

# Garden in a Glove

How do Seeds Grow into Plants?



Plants are an important part of our planet. They provide food, fiber, shelter, and oxygen to animals and people. With Garden in a Glove, you will be able to see the life cycle of plants and discover what seeds need to germinate and produce fruit or vegetables.

## Getting Started

**Before you begin:** Prepare a clean and safe work area. Read through the entire experiment with your parents so you understand each step and ensure you have all the tools you need to complete the project. Make sure any equipment you need is in good working order.

**During the experiment:** Over the next several weeks, take lots of notes and even make drawings of your observations. Scientists document all of their work so they can repeat successful outcomes and understand what changes they should make to see results.

### You will need:

- 1 Clear Plastic Food Grade Glove
- 10 Cotton Balls
- 5 types of seeds (3-4 of each). Choose a variety of plants you want to grow (and eventually eat).
- 1 Permanent Marker
- 1 Twist Tie or Pipe Cleaner
- Soil
- Planting cups (optional)
- Scissors
- A glass of water

## Vocabulary

**Germination:** The process by which a plant grows from a seed.

**Transplant:** To transplant or replant is to move a plant from one location to another.

**Hypothesis:** An educated guess about how things work.

**Control:** A factor that is kept constant and unchanging so that the impact of another factor can be better understood.

**Variables:** Any factor that you can control, change, or measure in an experiment.



# Step-By-Step

## Step 1

Write your name and the date in permanent marker on a clear plastic glove. On each finger and thumb of the glove, write the type of seed that you plan to put into each.



## Journal Opportunity

Think of the conditions that may affect your experiment. Write down the seeds that you have chosen to use. Create a hypothesis of what you expect to see in this experiment. Don't forget to date the entry and include your name!



## Step 2

Wet five cotton balls in the glass of water and squeeze the excess water out of the cotton balls.

## Journal Opportunity

How wet are the cotton balls? How warm was the water? Do you think the water temperature will make a difference in how the seeds will germinate?

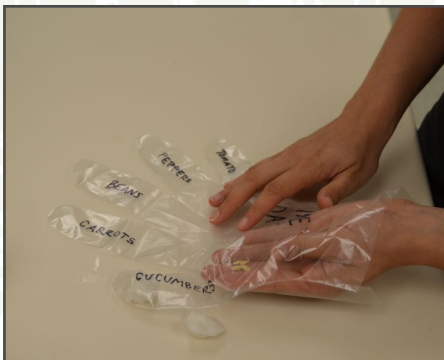
## Step 3

Place one cotton ball in each finger and thumb of the glove.



## Journal Opportunity

How well do the cotton balls fit in the glove?



## Step 4

Place 3-4 seeds in each one of the fingers and thumb of the glove. Make sure you match the seeds to the labels you have put on the glove.

## Journal Opportunity

How many seeds did you put in each finger/thumb? Describe and sketch what each seed looks like – color, size, shape.



## Step-By-Step ( cont'd)

### Step 5

Wet five cotton balls in your glass of water and squeeze the excess water out of the cotton balls. Place one cotton ball into each finger/thumb of the glove on top of the cotton balls that were placed in step 3. Cover the seeds as best as you can.

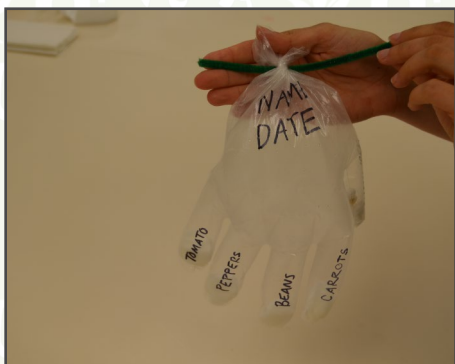


### Journal Opportunity

*Were you able to cover the entire area of the seeds with the cotton balls? Do you think they have enough contact with the moisture in the cotton ball to start the germination process?*

### Step 6

Blow air into the plastic glove and tie it closed with a twist tie or pipe cleaner. Tape the glove to a window, chalkboard or wall. You can also pin them to a clothes line. Make sure the area you choose is warm and has a source of light.

