



PLANT MAZE

Grade Level

K-7

Length of Lesson

2-3 class periods

Objective

By the end of this lesson, students will have a better understanding of how light affects plant growth.

Materials Needed

- Cardboard shoeboxes
- Extra cardboard
- Tape or Glue
- Scissors
- Potting soil
- Small cups
- Pea seeds
- Copies of student worksheet
- [LED light emitting diodes](#) (optional)
- [Coin cell batteries](#) (optional)
- Black electrical tape (optional)

Standards

NGSS

K-LS1-1; 1-LS1-1; 2-LS2-1; 2-LS4-1; 3-LS1-1; 3-LS3-2; 3-LS4-3; 3-LS4-4; 4-LS1-1; 5-LS1-1

Lesson Summary

This lesson is designed to give students a hands-on activity that shows how light affects plant growth through a process called *phototropism*, the orientation of a plant or other organism in response to light. Students will design a “plant maze” to see if plant growth changes based on the availability of light.

Suggested Sequence of Events:

1. Set Up: Have students bring in cardboard shoe boxes to create their plant mazes. Teachers will also need to acquire additional sheets of cardboard.
2. Read [Seed Soil Sun](#) by Cris Peterson to introduce students to the necessary elements for plants to grow.
3. Complete the activity following the procedures:
 - Ask students: How does light affect how plants grow?
 - After writing down their guesses, challenge students to build a “plant maze” to see how plants will grow without light.
 - Using the student worksheet, students should design their plant maze and share ideas with their classmates.
 - Then, students should place their shoeboxes upright on their desks and begin to construct their mazes.
 - Students must leave enough room in the bottom of the box to place a small container with seeds and soil. There must also be a hole at the top of the box to allow light into the maze.
 - Once the mazes are complete, students must plant their seeds. Give each student potting soil or a peat pellet and have them place the soil into a small cup, moisten the soil, and then bury some pea seeds. (Soaking the pea seeds in water for about 8 hours prior to planting will dramatically speed up the time to germination.)
 - Place the cup of seeds in the bottom of the plant maze and close the lid.
 - After one week, check the plant growth. Each day, have students document the changes in plant growth.
4. After plants have grown, return to students’ guesses and see if the results confirmed their initial ideas about light and plant growth.

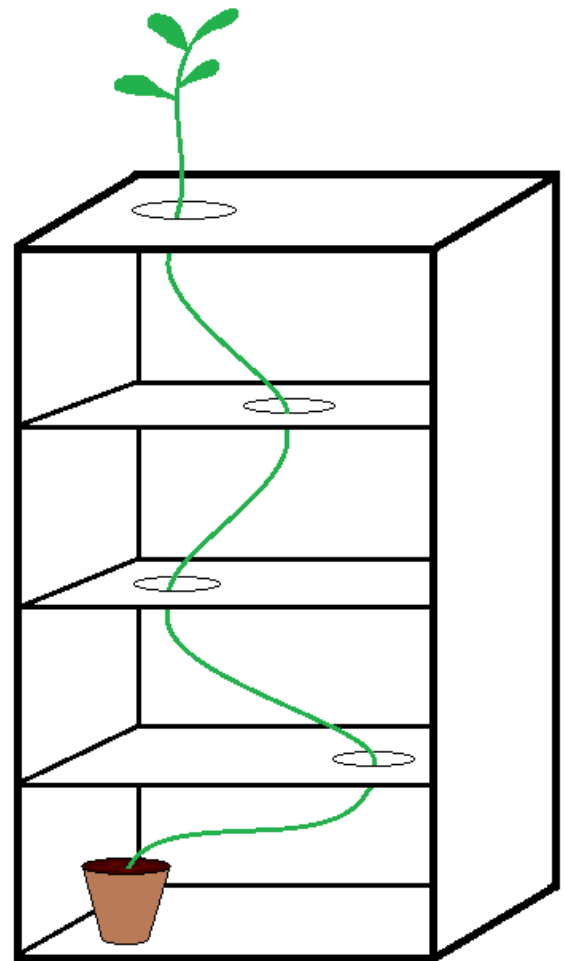
TEACHER RESOURCES

Suggestions and Options

- The lesson suggests waiting one week to open up the plant mazes. The pea seeds, under the right conditions, should germinate in just a couple days. It may be necessary to add water to the cups to give the seeds enough moisture to continue to grow for one week. Waiting a week allows for more of a “wow” factor when students open up their mazes, but is not necessary for the activity. Pre-soaking the seeds in water for approximately 8 hours ahead of planting will greatly speed up the time needed for the seeds to germinate.
- Students can also learn about the basics of electricity by taping coil cell batteries to LED light emitting diodes and inserting those into small holes in the box to serve as a light source. Placing these lights in different places and quantities in the mazes should change the results and allow for a more thorough experiment.

