

Plant Processes Lesson

Concept Objectives: Photosynthesis, Pollination

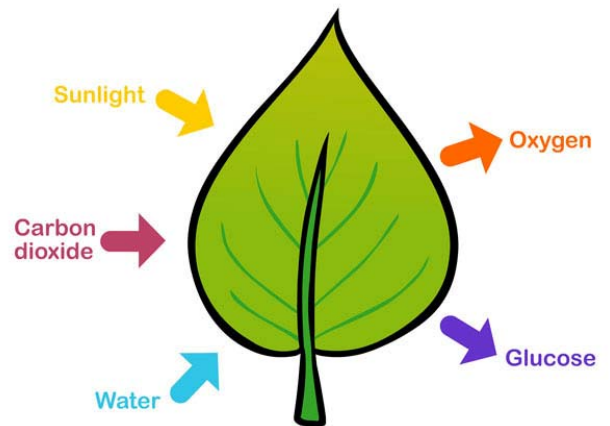
Time: 40-45 minutes

Setting: Indoors

Activities: Oxygen Factory, Flower Dissection

Materials Needed:

- Leaves of various kinds
- Oxygen Factory Diagram
- Crayons, Colored Pencils
- Magnifiers
- Crayons, colored pencils, or markers
- Paper
- pencils
- Flowers with discernible reproductive parts, enough for each child to have 2
- Magnifiers
- Toothpicks
- Paper Towels
- Twigs gathered from around the school (cherry or birch)
- Vase or glass



Procedure

Oxygen Factory

1. Distribute a magnifier and a leaf to each student.
2. Have the students draw the leaf or give them a line drawing of a leaf with basic veins. (Attached to this lesson plan)
3. Explain that plants are the only living things in the world that don't have to find or gather food to eat. They make their own food within their leaves, this process is called **photosynthesis**.
4. Just as we follow a recipe and use different ingredients, plants need many ingredients to make their food. Just as we use an oven to change food into something we can eat,

plants use sunlight to change their ingredients into food, sugar, which they can use to grow. Plants use three ingredients to make food: **Chlorophyll, Water, and Carbon Dioxide.**

5. Explain that the green in the leaves come from CHLOROPHYLL, a green pigment found in the plant cells that allows plants to absorb the energy from sunlight.
6. Have them lightly color the leaf green. Have them color the veins and stem blue. Remind them that roots bring the water in from the ground and the stem transports it to the leaves.
7. Have the students take a deep breath and let it out slowly. Tell them most of their breath out is CARBON DIOXIDE – one of the ingredients that plants use to make their food. Have them color the carbon dioxide arrow gray.
8. Tell them that the leaves soak up sunlight to make food. Have them color the arrow labeled SUNLIGHT yellow.
9. Tell them that the plant sends the food/sugars it makes in the leaves to the stem to be distributed to the rest of the plant.
10. Have the students take another breath and tell them that OXYGEN is a leftover in the process of making food. The plants do not use it and send it out of the leaf. Have them color the OXYGEN arrow red.
11. Moisture is also released during the process of making food. Have them color the MOISTURE arrow blue.

Flower Dissection

1. Remind students that plants have flowers which are the parts of the plant that produce seeds. Plants make seeds only after pollination. Ask the students if they have ever heard of pollination. Most flowers depend on bees, birds, or other insects to help with the pollination process. Smell, color, and nectar attract pollinators to the flower.
2. Explain that now the class will be taking a closer look at flower parts. Hand out one flower and a magnifier to each student. Also give them a toothpick and a paper towel.
3. Investigate the flower with the magnifier, going over the different parts:

Different parts of the flower are specialized to help plants reproduce—to produce seeds that are used in new plant growth. Typical flowers have four main parts: pistil (stigma, ovary, and style), stamen (anther and filament), petals, and sepals.

The female part of the flower, **the pistil**, includes the ovary, style, and stigma. Pollen attaches to the sticky stigma and this begins the process of pollination. The pollen travels down the style until it reaches the ovary where ovules are fertilized and will develop into seeds. Depending on the plant species, a flower may have male, female, or both male and female reproductive structures.

The male part of the flower, **the stamen**, consists of the anther and filament. The anther carries the pollen that fertilizes the female part of the flower and is held up by the thread-like filament.

Petals are the colorful structures that help the flower attract pollinators. Petals also serve as a landing platform for insects and birds. For example, when a bee lands on the lower petal of a snapdragon, its weight causes the stamen to swing down and dust the bee with pollen. Petals of some plant species have stripes or other markings that guide pollinators to the nectar.

Sepals are usually green, sepals typically function as protection for the flower in bud, and often as support for the petals when in bloom

4. Have students draw their second flowers, diagramming the parts. They can use the leaves of the first flowers to color the drawings.

Twig Push

(if you have time)

1. Take the students outside and gather a few 10-12" twigs off of a nearby tree (cherry or birch is best)
2. Cut off the bottom of the twig on an angle and place in a vase of warm water.
3. Place vase in a sunny area or by the plant light you have set up.
4. Have students estimate the date the buds will start opening.
5. Monitor the bud burst. Have the students journal the progress either daily or at least 2x a week until the leaves and/or flowers emerge.
6. Have students either photograph or draw the progress of the opening leaves.

Oxygen Factory Diagram

