

What is a Seed?

Description: Ever wonder what is inside the bean you had for lunch? Did you know that bean can become a 12-foot-tall plant! During this lesson you will use your observation skills to explore the inside of a bean.

Time: 15 minutes

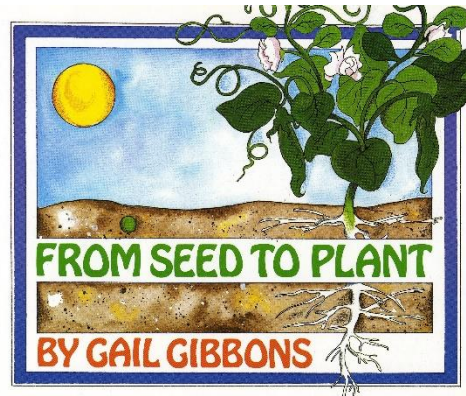
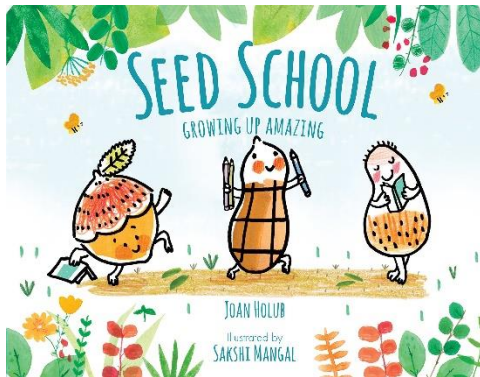
Materials:

- Large Beans (examples: scarlet runner, kidney, pinto, lima) soaked in water for 12-24 hours or microwaved for 5 minutes
- Magnifying Glasses (optional)

Introduction: Ask, “What is a seed?” After hearing their answers, let them know that we are going to find those answers today. We are going to use our observation skills like a scientist to discover what characteristics help it grow into a plant!

Good Books:

- *Seed School* by Joan Z. Holub
- *From Seed to Plant* by Gail Gibbons



Story of a seed:

During germination (when the seed starts to grow when the light, heat, and water is just right), the root (radicle) absorbs large amounts of water, swells and breaks the seed coat. The root starts to come out from the seed coat and grows down into the ground. The shoot along with the cotyledon (remember those two leaves that the plants use as food?) grows upwards. The cotyledons shrivel as their nutrient supply is diminished and the maturing plant begins to make food via photosynthesis. The conditions have to be right. The soil temperature needs to be between 60-70 degrees F, water needs to be present, and it has to be planted after the last frost. It also takes time! It takes between 45-55 days for the plant to start blooming and making new beans, which can be grown the next year.

Activity: Dissect a Bean - Today, we are going to dissect a bean seed. Dissect means to carefully take apart things from nature to learn how they work. By learning how it works we can take better care of our own. As they take it apart talk about each layer they encounter or find.

1. Pass out one soaked bean

- 2. Guide the child through each step.** Encouraging them to go slow and make observations about the outside (ex. discuss colors, patterns, seam along the edge of the bean, where it could open, tiny bump on the seam). Share basic vocabulary (seed coat, hilum/scar, embryo/baby plant, and cotyledon) other vocabulary is included below for your reference however it will be beyond most younger learners.

- Seed coat: the protective covering that surrounds the seed- How might this help the seed?
- Hilum: the scar of where the seed was attached to the fruit- do they remember the bump on the side? (Like a belly button)
- Micropyle: small bump at one end of the hilum- it's very tiny

- 3. Peel the seed coat off** with fingernails and open the seed along the seam. Share one more observation about the inside. (ex. cotyledon, baby plant, color, consistency)

1. Embryo: baby plant – which includes the following:

- Cotyledon: two sides of the bean that contain nutrients to sustain the embryo – All the nutrients the seed needs to grow until it has leaves to start photosynthesizing light
- Embryonic Shoot (Epicotyl)
- Embryonic Root (Radicle)



Questions for Discussion:

1. What might a seed need protection from? Why does it need a coat?
2. Which part of the seed do you think is the most important to help it survive? Why?
3. If we were to dissect a different bean would it be the same? Try dissecting a different kind of bean and compare/contrast your findings.