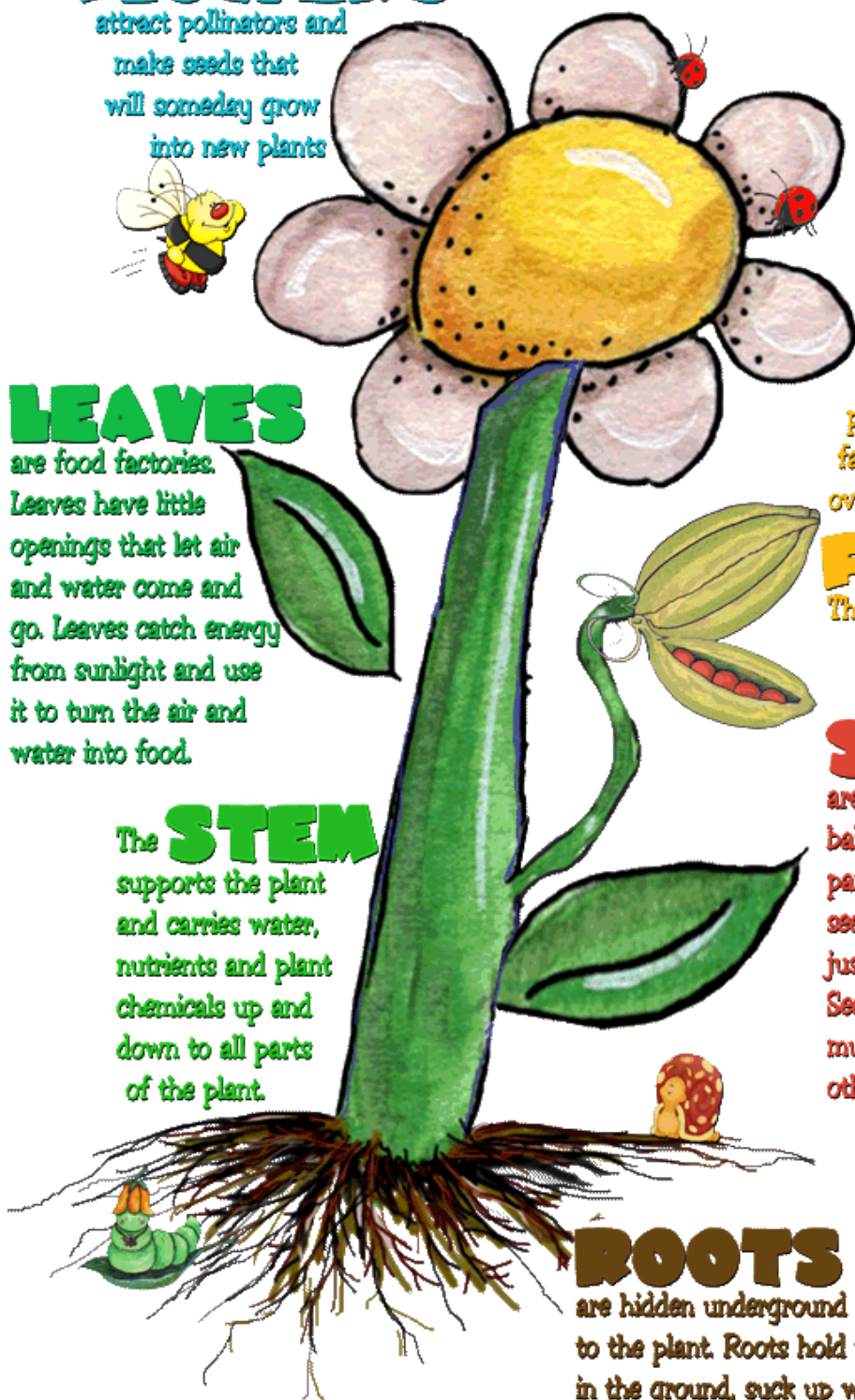
The fruit protects the
developing seeds.

