

Garden in a Glove

Purpose: Students see how a seed sprouts and the conditions necessary for this germination process to happen.

Time: 60 minutes – on-going

Level: K-6

Materials:

- Clear plastic gloves
- Permanent markers
- Cotton balls
- Small paper plates
- Five different types of seeds

Seed combination ideas

1. Seeds to show the different parts of a plant we eat:
Root – radish, beet
Leaf – lettuce
Stem – asparagus, celery
Flower – broccoli
Fruit – tomato
2. Herb seeds:
Basil, cilantro, oregano, rosemary, mint, etc.
3. Vine crops (you will need lots of space to grow these plants):
Pumpkins, cucumbers, squash, melons
4. **Three Sisters crops:**
corn (sweet corn, popcorn and/or field corn), squash (butternut and acorn), beans



Minnesota Social Studies Standards and Benchmarks

2.4.2.4.2 Describe how the culture of a community reflects the history, daily life or beliefs of its people.

3.1.3.2.1 Understand that everybody (including Minnesota American Indian tribes) can use evidence to learn about the natural world, identify patterns in nature and develop tools.

6.4.4.16.1 Compare and contrast the Dakota and Anishinaabe nations prior to 1800; describe their interactions with each other and other indigenous peoples.

Minnesota Science and Benchmarks

0.4.1.1.2 Identify the external parts of a variety of plants and animals including humans.

2.4.2.1.1 Recognize that plants need space, water, nutrients and air and that they fulfill these needs in different ways.

2.4.3.1.1 Describe the characteristic of plants at different states of their life cycles.

Background

Plants provide perfect living specimens for a wide variety of scientific investigations and experiments. Focusing on plants that provide edible products (fruits, vegetables, flowers, etc.) can assist in engaging students and peaking their interest – it seems that everyone can relate to food! Also it seems that the sprouting, or germination process, of seeds (that lead to plants) is somewhat mysterious because it takes place underground where we cannot observe the action. This activity will allow the observation of germination and provide an excellent view as the plant begins to develop its first leaves and root system.

Procedure

1. Display a variety of plants that we eat (Examples: lettuce, radishes, tomatoes, pumpkins, peas, beans, cucumbers, basil and other herbs, etc.). Ask students to identify what they see – guide them to recognizing that these are all parts of plants. These plant parts are also food!
2. Ask students:
 - a. If you wanted to eat one or more of these items at your home, where would you go to get it? (*grocery store, farmers market, garden*)
 - b. Let's imagine that you want to grow one of these items in a garden. How would you start this growing process? (*plant a seed*)
3. Explain to the students that many people have their own personal gardens; however farmers all over Minnesota, the United States and the world grow a very large amount of food to feed the people on earth.
4. Ask Students:
 - a. What do farmers need to provide in order to get the seeds to grow into the plants that provide animals and humans food?

Water – from rain or irrigation

Air – plants need to breathe in order to grow

Light – the bright summer sun provides solar energy for the plant

Soil – once the plant is growing it needs nutrients (minerals, vitamins from the soil)

- b. What kinds of resources are needed to get the seed to grow and provide food?

Natural resources – water, sun, soil

Capital resources – tractors, planters, irrigation methods, harvesters (combines) etc.

Human resources – farmers, plant scientists

5. Tell students that they are going to provide a variety of food plant seeds with everything they need to sprout. The scientific name for sprouting is germination. Ask students:
- a. What do you need to give the seeds so they will germinate?
- Water, air, light*
Soil is not necessary to get the seed to germinate but once the seed gets past germination and starts to grow it will need nutrients from the soil.
6. Demonstrate the process of making a garden in a glove.
- a. Write your name on the palm section of a clear plastic glove with a permanent marker. Also label each finger with a different type of seed (see Materials list for seed suggestions).
- b. Dip five cotton balls in water. Give each cotton ball 3 flat squeezes to wring out excess water.
- c. Place 3-5 seeds on a small paper plate or paper towel and pick up the seeds with a moistened cotton ball.
- d. Put the cotton ball with the seeds attached into the matching labeled finger in your glove. ***Teacher Tip: You may need to use a pencil to get the cotton ball all the way to the tips of the glove fingers. For large seeds like pumpkins, use only two seeds.
- e. Repeat the seed pick-up and depositing in the glove with the additional cotton balls and seeds.
- f. Tape the glove to a window, chalkboard, or wall. A clothesline can also be used with clothespins holding the gloves on the line.
7. Assist students in creating their Garden in a Glove.
8. **OPTIONAL: Read information from AgMag “Our Bountiful Land: The story of Food”. Discuss as a group:**
- a. *What impact do the food gathering and production techniques of the Ojibwe and Dakota have on our current agriculture practices in Minnesota?*
- b. *Why did the Indians in northern Minnesota and southern Minnesota eat and grow different foods?*
- c. *What connections do the “Three Sisters” have to science and history?*

Additional information on the three sisters can be found at

<http://blogs.cornell.edu/garden/get-activities/signature-projects/the-three-sisters-exploring-an-iroquois-garden/a-legend/>

9. Depending on what seeds are used, germination will take place in 3-5 days. The cotton balls should stay moist through germination. If one or more appear dry you can add a little water with an eyedropper or spray bottle.

10. Germinated seeds can be transplanted in 1-2 weeks. Cut the bottom off each finger and pull out the germinated seeds (cotton ball and all), and transplant into a container with soil.

Additional Activities

- Have students record predictions about what they think will happen with their Garden in a Glove. Record (with drawings and written descriptions) what occurs with their seeds in a daily journal to see if their predictions come true.
- Have students design a scientific experiment with the germinating conditions. Students can compare environmental factors such as light, temperature, squeezing the cotton ball once versus three times, two seeds versus one, etc.
- Have students calculate the percent of germination. Once the germinated seeds are transplanted to soil, take daily measurements and create a class graph of plant growth.
- Have students discuss and draw the life cycle of plants from seeds to a mature plant that could give us food.
- Have students research uses of the plants they are germinating and present their findings to the class.
- Prepare a salad or other nutritious snack using products from the grown plants.

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