

Learning Cycle Lesson: Seeds

NSES Standard(s):

Each plant or animal has different structures that serve different functions in growth, survival, and reproduction.

Illinois Learning Standards:

11.A.1a Describe an observed event.

12.A.1a Identify and describe the component parts of living things (e.g., birds have feathers; people have bones, blood, hair, skin) and their major functions.

12.A.1b Categorize living organisms using a variety of observable features (e.g., size, color, shape, backbone).

Concepts

A seed coat protects the contents of a seed.

A seed contains an embryo plant and cotyledon. The embryo plant contains leaf, stem, and root parts. The cotyledon is stored food.

Germination requires moisture, air, and warm temperatures.

Materials:

Book—"The Reason for a Flower" by Ruth Heller, Index cards, Dry lima bean seeds, magnifying glasses, soaked lima beans, paper towels, quart re-sealable bags, water, staplers, markers.

Pre-assessment: What is found inside of a seed? Draw or explain. (This is an entrance slip).

Engagement: What do you notice on the cover of this book, "*The Reason for a Flower*" by Ruth Heller? What do you notice happening to this flower (Plum)? Read the book. On the page with all the different seeds ask: Are there any items that you recognize on this page? Where are the seeds in the tomato? Are any of the seeds on this page similar? How are they different? Continue reading the book until you come to the carnivorous plants. What do you notice about the shapes of these plants? Do you know the names of any of these plants? How could we find out the names of these plants? Continue reading the book? Look carefully at the pictures of this "This one has become a plum", What do you notice about the petals? What eventually replaces the petals and seeds?

Exploration:

Part A: Examine the dry lima bean seed carefully. Draw a picture of it. Try to include as much detail as you can about the seed. What are some of your observations?

Part B: Examine the soaked lima bean. Draw a picture of it or describe with words. Carefully open the seed up and see if there is anything inside. Draw a picture of the inside.

Explanation:

What happened to the seed coat when it was soaked? What happened to the two halves of the seed? What did you find inside the seed? Describe what you found? If we planted this lima bean seed, what type of plant would we get? Since this seed will grow into another lima bean plant, what do you think the object was inside of the plant? Why do you think the seed coat softened and the two seed halves opened up a little? What will the embryo plant be able to do now?

Expansion:

1. What does a seed need in order to start to grow? Record your prediction.
2. Does a seed need to be planted in soil in order to start to grow?
3. We're going to see what happens when we put lima bean seeds in a quart sized re-sealable bag on top of a damp paper towel. Do you think the seed will grow? Record your prediction.
4. Which do you think will push through the bean seed first the root or the stem? In what direction do most roots grow? Record your prediction.
5. Do you think we have to plant all the seeds the same direction so the roots will grow down? Record your prediction.
6. Line a quart sized re-sealable bag with a moist paper towel.
7. Place six staples 4-5 cms from the bottom of the bag.
8. Write your name on your bag with a marker.
9. Position each seed to be germinated above one of the staples. Be sure to place the seeds in different arrangements.
10. Gently pour water into the bag. Pour about a finger's thickness width of water in the bag.
11. Use masking tape to hang your bag to one of the cabinets.
12. Draw pictures or describe the changes of your seeds each class period.

Evaluation: What is inside a seed? Draw a picture and label. (Exit slip).

