A-MAZE-ing Plants

SECOND GRADE

Plants create their own food using sunlight through a process called photosynthesis. In this "must-do" experiment, you will challenge a bean seedling to find its way through a maze made inside a shoebox by blocking most of its light. Will the plant find the light? Be sure to ask students to bring a shoebox from home prior to the experiment.

SUBJECT

SCIENCE

TIME

45 MIN - 1 HR
+
5 MIN follow-up every few days

MATERIALS

Shoebox, 1 per student (**bring from home, not provided**)

Read aloud book from the Garden Library (optional)

Dark-colored cardstock, 1 sheet per student

Masking tape, several rolls to share

Scissors, 1 per student

Heavy-duty scissors, 1 per adult

Clear plastic cup, 1 per student

Fava or lima bean seeds, 1 per student

Black permanent markers, several to share

Potting soil, enough to fill the plastic cups

Plastic scoops, several to share

Spray bottles with water, several to share

DIRECTIONS

- Introduce the activity with a discussion about photosynthesis or read a book about photosynthesis and plants from the Garden Library. Ask why plants need light? What would happen to a plant if it didn't get enough sunlight?
- Tell students they will build a maze for a seedling and block most of its light. Have them predict what will happen to the seedling.
- First, students will plant a bean seed in a cup. Distribute one plastic cup, one seed, and a permanent marker to each student. Label the cup with their names.
- Use a plastic scoop to fill the cup almost to the top with potting soil.
- Poke a hole about one inch deep with your finger and put the seed in the hole. Cover with soil and moisten with a spray bottle, so it is completely moistened but not soggy.
- Next, build a maze for each shoebox. Set the shoebox on its bottom end so that it stands at its tallest. Have an adult cut a 2-3" hole at the top end of the shoebox.
- Create a maze inside the box using the pieces of cardstock. Cut the cardstock to fit inside the box and cut openings into the cardstock. These openings are for light to enter the maze and for the plant to fit through. Tape the cardstock to the sides of the box. See the picture of a completed maze for reference.
- Return to the classroom with the seed cups and completed mazes. Keep the soil moist until the seeds start to sprout (a few days to a week). Then place them at the bottom of the maze. Keep the box closed at all times, except to water the soil to keep it moist.
- After a week or two, you should see the plant start to peek up through the hole at the top of the box. Lead a class discussion about their original predictions and their experiment. Did some plants make it out and others didn't? How are these plants different from plants that grow in full sunlight?
- Use the plants as a natural fertilizer. Tear them apart and till them into a garden bed. As the plants break down they will add nitrogen to the soil. Return the cups to the bin for use next year to practice sustainability.

SOURCE

Adapted from:

- Greensboro Science Center | DIY Science: Light Maze

Example of Shoe Box Maze