

GRADES K-2

TIME

15-20 minutes

SEED DISSECTION



Science



PRESENTED BY

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CHILDREN'S
MUSEUM
INDIANAPOLIS[®]

PLANTS AND SEEDS

The Children's Museum's lessons are designed to weave classroom experiences and museum education together. All lessons are interdisciplinary and can be used as individual classroom experiences or in combination to create a cohesive unit. Lessons are optimized when used in connection with museum virtual programs and field trips.

Plants **reproduce**, or make more of themselves, like other living things. To reproduce, many plants bear seeds. Seeds may not look alive, but they each contain a living baby plant called an **embryo**. That embryo may have one or two **leaves** and a **root** and is surrounded by a **food source**. This stored food allows the baby plant to survive until it can **germinate**, or sprout and grow from the seed, and start using energy from the sun to make its own food. The seed is protected from the dangers of the world around it by a hard **seed coat** that is like a shell. The seed coat will soften to allow the sprout to emerge when the conditions are right (usually when the seed is in a warm and wet place). In this lesson, you will dissect, or take apart, a lima bean seed so you can see the parts inside.

FOCUS QUESTIONS

- Are seeds alive?
- What is one thing you can find inside a seed?
- Do plants need food?



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INDIANA ACADEMIC STANDARDS

Science: SEPS.2, K.LS.1, K.LS.2, K.LS.3, 1.LS.1, 2.LS.2

OBJECTIVES

Students will:

- Observe the parts of a seed.
- Identify how the different parts of the seed help a plant germinate



MATERIALS

- 2 large lima beans for each student
- Hand lenses
- Paper towels
- 1 cup or bowl large enough to hold all lima beans needed for activity.
- Water
- Knife (for teacher)

Studying Seeds

PROCEDURES

Pre-Lesson Preparation

- Place half of the seeds for the students into a bowl or cup and submerge them in water.
- Allow those seeds to soak 12-24 hours.
- Drain excess water from container.
- Score the narrow edge of each bean with a knife to split the seed coat (as needed).

Classroom Directions

- Ask students if they think plants are alive and share their reasoning (they get bigger, they need water etc.). Compare plants to other living things, pointing out that they need things like air and water, and can move, grow, and make more of themselves (reproduce).
- Ask students how plants make more of themselves. Guide them to the idea that plants reproduce using seeds.
- Provide each student with a paper towel, dry lima bean, and hand lens. Invite students to make observations of the seeds, including its texture or interesting features on the seed.
- Give each student a lima bean that has been soaked in water. Explain to students that the seeds were placed in water overnight, so it would be easier to observe the inside of the seed. Ask students to make comparisons between the dry and soaked seeds. Students may notice that the seed is softer, is larger or the outside is coming off.
- Demonstrate how to carefully remove the seed coat, and share with students that this layer was much harder on the dry bean, and protects the inside of the seed.
- Invite the student to carefully separate the two halves of the seed, and keep them on the paper towel. Using a hand lens, ask students to look closely at the inside of the seed. Older students can draw or write a description of the parts of a seed.
- As students are examining the seeds, check in with students to make sure their seed contains the baby plant and root (or embryo). The seeds are fragile, and the embryo may fall off,
- After students have made observations, have a discussion with the students about what they observed in their seed, using the following questions:
 - Was there anything inside the seed that reminded you of something you might have seen before?
 - How do you think the parts you found might help a plant start to grow?
- During the discussion with students, reinforce student thinking that a seed contains a small plant will grow into a larger plant. Using a diagram of a seed, or soaked bean identify the seed coat, root, leaves, and the food source for the plant.
- Share with students that the process of a seed beginning to grow and sprout is called germination.
- Collect and dispose of the beans in a waste or compost bin.

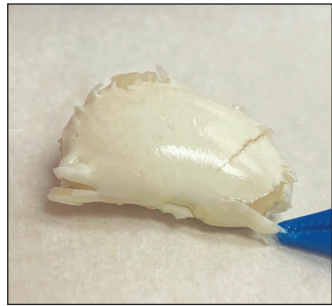


Activity Steps

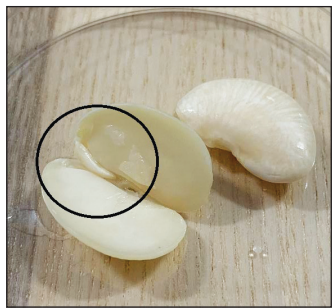
- 1** Soak a lima bean in water overnight.



- 2** Carefully remove the seed coat.



- 3** Gently open the seed, and look for a baby plant.



VOCABULARY

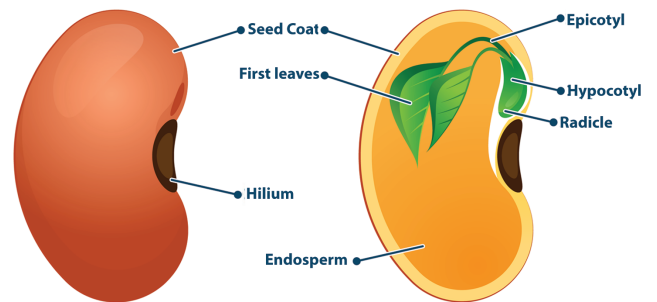
- Seed coat
- Embryo
- Germinate
- Root
- Food source
- Reproduce
- Leaves

EDIBLE SEEDS

Many students might now realize how many seeds they eat on a regular basis. Invite students to brainstorm the different types of seeds that are edible. Suggestions will include peas, black beans, peanuts and corn. For older students you can talk about foods that are made of seeds such as hummus (chickpeas and sesame seeds) or peanut butter.

SEED ANATOMY

BEAN SEED



WHOLE

CROSS SECTION

Optional Side Activity - Journaling

To connect to literacy standards, students can record their observations of the seeds in a journal.



Younger students can try to draw and label the different parts of the seeds, while older students can add more detailed descriptions. Students can add to their journals if you conduct a seed germination activity.

