

Subject: Grade 5 Science

Unit: Plants and Life Cycles

Day: 8

Topic: Photosynthesis

Materials:

- Photosynthesis power point
- Photosynthesis Homework
- Stem of mint
- Candle
- Covering; class bowl or otherwise

Lesson objective(s):

- SWBAT define photosynthesis
- SWBAT describe why plants make their own food

ENGAGEMENT

Light a candle then put it under a container. The fire should die. Then light the candle and put the piece of mint under with it. The candle should stay lit, ask students why this happens

EXPLANATION

Slide 1: Photosynthesis – have students guess at what it is based on what they know of plants and plant parts

Slide 2: Photosynthesis intro

Plants make their own food, that's why they are known as autotrophs (auto=self, troph=food)

Photosynthesis is the process by which plants make their own food. They use sunlight, water, and carbon dioxide in the chloroplast to produce the glucose they need to grow. (WHERE IS THE CHLOROPLAST?)

Slide 3: Plant cell

We already know that the plant cell has two main differences from animal cells (Ask what they are).

Chloroplast and cell wall. The chloroplast is the part of the plant cell that is responsible for making the food needed. Chloroplast are found most abundantly in the leaf cells (WHY?) The leaves are responsible for taking in most of the sunlight for the plant, so they are most abundant there. Within the chloroplast is chlorophyll, which is the part of the cell that absorbs the light and gives the plant the green color.

Notice the white leaf, what can you tell us about the amount of chlorophyll?

Slide 4: Cell photos

Remind them we already learned this, review the plant cell including the chloroplast. The bottom right photo shows a microscope photo that has distinct chloroplasts.

Slide 5: large microscope photo

Point out the labeled organelles, not the chloroplast are very green

Slide 6: Photosynthesis recipe

Let's think about this like cooking. We need ingredients to cook.

The plant needs Light energy from the sun, water (H₂O), Carbon Dioxide (CO₂), and chlorophyll to make its food. The steps are:

- 1) Chlorophyll absorbs sunlight and the roots take in water, which travels up the xylem.
- *2) The chlorophyll uses the light energy to break water into 2 hydrogen and 1 oxygen.
- *3) Plant takes in CO₂ and hydrogen from water joins to make sugar (glucose)
- *4) Sugar (glucose) is carried to rest of plant in the phloem and oxygen is released into the environment.

Slide 7: Photosynthesis photos

Go over the ingredients and steps with the photo.

MAKE SURE STUDENTS KNOW THE EQUATION

Carbon Dioxide + water + light -> glucose + oxygen

Slide 8: Respiration

Students should know the opposite of photosynthesis is respiration

Animals take in oxygen and use energy/ glucose to breath, then with we exhale we release CO₂ and water.

Slide 9: It's a cycle

Have students take turns explaining the cycle, using the photo to explain.

EVALUATION

Photosynthesis worksheet

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