

Overview:

Students observe the sprouting and measure the growth of pea seeds.

Objectives:

The student will:

- plant pea seeds;
- observe the growth of pea seeds; and
- measure pea seed growth.

Targeted Alaska Grade Level Expectations:

Science

- [3] SC2.2 The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by observing and comparing external features of plants and animals that may help them grow, survive, and reproduce.
- [3] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [3] SG2.1 The student demonstrates an understanding of the bases of the advancement of scientific knowledge by comparing the results of multiple observations of a single local event (L)..

Materials:

- *One Bean* by Anne Rockwell
- The following materials should be provided for each small group: 2 or 3 hand lenses, 3-5 bean seeds (type with shortest time to maturity), quart size re-sealable plastic bag, and damp paper towel.
- Centimeter ruler
- Stapler
- Science journal (one per student)

Activity Preparation:

1. Make a Needs of Seeds chart large enough for the class to see.
2. Soak pea seeds overnight before the lesson.
3. Using a permanent marker, draw a line across the width of the bag about 10 cm from the bottom.

Activity Procedure:

1. Ask students what seeds need to sprout and grow. Complete the Needs of Seeds chart as a class.
2. Read the book *One Bean* and discuss the story. Ask them what things a bean seed needed to grow and list on the board. Revise the Need for Seeds chart. Ask students if anyone wants to change their mind about what seeds need to grow. If so, make new tally marks in a different color.
3. Tell students they will be planting pea seeds to observe their needs and growth. Ask students if they have eaten peas and if so, where they came from (a garden, the store, out of a package or can). Students may not know that the peas they were once seeds.
4. Divide the students into small groups. Give each group 3-5 pea seeds to observe with a hand lens. Record any observations in their individual science journal.
5. Have students staple along the line on the bag. The staples should be 3-8 mm apart so the seeds will not fall to the bottom but not so tightly the roots cannot get through to the water that will be at the bottom of the bag.

6. Add 3-5 seeds and enough water to make a small reservoir at the bottom of the bag (about 2 cm deep). Tape the bag to a wall so it will be upright.
7. Have students check the bag daily and measure and record any growth of the root and sprout in their science journal. They should also write any observations made.
8. Nutrients stored in the cotyledon will nourish the plant for a while, but without additional nutrients (from soil or fertilizer) and food (made by the plant using sunlight) the plant will become weak in about a month. Ask students what the pea seeds need to continue to grow and investigate their ideas.
9. Revisit the Need of Seeds chart and have students give responses and use a third color to record responses.

Extension Ideas:

1. Plant pea seeds in soil at the same time others seeds are planted in water.
2. Plant other types of seeds such as radish, nasturtium, lettuce, or sunflowers.
3. Start a school garden project.
4. Plant a bulb such as an amaryllis or daffodil and observe, measure, and record growth.
5. Read the following books aloud: *The Sunflower House* by Eve Bunting, *Jack's Garden* by Henry Cole, *From Seed to Plant* by Gail Gibbons, *The Reason for a Flower* by Ruth Heller, *How a Seed Grows* by Helene Jordan, *The Tiny Seed* by Eric Carle, and *The Magic School Bus Plants Seeds- A Book About How Living Things Grow* by Joanna Cole.
6. Discuss hydroponic method of growing plants.

NEEDS FOR SEEDS

TEACHER INFORMATION SHEET

Seeds Need to Sprout and Grow	What Do We Think?	How Can We Find Out?
water	Agree Disagree Not Sure	
air	Agree Disagree Not Sure	
soil	Agree Disagree Not Sure	
sunlight	Agree Disagree Not Sure	
darkness	Agree Disagree Not Sure	
warmth	Agree Disagree Not Sure	
food	Agree Disagree Not Sure	