



Teaching in the Gardens and Growing the Future

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Planting a Salad Grade One

Lesson Summary

When to use this lesson

Use this lesson for your first early spring planting. We plant in mid-March, around St. Patrick's Day, to give the plants time to develop for a May harvest.

Standards

S1L1. Students will investigate the characteristics and basic needs of plants and animals.

a. Identify the basic needs of a plant.

1. Air
2. Water
3. Light
4. Nutrients

c. Identify the parts of a plant—root, stem, leaf, and flower.

MCC1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Objective

Students understand that seeds have basic needs to grow that are dependent on the conditions in the seed's environment.

Materials

Flour in zip top bag

Seeds

Planting map

Pre-labeled plant marker for each seed type

Three buckets

Bucket of empty cut water bottles

Compost thermometer

Worksheet to track temperature

Optional: pre-soak at least 6 lima beans to show students some seed parts during your discussion

Estimated Duration

30 minutes

Planting Tips

- Pick up your seeds from the barn several days in advance. Along with the seeds, you'll find pre-labeled plant markers for each type of seed that will be planted in your beds. Please write the planting date and the markers.
- Ahead of time, review the seed planting instructions and map. You may need to adjust the maps a bit to fit your class size. The position of the seed placement on the maps takes into account companion planting when possible.
- Make a copy of the planting map for the teacher or another volunteer who will help you, and separate the seeds that go with that bed. Put the seeds in the order that they appear on the planting map. You can work one bed and the teacher or volunteer the second bed. Or, place a seed packet in the spot you want a student to plant.
- In advance, prepare your beds to visually show planting areas in your beds. Use flour to line the sections. If your flour is in a zip top bag, cut a very small hole in one corner for pouring flour.

Activity

- In advance, fill three buckets with water for students to use to water their plantings. Collect some empty water bottles for students to share.
- In the classroom, discuss background information about seeds.
 - √ Today students are planting ingredients to harvest a salad in May.
 - √ Seeds have a protective outer layer called the seed coat. Inside every seed there is food and a plant with a root and the plant's first leaves. The food source inside the seed provides energy for the plant to grow until the plant grows through the top of the soil. Then the leaves make food for the plant. If you pre-soaked seeds, show examples of seed parts.
 - √ What is the name of the process for the start of seed growth? Germination
 - √ Seeds are dormant, meaning they are at rest, until they are exposed to proper growing conditions for that seed type. Seeds need proper amounts of water, oxygen, and sometimes light and the right soil temperature (not air temperature) to germinate.
 - √ The seeds we are planting today were selected because they germinate in cool soils.
 - √ Other seeds and plants require warmer soil and air to grow and produce. Some of these are tomatoes, cucumbers, beans, and squash. We'll plant these later in spring.
 - √ Explain that we'll take the soil and air temperature regularly this spring to observe how temperature affects plants and animals.
 - √ How do these conditions affect planting?
 - Planted too deep? Small seeds are planted closer to the surface because there is not enough food inside for the embryo to make it to the surface if it is planted too deep, and they may require more light.
 - Planted too close? Seeds need to be properly spaced apart to provide room for the roots and plant to grow. You can demonstrate overcrowding of seeds with students by gathering several students together to show that improper spacing of seeds leads to competition for resources and poor development of plant parts.
- Discuss how to plant while you are in the classroom.
 - √ Wood chips can be used to make a small hole or shallow furrows for seed planting. Furrows are an easy way to plant small seeds that are planted $\frac{1}{4}$ to $\frac{1}{2}$ inch deep. Furrows also give students a better visual for spacing between seeds. Encourage students to use multiple furrows.
 - √ Fingers are excellent tools to estimate length. For the proper depth, model for the students how to use fingertips to estimate the proper planting depth. Check their fingers to find the finger to use to estimate one inch from the tip to a knuckle and another to measure $\frac{1}{2}$ inch from the tip to the knuckle or the base of a fingernail. Often the pinky finger is the best to find these benchmarks. Use the width of fingers to estimate spacing. Check their fingers to find the combination of the index finger and the next two or three

fingers side by side for 2 inches. Generally, two fingers are an inch – especially for the younger grades.

