



**FALL | Sun**

## **Photosynthesis: Sun, Soil, and Seeds Working Together**

### **Summary:**

We know the sun is essential for our plants to grow, but why? Over the course of a few garden visits we will watch how the sun works with our plants to help them grow using a process called photosynthesis.

### **Before Visiting the Garden:**

**Gather:** Paperclips, dark construction paper, scissors, camera, pencil, and a notebook.

**Explore:** “The Sun” 2008 by Dale Chihuly

**Read:** *The Magic School Bus Gets Planted: A Book About Photosynthesis* by Joanna Cole and Bruce Degen, Illustrated by Bob Ostrom

### **In the Garden:**

Photosynthesis is a big word that is quite simple when broken into two parts, photo—light and synthesis—putting together. Photosynthesis is the process by which plants take in energy from the sun and turn it into sugar for plant growth and oxygen for humans. We do not think of plants as having mouths but in addition to roots that take in water and nutrients from the soil they also have cells that contain chloroplasts that act like small mouths to suck in the sun’s energy. Because all of this is happening at a cellular level it can be hard for us to see without a microscope. Let’s do some observations and then a simple experiment to see photosynthesis in action.

### **Questions to Explore:**

- Where is there the most sun in the garden?
- Which plants are growing there? Do you notice any differences about the leaves on plants in the sun versus plants in the shade?
- Examine one plant from top to bottom. Do you notice any changes between the leaves on the outermost and topmost parts of the plant versus leaves on the inside or bottom of the plant?

### **Activity:**

1. Grab your notebook and camera then choose a plant for your experiment. Choose a plant that gets a good amount of sun and has broad leaves, you can also do this experiment with a tree or shrub.
2. Document your plant at the beginning of the experiment by writing a description in your notebook. Include details such as color and texture of the leaves. You can also take a picture and add it to your page.
3. Cut several one-inch squares from the construction paper.
4. Using the paperclips to gently attach four or more squares the leaves on the plant.
5. Over the next week return to the garden and document changes in the leaves that are covered versus the leaves left uncovered. What do you notice?

### **Beyond the Garden | Sun + Seedlings:**

You can run your own photosynthesis experiment at home by planting a quick growing seed like grass or mung bean. Once your seedling has begun to sprout and form leaves, place one plant in a dark closet and leave the other plant in a sunny location. What do you notice?

### **Continue Exploring | Supporting Materials**

Photosynthesis from space:

<http://www.nasa.gov/content/goddard/seeing-photosynthesis-from-space-nasa-scientists-use-satellites-to-measure-plant-health/#.V732bY6ehaU>