SEEDS

are little cases with a
baby plant inside. The
parent plant packs the
seed with nutrition,
just like a lunch.
Seeds end up having
much more energy than
other parts of the plant.

ROOTS

are hidden underground but are very important
to the plant. Roots hold the plant steady
in the ground, suck up water and nutrients
from the soil and even store food for the future.



Video on the Plant Cycle:

1. Dinosaur Train: Nature Life Cycle (run time 2 min. 38 sec.)
<http://www.pbslearningmedia.org/resource/0c0da038-4ed9-47fd-b108-3d155f05a0b3/0c0da038-4ed9-47fd-b108-3d155f05a0b3/>
2. How Does a Plant Grow – Time Lapse (run time 1 min. 7 sec.)
<http://www.pbslearningmedia.org/resource/tdc02.sci.life.colt.plantsgrow/from-seed-to-flower/>
3. Dinosaur Train: Flowers that Last Forever
<http://www.pbslearningmedia.org/resource/c23141f7-63eb-4667-a9c5-fb04f4795885/c23141f7-63eb-4667-a9c5-fb04f4795885/>

Demonstration: Whole Class

Estimated time: 5-10 minutes

Materials:

- Sample pictures of tree trunks painted white, plants cuticle and upper epidermis.

The cuticle and upper epidermis are the outer protective layers for a plant. There are many jobs for the cuticle and upper epidermis and one of the jobs is that it helps the plant defend itself against too much sun. Like our skin, plants also need some sun to grow, but too much can be harmful.

Instructions:

1. Show the pictures of the Aloe plant being split open & the picture labeling the cuticle & upper epidermis. Point out the plant's cuticle & epidermis layer in both pictures.
2. Discuss what the jobs might be for a plant's "epidermis"/skin.
3. Compare a plant's epidermis to our epidermis.
4. Show the picture of the tree trunks painted white.
5. Discuss why people paint the tree trunks. (It helps avoid sunscald which is a sunburn for a plant & reflects sunlight during the daytime, helps keep them warmer at night, and can protect against rodents/insects).
6. Ask how we can protect ourselves from the sun like we do with the tree trunks. (Sunscreen & protective clothing)

Experiment #1: Planting

Estimated time: 15-20 minutes

Materials:

- Empty pots and or containers

- Soil
- Bulbs (Freesias, gladiolus, onions or garlic)
- Labels, markers and popsicle sticks for Names
- Water
- Spoons or cups for scooping soil

Preparation:

- Set out 1-2 containers per table based on how many containers are available.
- Set out bowls of soil and scooping utensils (or hands works perfectly too).
- Set out bulbs at each table.
- Create a table with markers, Popsicle sticks and labels for kids to make signs for their planter identifying what they have planted and their names.

Instructions:

7. Students will work at table groups.
8. Scoop soil into the container.
9. Place bulbs at the appropriate depth based on the type of bulb.
10. Add water.
11. Create labels for each planter.
12. Add water.

Experiment #2: Plant Investigation

Estimated time: 15 minutes

Materials:

- Various plant leaves, flowers and seeds
- Magnifying glasses
- Zoomy microscope
- Computer

Preparation:

- Before class starts boot up the computer and start the Zoomy microscope program.
- Place magnifying glasses on the tables for students to view plant specimens on their own.
- Prepare trays with leaves and plants to investigate.

Instruction:

1. Have the student's magnifying glasses to look at the details of various plants and flowers. What do they see? Can they name the parts of the plant or flower?
2. You can also take the students to the computer station and have them view plant specimens with the Zoomy microscope. Just put the microscope over the specimen and turn the top of the microscope to zoom in and out.

IPad Resource: The Science of Gardening from the SF Exploratorium

If you are interested in using the iPad to show the kids some interesting close up photos of different flowers take a look at the *Secret Lives of Flowers* at:

http://www.exploratorium.edu/gardening/bloom/secret_life_of_flowers/index.html