

GROW YOUR PALS PROGRAM GUIDE



THE NATIONAL FFA MENTORING PROGRAM

Sponsored by



LESSON 51

Develop an Awareness of Photosynthesis

Unit:
PLANT SCIENCE

PRECEPTS

- J. Mental Growth
- J1. Think critically

NATIONAL STANDARDS

NS.K-4.3 Life Science



Lesson Type:
One-on-One

STUDENT LEARNING OBJECTIVES

As a result of this lesson, the student will ...

1. Conduct a simple experiment and observe the influence of sunlight on plant growth.





TIME

Instruction time for this lesson: **30 minutes**.
(Additionally Five days for growth and then a 10-minute follow-up.)



RESOURCES

None



TOOLS, EQUIPMENT AND SUPPLIES

- ✓ empty, clean margarine container
(or other round, shallow container)
- ✓ soil
- ✓ fast-growing seeds (such as cress, alfalfa,
radishes, etc.)
- ✓ water
- ✓ lightweight cardboard or poster board
- ✓ scissors
- ✓ blank paper

KEY TERMS



The following term is
presented in this lesson
and appears in ***bold italics***:

photosynthesis
chlorophyll

INTEREST APPROACH



Think about the last time you remember being hungry or thirsty, your stomach growling and your mouth dry. Eventually when you got that drink of water, what was it like? Can humans survive without food and water? Can animals?

Assist students through discussion about animals and humans having basic needs for life.



What about plants? What do they need to survive?

Lead the student to the basic needs of plants, eventually the need of sunlight.



Great examples! Let's take a closer look at sunlight. What if a plant didn't get enough? What do you think would happen? I have a cool experiment that will help us find out!

SUMMARY OF CONTENT AND TEACHING STRATEGIES

OBJECTIVE 1. | Conduct a simple experiment and observe the influence of sunlight on plant growth.



With your PALS, plant the fast-growing seeds in a shallow round container. Place the container upside down on a piece of cardboard and trace it for later use. Go over the proper steps in planting a seed, following the instructions on the package. Hint: Most young students plant seeds too deep, so it is important to teach them to read the label. Water the seeds in and then put container on a sunny window ledge.



Let's get set up by planting some seeds. As with any seed, it is important to read the back of the package to make sure we know how deep to plant our seeds.

Point out label and depth, as well as anything else on the label.



Before we plant, let's trace the top of the pot on this piece of cardboard. We will use it later. Great, and now that we know how deep to plant our seeds, let's make a hole that deep, place in the seeds and cover. Next, we will water the seeds. Remember that water is one of the needs for plants to survive. We will put our seeds here in the sun on the window ledge.

Next, walk the student through constructing a cover to block out part of the light. Cut out the circle traced earlier. Then help the PALS cut out a star or triangle in the center of the circle. Then place the cover on the top of the planted seeds.



Now, let's cut out the circle we traced earlier.

Assist with cutting as necessary.



Now, draw a triangle in the center of the circle and cut it out.

Allow for cutting. PALS may need help with cutting inside circle.



Nice cutting...now, let's put this on top of our seeds. Remember; check every day to make sure the soil is moist, but not too wet.

DAY ONE REVIEW

Use the Picasso Moment to have the mentee draw what he or she thinks the seedlings will look like in five days. Be sure to use a blank sheet of paper to do this activity.



We have set up our experiment and will find out the effect of light on plants in just a few days! Let us take a moment to sketch what we think the seedlings will look like in five days. Think about the seedlings covered by the cardboard and seedlings in the light.

ON DAY FIVE



It's great to be back! So, before we check on our plants, let's see your drawing again. Now take a look at the seedlings, go ahead and remove the cardboard. Wow!

Examine the seedlings and the results of the experiment. Seedlings in dark will be white and stunted; the seedlings in the sun will be tall and green.



So let's examine why this happened. We can see the seedlings needed sunlight to be healthy; the reason for this is **photosynthesis**. Plants use the sun's energy during **photosynthesis** to convert sunlight into food.

Chlorophyll is also an important part of this process. **Chlorophyll** is what makes plants green, so we know that there was **photosynthesis** in the green seedlings, but none in the white sick looking seedlings; so, no light, no food!



REVIEW / SUMMARY / EVALUATION

Use the Show-What-You-Know Moment to quiz your mentee on the lesson. Use the evaluation questions below for the mentee to show what he or she knows.



APPLICATION

Large Group Suggestion: *Do the same experiment but without water. Do another experiment in a sealed Ziploc bag with the air removed. What are the results of removing these other plant growth requirements?*

EVALUATION

1. What is the term used to describe plants' ability to use the sun's energy to create food?
2. What is the substance in plants that gives them their green color?
3. What happens to a seedling without light?

ANSWERS TO EVALUATION

1. Photosynthesis
2. Chlorophyll
3. Stunted, weak, white color, eventually dying.