

# SEED UNDERCOVER!



## BENCHMARKS and TASKS

**SC.A.1.1.1** The student knows that objects can be described, classified, and compared by their composition (e.g., wood or metal) and their physical properties (e.g., color, size, and shape).

**SC.F.1.1.1** The student knows the basic needs of all living things.

**SC.F.1.1.5** The student compares and describes the structural characteristics of plants and animals.

**SC.G.1.1.2** The student knows that plants and animals are dependent upon each other for survival.

- The student observes and describes seeds.
- The student observes and analyzes each part of a plant (seeds, roots, stems, leaves, flowers and/or fruit) and correlates it to a specific function.
- The student maintains certain conditions in order for seeds to progress through the stages of growth (seed, seedling, mature plant) and analyzes how nature does the same.
- The student explains how plants are dependent on animals for seed dispersal.

## KEY QUESTION

What is the function of a seed?

## BACKGROUND INFORMATION

Seeds come in many different sizes, shapes, textures, and colors. Some are edible; some are not. Most plants produce a large number of seeds; this is because so few seeds survive. Some seeds just drop from the parent plant and take root, but they must compete for space and light. Animals and birds carry some seeds, others travel by the wind, and some seeds float. Some seeds are eaten by animals and then deposited in the ground as part of the animals' waste.

Germination is the process in which a plant begins to sprout or grow. In order to germinate, seeds must absorb water until they swell and burst their seed coat. All seeds have the same parts: a **seed coat** for protection, an **embryo** (the baby plant), and **cotyledon** (stores food that feeds the embryo until it is a seedling and can make its own food). The purpose of a seed is to develop into a new plant.

## MATERIALS

### Teacher

*The Tiny Seed* by Eric Carle

### Per student

science/plant journal  
magnifier

### Per group

lima beans or pinto beans  
1 paper towel  
2 clear plastic cups  
water

## TEACHING TIPS

1. Do not soak the beans overnight. Students will do this.
2. Save the beans from Day One to use on Day Two.

## ENGAGE

1. Ask:  
*What is a seed?*  
*Why do you think we have seeds in fruits and vegetables?*
2. Read and discuss *The Tiny Seed* by Eric Carle.

## EXPLORE

1. Tell students to observe a bean with their hand lens. Trace it in their science/plant journal.
2. Have each group place enough lima beans or pinto beans to fill two clear plastic cups. (The same kind of beans in both cups.)
3. Have students fill to the rim, ONE of the cups of beans with water. The other cup stays dry.
4. Have students predict what will happen to the beans in both cups. Record their predictions.
5. The students should observe changes over a two-hour period. Every half hour the students record their findings in their journal. After an hour, add just enough water to the watered beans so the water fills the cup. (If you have the students time this activity and read the clock, you will be supporting a mathematics benchmark.)

## EXPLAIN

Discuss the following questions every half hour and have students record in their journals:

*How did the seeds change when water was added?*

*Did both cups show a change? If not, which cup of seeds did not change?*

*Describe what changes you observed.*

*Be sure to include size, color, and hardness.*

*Did our predictions match our results?*

## EXPLORE

1. Ask students to carefully peel off the outer skin or seed coat of a soaked bean and then split the bean in half lengthwise. After opening the bean, students should use a magnifier to identify the parts of the seed: seed coat, embryo, and cotyledon (see **Background Information**). (Students probably will not use these terms, so accept their responses, and then provide the appropriate terms for the parts they've identified.) Do not expect first graders to memorize the terms.
2. Draw a seed on the board, labeling each part. Have students do the same in their science journals.
3. Discuss the function of the seed coat, the embryo, and cotyledon.

## EXPLAIN

1. Have students describe their observations after using the magnifier to examine their seed.
2. Explain to the students that **a seed has only one purpose – to become a new plant**. Ask students to think about how a seed gets to a certain place so it can become a new plant.

Ask:

*What is the main purpose of a seed?*

*What are the parts of a seed?*

*What is the function of each part of the seed?*

*How do seeds get from one place to another so they can become new plants? (See*

**Background Information.**)

**EXTEND/APPLY**

1. Share the following poem with the students:

THE SEED

The seed didn't like the dark and wet all around.  
So he burst his shell and traveled up above the ground.  
by Deirdre Englehart

2. Plant some of the seeds that were soaked and plant some seeds that were not soaked. Label the containers. Place in a well-lit area and provide water as needed. Observe the containers to see which seeds will sprout first.
3. Burdocks are plants with round burrs that stick to clothing or get tangled in animal fur. They also stick to each other. One man found burdocks to be so fascinating that he began experimenting with a man-made version. Have students try to predict what he invented, based on his study of burdocks. (He invented Velcro!)