

# Garden In A Glove

## A lesson on seed germination



A lesson based on the book, *The Soil Neighborhood* by Dan Yunk and Steve Swaffar.

America's food supply is safe, affordable and abundant but misunderstood by the public. Kansas Farm Bureau seeks to improve consumer knowledge of the importance of farming and ranching through the *Kailey's Ag Adventure Series*, of which this book is a part.

Plants provide food, fiber, oxygen and more to animals and humans. They are an important part of our livelihood and well-being. Although plants may take on complex life cycles and structures, the germination, or sprouting, process can be simple enough to demonstrate in the classroom. This activity will allow the observation of the germination process, and provide a good view of the plant's root system.

After this activity, students should have a better understanding of the life cycle of crops and plants, and better appreciate the importance of maintaining a clean and healthy environment so that plants have all the ingredients they need to grow.

### LESSON OBJECTIVES:

The students will be able to:

- Identify the basic needs of seeds
- Describe the process of germination
- Compare the basic needs of plants and the basic needs of seeds.

### VOCABULARY:

Annual– life cycle of one year

Perennial– life cycle of more than two years

Germination– to begin to grow (sprout)

Transplant– to move and plant in another place

### GUIDING QUESTIONS:

Have you ever wanted to see what happens to a seed when it is planted in the soil?

What are the key ingredients necessary for a plant to grow?

*Good Soil or planting media (the more nutrient-rich the soil, the better the plant will grow), Water, Air, Sunlight, Proper soil temperature, Proper air temperature*

What would happen to plants if they could not get all the necessities needed for their growth?

How would that affect your life?

Can you give any examples of how plants are present in your life?

**LEVEL: K-2**

### SUBJECTS/STANDARDS:

Science: 2nd Grade

Life Science

Ecosystems: Interactions, Energy, and Dynamics

### 2-LS2-1

Plan and conduct an investigation to determine if plants need sunlight and water to grow.

*Standards may be adjusted to fit other grade levels.*

### ACTIVITY DESCRIPTION:

This activity will allow the student to observe seeds germinating and provide a good view of the plant's root system.

The student will develop an understanding of the characteristics of living things.

### ADDITIONAL RESOURCES

#### INCLUDED:

Handout 1– *Seed*

*Germination Observation Sheet*

Worksheet 1– *Plant Logic*

**MATERIALS NEEDED:**

Each person will need:

- Clear plastic glove
- 5 cotton balls
- 5 types of seeds, 3- 4 seeds of each (examples: lettuce, carrot, cucumber, tomato, broccoli, corn, soybeans, peas)
- Pencil
- Water
- Permanent Marker
- Twist Ties or Pipe Cleaners

**ACTIVITY:**

After you have gathered all materials:

1. Write your name on a clear plastic glove.
2. Wet five cotton balls and wring them out.
3. Place 3-4 seeds of the same type in each cotton ball. You may want to keep track of which seed is in which finger (you can write the seed type on the finger of the glove with the permanent marker).
4. Put a cotton ball with the seeds attached into each finger of the glove. Hint: You may have to use a pencil to get the cotton ball all the way to the tips of the glove fingers.
5. Blow up the plastic glove and close it with a twist tie or pipe cleaner.
6. Tape the glove to a window, chalkboard, or wall. You may want to hang a clothes line under a chalk tray and use clothes pins to hold the gloves on.
7. The seeds will germinate in 3 to 5 days. Keep a plant diary and look at the seeds under a microscope (Handout 1). Note, the cotton balls should stay moist enough through the germination of the seeds. If one appears dry you can add a little moisture to the glove.
8. Transplant the seeds about 1 ½ to 2 weeks by cutting the tips of the fingers off the glove. Transplant the cotton ball and small plants into soil or sphagnum moss.
9. After growing to full size, plants can be made into a salad (this will take several weeks depending on the seed type).

