

GROW YOUR PALS PROGRAM GUIDE



THE NATIONAL FFA MENTORING PROGRAM

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LESSON 50

Effects of a Changing Light Source

Unit:
PLANT SCIENCE

PRECEPTS

- F. Continuous Improvement
- F5. Acquire new knowledge

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. Plant and cultivate seeds, then observe the effects of changing light source direction.





TIME

Instruction time for this lesson: **30 minutes.**



RESOURCES

None



TOOLS, EQUIPMENT AND SUPPLIES

- ✓ glass jar with watertight lid
- ✓ soil or sand to fill jar half full
- ✓ 1-2 beans or corn seeds
- ✓ blank sheet of paper

KEY TERMS



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

INTEREST APPROACH



Think about this question for a moment ... if you were upside down, would you be able to swallow food?

Have a brief discussion about if this is possible or not, or if the PALS knows that it is, have a discussion about why this is true.



So it is not gravity that moves food down our throats, it is the muscles in our esophagus. Now think about this for a moment ... can plants move?

Ask your PALS for examples that they know plants can or cannot move.



There is actually an experiment that will put this question to rest; let's find out!

SUMMARY OF CONTENT AND TEACHING STRATEGIES

OBJECTIVE 1. | Plant and cultivate seeds, then observe the effects of changing light source direction.



With your PALS, fill the jar halfway full with soil or sand. Plant one or two seeds halfway down the jar, next to the glass. Water the seed in the soil, and then seal the jar with a watertight lid. Place upright on a sunny window ledge. Check the jar daily and when shoots appear, have your PALS observe the jar and draw a picture of the plants in the jar.



So now that we have seedlings in our jar, let's take a moment to record what we see. Use a piece of paper and draw what you see, both the jar and the plants inside. Let's start by putting the date down on your drawing so we can look back at it later.

After drawing, lay the jar on its side. Observe again after two to three days.



Great drawing; let's start to mess with our plant a little and see if we can get it to move. Let's lay our plant on its side and see what happens.

Once the seedlings change directions so the roots grow down and the plant upright, have the PALS draw the jar and plant in the new position and record the date.



So now it has been three days, let's look at our seedling. What do you notice? Why is this? Let's record what we see by adding what you see to your original drawing.

Help the student see that the plant has changed direction to grow upright. Ask why this might be.



One last time, let's put the jar back upright and find out what happens, we will check it again in a couple of days.

After two more days, repeat discussion and drawing for a final time. Have the PALS observe the movement in the drawings from first to last.



So now that you have had a chance to look at what happened, why do you think this happened? Plants tend to move upright, roots move down, and we call this **tropism**. Plants' tendency to move toward light is called **phototropism**. How might this information be useful in agriculture?



Have a discussion about how light effects crops and landscaping plants, especially when planted around buildings.



REVIEW / SUMMARY / EVALUATION

Bob-the-Weather-Guy Moment (modified)

Rather than have the student present a weather report, have the student create a weather map, including sun, clouds, fronts, etc. Once finished drawing the map, have the student add a plant somewhere on the map, growing or leaning toward the sun. Have the student explain back to you the map and why the plant tends to lean toward the sun on the map.



That is an awesome map that you have drawn. On the bottom of the sheet of paper, quickly write the definitions for **tropism** and **phototropism** to help us remember them. Great work today, now we know why some plants lean.

APPLICATION



Large Group Suggestion: *Do the same experiment with multiple jars. Place the jars in different lighting situations, such as a dark closet with no light, on a windowsill and in a spot that receives only artificial light. Observe what happens to each plant.*



Small Group Suggestion: *Take a walk in the woods with your PALS and look for plants that have grown at strange angles toward the sun.*