

Let's Dig Up Dinner

Post Lab Activity

Teacher Guide - Grades K-3

Overview:

Phototropism is when plants bend or turn toward light. In this post lab activity, teams of students will construct a maze inside a closed container to demonstrate phototropism. Factors needed for a healthy plant need to be discussed prior to completing this activity.

Request the shoeboxes or closed containers be sent into school BEFORE the day of the e-Lab session.

Materials:

Each team will need:

- Seeds from a fast growing plant, such as beans or sunflowers
- Potting soil
- Small pots or Styrofoam cups (8 ounce size)
- Water
- Rectangular boxes (A shoe box with a lid works great.)
- Cardboard pieces
- Tape
- Scissors
- Rulers
- Growth Data Worksheet to record information
- Bar graph worksheet

Optional Supplies:

- Toilet paper tube – cut into 2 inch sections
- Paper towel tube – cut into 2 inch sections
- Picture of a maze
- Newspaper
- Paper towels
- Pictures of plants bending toward sunlight

Getting Ready:

- Plant the seeds about 4 or 5 days before students construct their mazes to give the plant time to start growing.
- Print **1 copy per team** of Growth Data Worksheet
- Print **1 copy per team** of bar graph worksheet
- Cover desks or tables with newspaper or paper towels

Procedure:

Begin by reviewing what a plant needs to be healthy. The plant needs good soil, carbon dioxide in the air, water and sunlight.

Phase 1 - Completed 2 or 3 days BEFORE completing the e-Lab:

Distribute the seeds, pots and potting soil. Have the students place some potting soil into their cup. Place the seed on top of the soil and then cover it over with more potting soil. Water it just enough to get the soil damp. Place the cups in an area that receives sunlight.

Phase 2 - Completed AFTER e-Lab connection:

Begin by reviewing what a plant needs to be healthy. The plant needs good soil, carbon dioxide in the air, water and sunlight.

Ask the students what would happen to their plant if any one of these things were missing.

Ask the students if they have ever noticed how a plant grows toward the sunlight. Maybe they have seen their parent or grandparent turn a plant in a pot because it was growing more toward one side and was uneven. (You could show pictures of plants that are growing toward the sunlight.)

Show a picture of a maze and ask the students if a plant can grow through a maze or do plants have to grow straight up from the ground. Explain that today they will create a maze for their plant to GROW through to try and reach sunlight. (The students should have planted their seeds BEFORE today and enough time should have passed that the plants have sprouted.)

Have the students create their maze for their plant to grow through to reach the sunlight. Start by having the students cut a small round hole, about the size of a quarter, at one end (one of the short sides) of a shoebox. They can trace a quarter and then cut out the hole that way. You could also request that the parents cut out the hole in the box before the students bring the shoebox to school.

Have the students cut up several pieces of cardboard and tape them to the inside of the shoebox. The students could also use toilet tissue tubes or paper towel tubes cut into small sections (about 2 inches each) to tape inside the box. You will want them to create a winding path (like a maze) inside the box for their plant to grow through to reach the hole at the top of the box.

Once their plant has sprouted, place it inside the box and put the lid on the box. Make sure each box is in an area that receives sunlight. Keep the plants watered and have the students record the growth of their plant by measuring the amount of growth with a ruler. The students should check the progress of their plant every two days. Keep track of the growth on the data worksheet. To help the students not disturb the growth process, a ruler can be taped inside each box to help them get an accurate measurement of the plant's growth.

Make sure the students keep the plant's soil moist but not overly wet. This part of the activity can take up to a week to 10 days.

You may want to provide a seed in a pot that is **not** put inside a box. This is your control plant. Place this pot beside the other boxes in a well-lit area and keep its soil moist also. You or a student may check the growth of this plant with a ruler every two days and record the information on the growth data sheet.

Explanation:

Seeds need certain things to grow into a healthy adult plant. One important factor a plant needs is sunlight. Phototropism is a directional change in response to a light source. Basically, it is when a plant bends or turns toward a light source, usually the sun. A plant **MUST** have a light source (usually the sun) in order for photosynthesis to take place. The more sunlight a plant's leaves can take in, the more food it can produce and be healthy. The students are changing the normal way a plant grows to prove the plant will seek out sunlight and grow in a way that the plant will receive the most sunlight possible so that photosynthesis can occur.

Assessment:

Discuss with the students what they see their plant doing inside the box.

Discuss why the students think the plant grew around the cardboard obstacles.

Complete a bar graph using the growth information for their plant and the control plant gathered on their data sheet. This can be done as a whole class activity or individual student activity.

Have the students compare and contrast their plant's growth with the control plant's growth.