**STUDENT LEARNING****ESTIMATED**

**TEACHING TIME:** 40 MINUTES

**NEW VOCABULARY:**

Annual– life cycle of one year  
 Perennial– life cycle of more than two years  
 Germination– to begin to grow (sprout)  
 Transplant– to move and plant in another place

**MATERIALS NEEDED:**

Clear plastic glove  
 5 cotton balls  
 5 types of seeds, 3- 4 seeds of each (examples: lettuce, carrot, cucumber, tomato, broccoli, corn, soybeans, peas)  
 Pencil  
 Water  
 Permanent Marker  
 Twist Ties or Pipe Cleaners

**PREPARE AHEAD:**

Have materials for each student set out.  
 Have seeds put in piles so students can observe the differences in shapes and sizes.

## TEACHER'S NOTES:

**Closure/Review:** Discuss the activity. Make some predictions about when the seeds might germinate, and what that will look like. Also, discuss what would happen if the gloves were placed in various locations with different light and temperature. Ask how the seeds might be effected. Relate back to the necessary ingredients plants need to grow.

Go over plant parts and their functions, then hand out Worksheet 1 titled, *Plant Logic*.

## EXTENSIONS:

- Experiment with different variables; type of glove, light, temperature, liquid used on cotton ball, etc.
- Have students calculate percent of germination.
- Have students research the crops the Indians introduced to the settlers when they came to the Americas. How has transportation changed the variety of foods available to consumers?
- Have students review information on the seed packet for growing habits of plants. What zones does Kansas fall in?
- Have students discuss the crops grown in Kansas today.
- Discuss the life cycle of plants from seed to mature plant.
- Have students research uses of the seeds (vegetables) that they have germinated and write and present findings to class.
- Keep records of the classroom and outdoor temperature. Is there an optimum temperature for germination?

## Unique Plant Facts:

Strawberries are the only fruit which grows seeds on the outside.

A method used to verify the age of a tree is to count the rings in the tree's trunk.

The world's fastest growing plant is Burma's giant bamboo, it can grow 17 centimeter in a day.



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# Seed Germination Observation Sheet

Name \_\_\_\_\_

Date \_\_\_\_\_

**Directions:** After you have planted your garden in a glove, keep a daily journal of the changes your seeds make. Be sure to write a description and draw a picture of any changes you see.

**Day 1**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**Day 2**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**Day 3**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**Day 4**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**Day 5**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**Day 6**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**Day 7**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# Plant Logic

Name \_\_\_\_\_

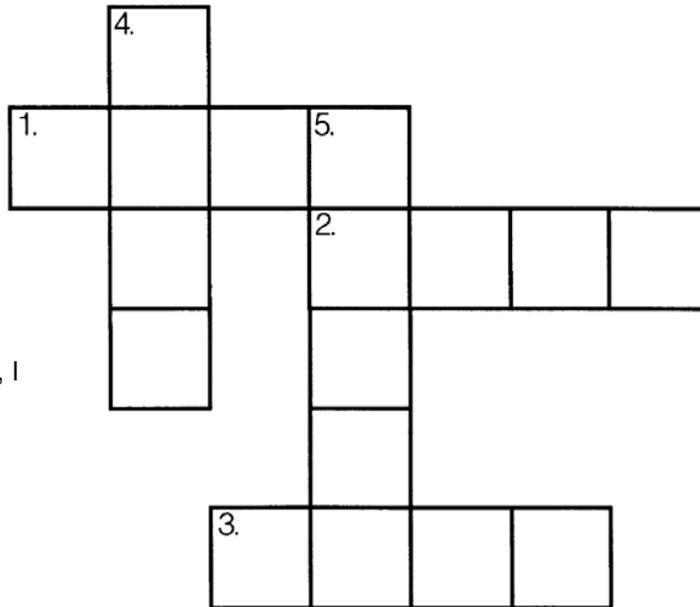
**Directions:** Fill out the crossword using the word bank, then use those words to help label the plant parts shown below.

**Across**

- 1. I bring in carbon dioxide and release oxygen. I can also be a variety of shapes including jagged, round, or long.
- 2. I take in food and water from the soil.
- 3. I hold the plant up.

**Down**

- 4. I contain stored food, and when planted, I will give rise to a new plant.
- 5. I have seeds inside.



Word Bank: stem, seed, leaf, root, fruit.

