

Session 2: Seeds = Baby Plants

Learning Outcomes

Upon completion of this session, students will:

- Examine seed characteristics and functions.
- Know the basic anatomy of a seed.
- Perform a seed dissection.

Duration

45 minutes-1 hour

Activities

1. Introduction to seeds
2. Overview of seed anatomy
3. Seed dissection

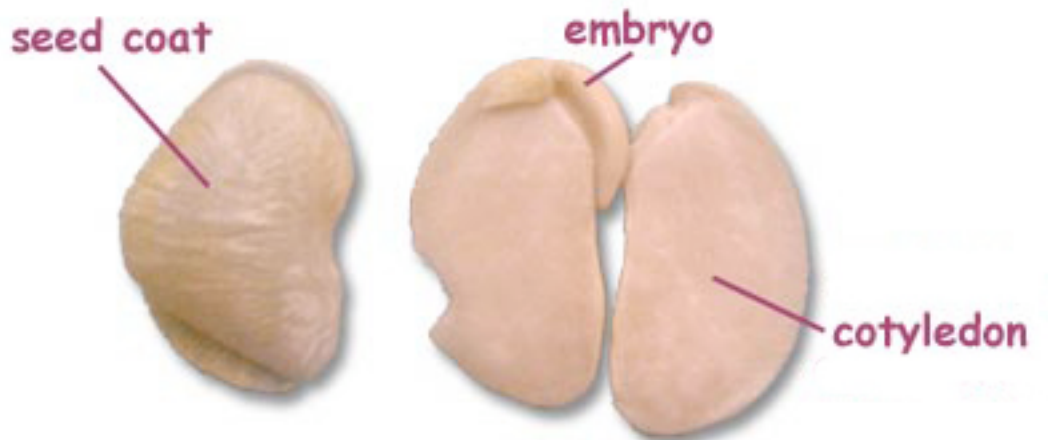
Materials

- Lima beans (dry beans and ones that have been soaked overnight for the dissection)
- Plastic bags (sandwich size)
- Plastic knives for dissection
- Magnifying glasses
- A place to draw a seed diagram
- Examples of different types of seeds from supermarket.

Background Information

In this lesson, students will learn the function and anatomy of seeds. They will also utilize the strongest tool for scientists – observation. Encourage students to make their own drawings and write down (or simply discuss) any observations, as well as labeling the individual parts for the seed.

For the anatomy, I focused on three main parts (shown above) – (1) seed coat (2) cotyledon (3) embryo. The embryo can also be further divided into the root and shoot (see “The Great Plant Escape” in Resource Materials section).



Procedures

1. What is a seed?
 - A seed is a “baby” plant.
 - After pollination (both mother and father needed!), a seed is formed from material given by the mother plant.
 - A seed, if given all the right nutrients and environmental conditions, can grow into a full-sized plant.
 - *Function = reproduction*
 - Dispersed by wind, animals or simply is deposited near the mother plant.
 - Seeds can be found in many shapes and colors, often have a hard outer layer for protection of the “baby plant.”
 - At the end of the introduction, give students hard seeds to attempt to dissect to show strength of seed coat.
2. Anatomy of a seed
 - Three basic parts of the seed and functions – draw diagram for class.
 - (1) Seed coat → hard, protects small plant inside
 - (2) Cotyledon (or seed leaf) → food source for small plant, allows plant to survive once nutrition is no longer coming from the mother plant
 - (3) Embryo → “baby” plant, consists of two parts – the root and shoot
3. Seed dissection
 - Divide students into groups of 2-4.
 - Give each group dry beans and soaked beans.
 - Have students list observations of each type of seed (ex. Hard or soft, color, size, etc.). Note any differences.

- With a plastic knife, cut the soaked lima bean in two lengthwise. The halves should look like the picture above.
- Have the students identify the seed coat, cotyledon, and embryo.
- After the students have correctly identified all the parts, let them “disassemble” the seed by peeling off the seed coat and separating the embryo from the cotyledons.
- Reiterate the importance of each part of the seed during the dissection.

Suggestions

The more formal names for the seed parts can be used for more advanced classes – testa=seed coat, radicle=root, plumule=shoot, and cotyledon=seed leaf. Asking the class to give examples of dispersal methods and the anatomy related to these (cockleburs, “helicopter seeds,” seeds in tasty fruit) was exciting for the class. The students also seemed to really enjoy the dissection and related to the concept of a seed as a “baby plant.”

The teacher’s comments included:

1. To make the lesson more difficult, have each child draw their own diagram of a seed from his or her observations, and then label the parts after we discuss the anatomy as a group.