- √ Explain that the seed packets will have planting depth and spacing on the envelope. In the early spring garden, all but pea seeds and onion sets are planted not more than ½-inch deep and 2 inches apart. Peas are planted 1 inch deep and 5 inches apart and onion sets 1 inch deep and 3 inches apart.
 - √ Instruct students to open their envelope and to pour all of the seeds into the hand they do not use to write. They pick up the seeds with the hand they use to write.
 - √ Remind students to pat the soil gently after covering the planted seeds to be sure the seeds and soil make contact.
- When you are outside:
 - √ Take a compost thermometer with you to take and record the temperature of the air and soil. First grade students will track soil and air temperature regularly in spring to note the emergence of plants and animals.
 - √ Note what is happening with plants you see in the gardens in early spring.
 - √ Discuss the condition of the soil. Is it ready for planting? Are any plants growing? Students should pull any weeds while they wait to receive their seeds. Remind students to hold the weed stem so their fingers touch the soil in order to remove the roots when they pull.
 - √ Using the planting map as your guide, give each student a seed packet.
 - √ Wrap up: Do you think each kind of seed will grow at the same time since all of the seeds will get the same amount of water and sunlight? If not, will we see the larger or smaller seeds first? Why? How long do you think it will take for the first seeds to grow?
 - √ Please return unused seeds to the barn.



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Today we started our spring garden season by planting seeds that will grow foods for a spring garden salad.

In science, we learn that seasonal changes affect the survival of plants and animals. Today, we learned that seeds need the right soil temperature to germinate. We only planted seeds that will germinate in cool soil temperatures of early spring.

We also started to take air and soil temperatures to make observations about the effect of these temperatures on plant growth and animal activity.

We were able to practice some measurement skills that we learn in math by using non-standard units. We used our pinky and other fingers to come up with estimates for planting $\frac{1}{2}$ inch and 1 inch deep and finger combinations to estimate 2 and 4 inches for spacing.

Ask your student what we planted in our gardens and what we noticed about plants and animals today.

Email Granny to join our class for our next garden experience!



Seed Planting Instructions

Seed	Envelopes Per Class	Plant Labels Per Class	Depth and Spacing	Germination	Notes
Beets, mixed colors	4	2	½ in. deep 2 in. apart	10 to 20 days	Each dried pod contains 5 to 6 seeds, so instruct students to plant one pod in a spot then space for the next pod, and so on.
Carrots, mixed colors	4	4	¼ to ½ in. deep 2 in. apart	14 to 25 days	Carrots are biennial. If you left a carrot or two from the fall, watch for the development of flowers in this second season.
Collards or kale	3	1	¼ in. deep 2 in. apart	6 to 12 days	Cabbage family greens that are frost tolerant.
Kohlrabi	3	1	¼ in. deep 2 in. apart	12 to 15 days	We plant a purple variety and a large forming green variety.
Lettuce, mixed colors	6	3	¼ in. deep 2 in. apart	7 to 21 days	Multiple color varieties mixed in seed packet.
Onion sets	2	1	1 in. deep 3 in. apart		Onion sets are small bulbs planted with the round bulb end at the bottom and the pointed end pointing up. Do not plant by the bunching or walking onions that over-wintered in your beds so we can distinguish the types.
Peas, snow	4	1	1 in. deep 5 to 6 in. apart	5 to 8 days	Place two cages side-by-side in the bed immediately after planting. Monitor for early harvest opportunity.
Spinach	2	1	½ in. deep 2 in. apart	8 to 10 days	Monitor for early harvest opportunity.
	28	14			

Planting Map for Class Size of 28

Key

- **Black** is week March 12
- **Blue** is week March 19 and is planted by fourth grade only
- **Red** is May

spinach	spinach	beets	beets	beets	beets
cucumber	cucumber	beets	beets		tomato
celeriace (2)	lettuce	carrot	carrot	collard or kale	collard or kale
lettuce	lettuce				collard or kale
Brussels spr	turnip (2)	leek	leek	chard	celery (2)

kohlrabi	kohlrabi	leek	leek	radish (2)	beet (1)
kohlrabi				peas	peas
squash	squash	carrot	carrot	beans	beans
onion sets	onion (2)			beans	beans
onion sets	lettuce	lettuce	lettuce	peas	peas
broccoli	cabbage	peppers	peppers	radish (2)	beet (1)

Hill gardens along fence

cucumber	cucumber	beets	beets	tomato	beets	beets	celery	celery
spinach	spinach	beets	beets	beets	beets	collard or kale	collard or kale	collard or kale
Brussels sprt						cabbage	turnip	turnip

pepper	pepper	leek	leek	leek	leek	onion seed	onion seed	celeriace	celeriace
lettuce	lettuce	lettuce	kohlrabi	kohlrabi	kohlrabi	onion sets	onion sets	carrot	carrot
		broccoli							

pepper	pepper	chard	squash	squash	beans	beans	beans	beans
carrot	carrot	lettuce	lettuce	lettuce	peas	peas	peas	peas
					radish	radish	radish	radish



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Tracking Animals and Weather

Teacher				Seed Planting Date		
Date	Air Temperature	Soil Temperature	Rainfall	Sunny, partly cloudy, overcast	Name of animal seen and how many	What plants have germinated?