Extension Ideas:

- Introduce or teach about photosynthesis.
- Learn about how energy is moved throughout ecosystems, starting with the sun!
- Try different types of seeds in similar mazes to see how different plants react differently to light.
- **Scientific Inquiry:** Have students think more deeply about plant growth and create their own question, hypothesis, and experiment to test. What other variables can be tested to see how plant growth is affected? Students could try changing water, soil type, and temperature. Place some cups on their sides in the bottoms of the mazes. Do plants have to grow upright?
 - Have students use the “Student Inquiry Sheet” to test their variables.
- Watch a time lapse video of a plant growing.
- Read AITC’s Urban Ag Mag to learn more about how urban settings have inspired a variety of agricultural innovations to grow food in urban communities.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





PLANT MAZE

STUDENT WORKSHEET

Background Information

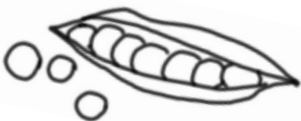
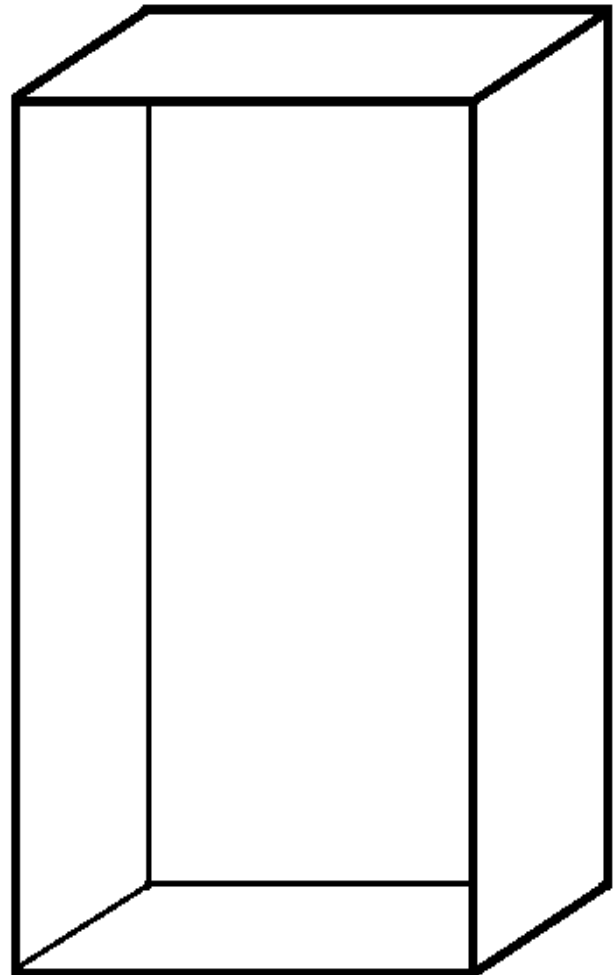
As you've already learned, plants need light to grow. But what affect does light have on plant growth? Can plants "find" the light they need? Today let's make a "plant maze" to test our hypothesis! You will use a cardboard shoe box, additional cardboard, and tape or glue to create a unique plant maze!

Make a Prediction!

How long will it take for your pea seeds to grow through the plant maze?

Directions

Draw your plans for your plant maze in the blank shoe box! Notes and ideas can be written in the blank space!





PLANT MAZE

STUDENT WORKSHEET

Chart Your Plant's Growth

After completing your plant maze and adding your cup of planted seeds in the bottom of the maze, wait until your teacher says it is time to open up the maze. How much have your plants grown? Are they growing towards the light?

Directions

Draw your plant maze as it actually looks after building, including your cup of seeds. Using a different color each day, draw your plant's growth below. Don't forget to fill in your key with the correct colors and numbers!

KEY

- 1st check, ____ days since planting
- 2nd check, ____ days since planting
- 3rd check, ____ days since planting
- 4th check, ____ days since planting
- 5th check, ____ days since planting

REFLECTION QUESTIONS

How did light affect the growth of your plant?

Was your prediction from the first page correct?
What are some other things that would affect the growth of the plant?

