

It Begins with a Seed

Adapted From: eat.think.grow “Plants Start from Seeds”

Overview: Students will learn what a seed is, how a plant begins to grow from a seed, and the life cycle of a bean plant.

Subject area: Science

Grade level: K

Next Generation Science Standards:

K-LS1 From Molecules to Organisms: Structures and Processes

- **K.LS1.1.** Use observations to describe patterns of what plants and animals (including humans) need to survive.

Objectives: Students will be able to describe how a seed is related to a plant, the life cycle of a bean plant, examine what is inside a bean seed, and explain how a bean seed becomes a new plant.

Prep time: 30 minutes

Lesson time: 30 minutes

Teacher Background: Seeds come in different sizes, shapes, and colors. Some are edible; some are not. The reason for the diversity in seeds is related to their needs in growing and being dispersed. All seeds have the same parts; a seed coat to protect it, an embryo that is the baby plant; and an endosperm that is the food that feeds the embryo until it is a seedling and can make its own food.

Materials needed:

- Collection of various seeds
- Bean seeds to be planted (some pre-soaked)
- Hand lenses or magnifying glasses
- Garden beds with plants in various stages of their life cycle
- White board and marker
- Watering can
- Garden stakes and string
- Plant labels

Space needed: Classroom and Garden

Staff needed: 1

Preparation steps: Measure out and stake lines of string to make planting easy for young children.

Discussion: Activate students' knowledge of plant parts. Draw a generic plant on the board (see attachment), and ask students to identify the roots, stem, leaves, flowers, fruit, and seed. Let the students know that plants have different parts and we can eat some of the parts. Guide the discussion to focus on seeds. Ask, what foods do we eat that are actually seeds of plants (examples include beans, peas, corn, nuts, sunflower and pumpkin seeds, grains, etc.). Tell students that today they are going to learn how seeds turn into plants, and we will identify some of this happening in the garden.

Presentation steps:

1. In the Classroom:
 - a. Show students a bean seed and tell them that a bean seed can grow into a bean plant. It can't grow into any other kind of plant. To help students discover that a seed grows the same kind of plant, ask questions such as, "What kind of plant would grow from a sunflower seed? A pea seed? A pumpkin seed?" Hold up a few examples of these types of seeds as you discuss them to have students visualize this concept.
 - b. Introduce a plant life cycle. Display again the bean seed. Remind students that it can grow into a bean plant. Ask students how they think a little seed can grow into a big plant. What steps might need to happen? As the students are giving their predictions, begin to draw the life cycle with them on the board:
 - i. The seed germinates—it opens up and sends out a root.
 - ii. The tiny root stretches downwards and the seed begins to put out a stem upwards.
 - iii. The seed sprouts up out of the soil.
 - iv. The new plant develops leaves to help it get energy from sun and grow bigger.
 - v. The full-grown plant has lots of leaves and makes new seeds.
 - vi. A plant which grows from just one bean can give us many more bean seeds—enough to eat some and use some to grow more new plants!
2. In the Classroom:
 - a. Next, students will examine bean seeds. Encourage students to predict what they will find by asking them questions such as: *If we open up a bean seed, do you think we'll be able to see a tiny new plant? What else will we find?*
 - b. Demonstrate how to open a bean seed and how to use a hand lens to look at the structures inside the seed.
 - c. Hand out the previously soaked beans and a hand lens to each student. Instruct students to carefully open their bean seed and examine the inside of the seed with the hand lens.
 - d. Help students to identify what they find inside, including the embryo and the endosperm, the temporary food supply.
3. In the Garden:
 - a. Explain to students that they are going to plant bean seeds and observe other plants in various stages of their life cycle.
 - b. Walk around the garden with the class and identify different plants and their life stages. Talk about what plants need to continue growing successfully. Show students seedlings, sprouting plants, adolescent plants, mature plants producing flowers, plants developing fruit, etc.

- c. Show students how to plant seeds. Explain that these seeds are to be placed directly under the string in the planting bed. Show students how far apart to place their seeds.
- d. When all seeds have been placed, have the students either push them into the soil gently to the recommended depth or have them cover the seeds lightly with soil.
- e. Ask students what will happen next (the seeds will sprout and their roots will begin to grow downwards into the soil).
- f. Ask students what the seeds need to grow (sunlight, water, air, nutrients). What do they need today? (Water). Have students take turns watering their seeds with a watering can.
- g. Optional follow-up: observe bean plants in the following weeks to explore what stages of their life cycle they are in.

Variation: Bean seeds can also be planted in small containers and placed on the windowsill in the classroom.

Attachment:

