

Seed Science

Classroom Activity

SYNOPSIS

Students will study seed anatomy by dissecting two seeds and comparing/contrasting them.

OBJECTIVES

Students will be able to identify the embryo, radicle, cotyledon, plumule, seed coat, and endosperm of a seed.

VOCABULARY/CONCEPTS

- embryo
- cotyledon
- seed coat
- radicle
- plumule
- endosperm

MATERIALS

- peanuts (1/child: **Beware of Peanut Allergies!**)
- lima beans (1/child); pre-soak lima beans overnight so they are easy to dissect
- worksheet (included)

PROCEDURE

1. Depending on the grade level and academic ability of your students, review the seed diagram on the following page explaining the anatomy and function of the various parts. Teach hand signs that represent the different parts.
2. Provide each student with one peanut, one lima bean, and a worksheet. This is a great activity for cooperative learning.
3. Demonstrate to the students how to break open the seed in half (lengthwise) so the embryo is revealed.
4. Tell the students to complete their worksheets as they explore their seeds.

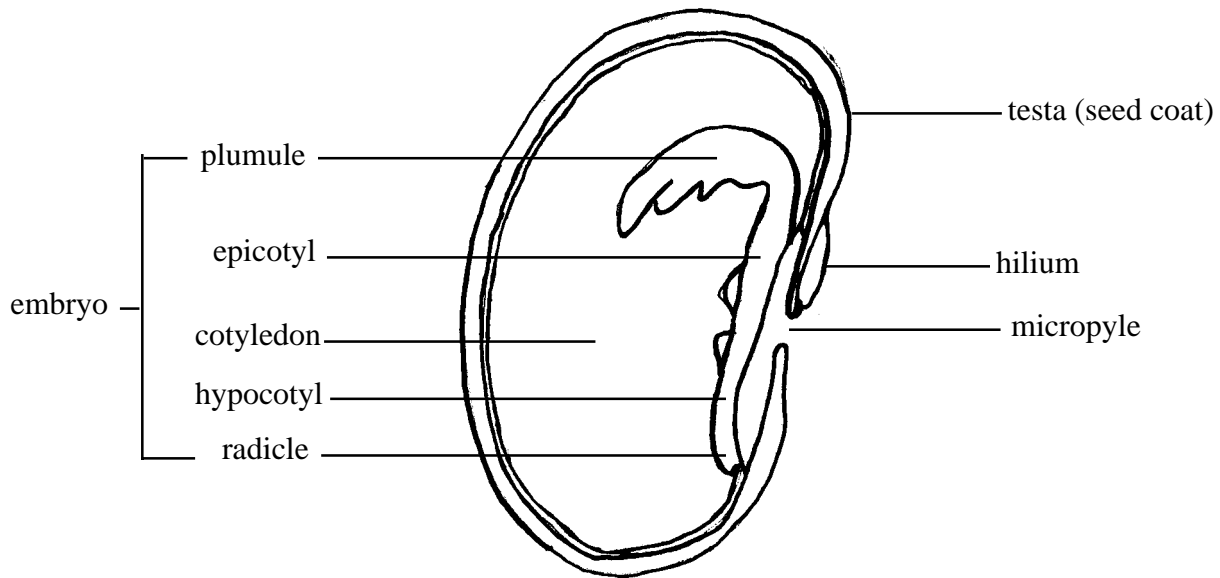
CHECK FOR UNDERSTANDING

- State the function of a part, and have the students respond with the hand sign that corresponds to that function (e.g., “This part is the root of the plant.” Students demonstrate the hand sign for *radicle*).

EXTENSION

- Have the students bring in other seeds (beans, peas, etc.) from their homes. They can dissect these and see if they have the same parts.
- Purchase sprouts and have the students identify the parts.
- Grow plants from seed in the classroom. Have the students observe and dissect the plants at different growth stages.

dicot seed (bean)



A seed (a mature ovule), includes:

embryo: a young plant present in the seed before germination

radicle: the root portion of the embryo

plumule: the shoot portion of the embryo

cotyledon: the first leaves of an embryo, may or may not resemble true leaves

coleorhiza: in monocots, a sheath that covers the radicle

coleoptile: in monocots, a sheath that covers the plumule

seed coat: outermost layer of a seed and develops from the integuments

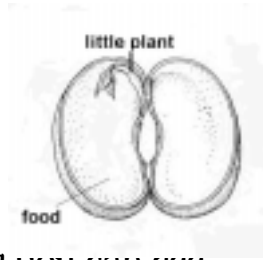
endosperm: a triploid nutritive tissue that develops in the ovule, may be absorbed by the embryo before the seed matures.

(Image adapted and information from David William Reed from Texas A & M Horticultural Sciences.

Webpage: <http://www.generalhorticulture.tamu.edu/lectsupl/Anatomy/Anatomy.html>)



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1. Draw the two halves of your peanut seed below. Label the parts you can see.

2. Draw the two halves of your lima bean seed below. Label the parts you can see.

How are they different?

How are they the same?

What part of a plant is the radicle? _____

What part of the plant is the plumule? _____

What part of the plant is the cotyledon? _____

What part contains stored food for the plant embryo (baby)? _____

What is your favorite part of the seed? _____