



Discovering Seeds

Lesson Description

In this lesson, students will explore the structure and purpose of seeds through tasting and dissection activities.


- Time required: 60 minutes
- Location of lesson: Classroom

Learning Objectives



- Observe and compare two different types of seeds (beans and nuts).
- Explain the structure and function of seed parts including seed coat, embryo and cotyledon.
- Explain the purpose of a seed.

Materials and Preparation


- Unshelled lima beans (or any other bean in a pod such as green beans, edamame or soybeans) - 1 for every group of 2-3 students
- Unshelled almonds (or any other unshelled nut such as walnut, acorn, hazelnut or chestnut) - 1 for every group of 2-3 students
- Magnifying glasses or microscopes - enough for student groups to share
- 2 large pieces of poster paper
- Markers for the poster paper
- Whole seed foods for tasting: any beans, nuts, whole grains or seeds (or products made from them). Ideas include hummus, whole wheat bread, whole corn tortillas, nuts and seeds, etc.
- Napkins or paper towels
- Paper plates for food samples
- Preparation for Seed Exploration Rotations activity:
 - Set up 2 separate seed centers- Center A “Seed Dissection” and Center B “Seed Tasting”. Each center will require an adult to assist and supervise.
 - For Center A: Set up a table or other area with space for half of the class to gather and dissect seeds. Set out magnifying glasses or microscopes. Have the lima beans and unshelled almonds available for dissection. Post 1 large piece of poster paper to the wall or place on a clear space on the floor or table. Have markers available.
 - For Center B: Set up a table or other area with space for half of the class to gather and taste sample whole seed foods. Open food packages and prepare bite sized samples for students. Place on paper plates if appropriate and set out napkins.

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- Prepared vegetable snack of the week – 1 for each student
- Water to drink during the Class Warm-up – water dispenser in the classroom and 1 cup or a water bottle for each student

Class Warm-up: Champion Cheer and Veggie Taste Test (5-10 minutes)

- Give each student a cup of water or ensure that they have a filled water bottle in front of them.
- Give each student the prepared veggie snack of the day.
- Lead the students in enthusiastically reciting the  **Champion Cheer**.
- At the end of the cheer, drink water and eat the veggie snack together.
- Have students complete their  **Taste Test Observations** about the vegetable snack of the week.


Review of Last Lesson (2-3 minutes)

- Review the evaluation questions from last week's lesson. Evaluation questions from all lessons are listed at the end of the workbook .

Class Discussion (5-10 minutes)

What do you know about seeds? Why are they important? A seed becomes a new plant. Without seeds there could be no new plants! We also eat seeds. What are some seeds that we eat? (Answer: sunflower seeds; chia seeds; all types of nuts and beans are seeds) Seeds give us lots of vitamins, minerals, fiber and energy.

Beans, nuts, grains and seeds are all included in the large category called seeds. Today, we will investigate 2 types of seeds: a bean and a nut. Beans, nuts, and grains are all types of seeds because they become a new plant.



Refer students to the  **Discovering Seeds** page in their workbook so they can look at the picture while you discuss this. *Seeds are made up of several different parts. Today we will discover the seed coat, embryo and cotyledon. Each of these parts does something important for the seed and the new plant.*

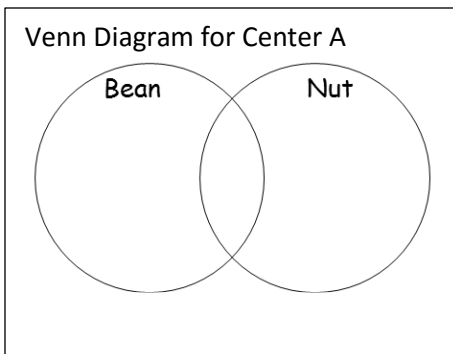
The seed coat is the thin, clear coating of the bean and the papery brown coating over the almond. The seed coat protects the baby plant (the embryo).


The embryo is the baby plant.

The cotyledons provide food for the embryo until it can make its own food from the sunlight.

Activities (40 minutes)

-  **“Seed Exploration Rotations” (40 minutes total – 20 minutes at each station):** Students observe 2 types of seeds and taste whole seed foods.
 1. Briefly describe each seed center so the class knows what they will be doing. *At Center A you will dissect or take apart 2 different types of seeds: a bean and a nut. At Center B, you can taste some whole seed foods.*
 2. Split the class into two groups. Assign one group to each seed center. The groups will spend 20 minutes at each seed center.
 - a. Center A
 - i. Divide the students into groups of 2-3.
 - ii. Give each team 1 lima bean and 1 unshelled almond.
 - iii. Show students how to break open the lima bean pod. *The pod is the fruit and the bean is the seed. The hard covering around the almond is its shell. Can you find the seed coat? The seed coat is the thin, clear coating of the bean and the papery brown coating over the almond. The seed coat protects the baby plant (the embryo).*
 - iv. Break the bean and nut in two equal halves (the cotyledons) to find the embryo attached to one side. *The embryo is the baby plant. The cotyledons provide food for the embryo until it can make its own food from the sunlight.*
 - v. Refer students to their workbook page  **Discovering Seeds**. Students will draw each part of the seed in the workbooks for both the lima bean and the almond. Label the parts: **seed coat, embryo, and cotyledon**. Write the functions of each part.
 - vi. Invite students to use the magnifying glasses and/or microscopes to study their seeds in more detail.
 - vii. Ask students to answer questions # 1 and # 2 in the workbooks. (How are the two seeds similar? How are they different?)
 - viii. On the poster paper, create a Venn diagram comparing the lima bean and the almond. *What is the same about the two seeds, what is different?*
 - b. Center B
 - i. Show students the food samples. *What part of the plant are these foods made from? (Answer: the seed!) Beans, nuts and grains are all seeds.*



- ii. *It's healthy for us to eat the seeds of plants and to eat all the parts of the seed. Whole seeds, including beans and nuts, have vitamins and minerals and fiber that are healthy for us.*
- iii. Invite students to taste the sample whole seed products and record their observations and preferences in the workbook page  **Discovering Seeds.**

Evaluation Questions (5 minutes)

1. *What does a seed do for a plant?* (Answer: becomes a new plant)
2. *What part of the seed is the baby plant?* (Answer: embryo)
3. *What does the seed coat do?* (Answer: protects the embryo)
4. *What does the cotyledon do for the seed?* (Answer: provides food to the new plant to use until it reaches sunlight and can make its own food)
5. *How much water should you drink every day?* (Answer: at least 6 cups of water a day)
6. *How many fruits and vegetables should you eat every day?* (Answer: at least 5 fruits and vegetables a day)
7. *Does gardening connect you to your culture and help you learn new words in your language?* (Answer: yes)

Preparation for Future Lessons – Reminder for the Instructor

- Review the materials and preparation needed for the next lesson.
- Remember that an Elder guest instructor is needed for these Spring lessons: lesson 1 (Eating a Rainbow), lesson 4 (Water and Precipitation), and lesson 9 (Plant Parts: Identifying Parts of a Flower).

Notes