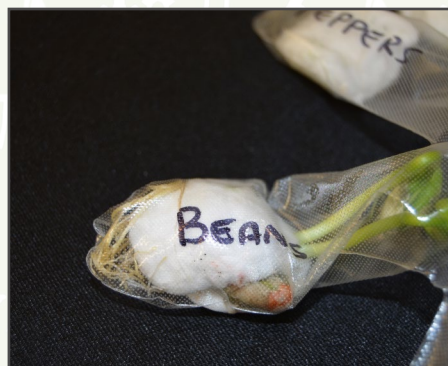


### Journal Opportunity

*What area did you choose to place your glove for germination? What is the temperature in the room? How much light does it get each day? Is the light from a lamp, ceiling light, sunlight, or what other form of light? Make some predictions, such as: what seeds do you expect to germinate first?*

### Step 7

Check your plants each day. In 3-5 days, you should see them beginning to germinate, and you will know this happens when you see that the husk of the seed is open and roots start to emerge. The cotton balls should be moist through the germination process. If any of them seem dry, add a small amount of water to the cotton ball(s). Use care as seeds are most vulnerable as they start emerging.





## Step-By-Step ( cont'd)

### Journal Opportunity ( Step 7)

Write a description and sketch the development you observe every day. Is the seed the same size or is it bigger? Which day did you start seeing shoots and roots coming out of the seed? Once the roots become large enough, measure the length of the roots and the shoots of the plant and note these in your journal. If the shoots have grown leaves, count how many and draw a picture.

### Step 8

When 9-14 days have passed after the start of the experiment, transplant the seedlings into soil. If the outdoor conditions are too cold or wet to transplant the seedlings into the ground or an outdoor pot, consider planting them in the biodegradable planting cups provided in your science kit until outdoor conditions improve. This is a great way to start your garden.



### Journal Opportunity

Write down observations of your seedlings as you transplant them into soil. How long are the plants, roots, leaves? What colors do you see? What shapes are the leaves? Look at them under a magnifying glass to see the detail of the plants. Draw a picture of the root system.



### Step 9

Observe and take notes.

**Journal Opportunity** Check your plant daily and record any water or nutrients you add to the soil. Measure the size of the plant, count the leaves, record when flowers appear and when those flowers turn into a vegetable. What colors do you see? If your plants are outdoors, what has the weather been like? Do you notice any insects or animals that seem to be attracted to the plants? Draw pictures of what you observe.



**Step 10**

Once the plants and the fruits or vegetables have reached maturity, it is time to harvest. Thoroughly wash the fruit or vegetable before eating.

**Journal Opportunity** *Make observations about your fruit or vegetable. What is the color, shape, weight, length, width? Cut the vegetable or fruit open – can you see the seeds? How do they compare to the seeds that you used at the beginning of the project? Draw pictures of your observations. And the best part: how does the fruit or vegetable taste?*

You may locate the original version of this experiment at:

[http://www.agintheclassroom.org/TeacherResources/interest\\_approaches.shtml](http://www.agintheclassroom.org/TeacherResources/interest_approaches.shtml)



# Keep the Fun Going!

This experiment provides a great control of how a plant grows in a healthy environment. This experiment can be repeated by changing the variables, such as:

- What would happen if the water I used to germinate was very warm? Would it germinate more quickly?
- What if I put my garden in a glove in the refrigerator?
- What if I gave my plant more/fewer hours of light?
- How long will the seedling survive in the glove, not being planted in soil, using only the nutrients provided by the seed?
- What if I water my plant with colored water? Will it change the color of the plant or the fruit?

What other observations did you make that you would like to implement? How can you get different results? This is how a scientist thinks. A scientist may attempt an experiment many times and change many different variables to see the results they are seeking. All attempts take a great deal of work, observation, data, critical thinking, and determination to be successful.

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 LIGHT  
 OBSERVATIONS  
 PEPPER  
 PLANT  
 ROOT  
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 SEED  
 SHOOT  
 SOIL  
 TOMATO  
 TRANSPLANT  
 VARIABLES  
 VEGETABLES  
 WATER