

Plant Science: Introduction to Photosynthesis

4th and 5th Grade

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Benchmarks:

Explain how organisms function and interact with their physical environment.

Purpose:

This lesson is intended to introduce the concept of photosynthesis to students. Students should become familiar with purpose of photosynthesis and its components such as sunlight, water, carbon dioxide, and oxygen.

This lesson is included in a series of plant science lessons. Students should first be introduced to the plant cycle, the concept of capillary action of water through the roots, and structure of the plant including the roots, leaves, stems, veins, and lamina (tissue).

Materials:

- Big poster size picture of a tree or plant on poster board
- Different colored markers
- Worksheets which go along with lesson (optional)

Initial Demonstration:

Instructor should place their poster of “our plant” in front of the class and initiate discussion of the role of the leaf in producing food so the entire plant has enough energy. Go over the importance of sunlight, water, and soil for the proper growth and survival of the plant. Emphasize that as we have progressed we have become more specific in talking about plants from their cycle to the role of specific parts of the plant and the leaf. There are smaller parts of the leaf that are very important in process of producing food for the plant. Introduce the word photosynthesis as a process that plants must go through to have food and energy and to survive.

Target Model:

- The leaf is part of the plant responsible for producing food.
- The plant uses the food produced for energy purposes.
- The different parts of the leaf work together and use the water, sunlight, and soil and this is important for the plant to survive.

Procedure:

After reviewing and introducing these concepts to the students, draw their attention once more to “our plant”. Ask students what “our plant” needs to survive. Hopefully students will name the obvious essentials such as sunlight, water, and nutrients from the soil, stressing that sunlight is major source of energy. Also stress to students that the process of photosynthesis takes place during the day because of the sun. As students name these things draw them up on the picture of “our plant.” Explain to the students that the plant uses the sunlight and takes in carbon dioxide to make food for itself, and

releases oxygen at the same time. Make sure to label these things on “our plant” as you go along so students can visualize this process.

After going through this process, go through the worksheets which correspond with this lesson so students can go over the process again.

Discussion:

Students should see that sunlight, water, and nutrients from the soil and air all work together to make food and energy for the plant. They should also know that plants use carbon dioxide and release oxygen. After this lesson, students do not have to know the whole process but should just be familiar with what is involved in photosynthesis and purpose of it.

THE PLANT CYCLE



Let's review what we have learned so far....

When you hear the word cycle, what kind of shape do you think of?

Put the following steps of the plant cycle in order, starting with the first step.

___ **Seed**

___ **Pollination**

___ **Germination**

___ **Stems and Roots**

___ **Flowering Plant**

Roots grow _____ and leaves grow _____. (Pick up or down)

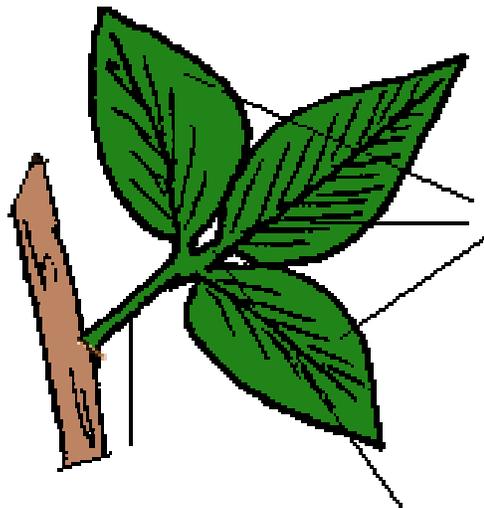
Name three things required by plants for proper growth.

Name two ways in which pollination can occur.

Now Let's Think Smaller.....

The leaf is the part of the plant responsible for producing food used by the plant to grow so they have enough energy.

Let's label the parts of the leaf and find out what each does.....



Leaf Stalk – where the leaf attaches to the stem

Midrib- is transport system for water, nutrients, and food to the rest of the leaf

Veins- support, soft thin tissue of the leaf

Lamina- soft, thin tissue of the leaf

Now let's go even smaller.....



What is the process by which plants trap sunlight to make food for itself?

Match the following terms with its correct definition?

_____ water

1. The plant takes this from the air.

2. The plant releases this into the air.

_____ oxygen

3. This is what the sunlight breaks down after it is absorbed by the leaf.

_____ carbon dioxide



The leaf absorbs _____ from the air and releases _____ into the air.

This is the main source of energy in photosynthesis?

Does Photosynthesis usually occurs in the day or the night?

Look at this list of items and cross out any words which are not associated with photosynthesis and circle the ones which are?



Dark

green

Sunlight

carbon dioxide

Leaves

oxygen

Water

salt

Moon

orange