

Manchester College

Education Department

Stephanie Alva

Lesson Plan: adapted from Indiana Academic Standards & Resources

Lesson: Seeds' Need

Length: 30 minutes

Age or Grade Intended: 4th grade

Academic Standard(s):

4.4.5 Observe and explain that most plants produce far more seeds than those that actually grow into new plants.

Performance Objectives:

*Each student will observe for ten days how plants produce more seeds than those that actually grow into new plants with 100% accuracy.

*Each student will record on the worksheet their seed information, predictions, results, and analysis with 90% accuracy.

Evaluation

The students will show their knowledge and understanding about how plants produce more seeds than those that actually grow into new plants by writing their thoughts and ideas down on the worksheet. Based on their prior knowledge the students will make their predictions. Then the actual analysis should reflect their understanding of the term germination and the basic needs of a seed.

Prep/Materials:

-Prep: Copies of the worksheet to record their answers.

-Materials: 1 square of cotton flannel, spray bottle with water, one hundred radish seeds, and pan of water.

Engagement

To start out and engage the students these three questions, “What are seeds?” (**Bloom’s Taxonomy: Knowledge**) Also ask, “Where are seeds made?” (**Bloom’s Taxonomy: Application**) The last question being, “What are the basic needs of a seed?” (**Bloom’s Taxonomy: Comprehension**) These three questions will engage the student and allow them to start thinking about seed characteristics. Also to show the different characteristics bring in a variety of seeds for them to observe. Lead into the lesson by asking, “Have you ever seen a sunflower? Does a sunflower have many or only a few seeds? Do you think all of its seeds become new sunflower plants?”

Exploration & Explanation

1. Give each student the worksheet that goes along with the activity. Explain to the class that they will be learning about seed germination. Discuss with the student what germination means and factors that affect it.

2. Explain to the students that they will be planting radish seeds on a piece of cotton flannel fabric. Have a student volunteer dampen the fabric with a spray bottle.

3. Have the students help count the radish seeds as the teacher places them on the flannel fabric. Ask, “What do you notice about these seeds? Do they all look the same?”
4. Instruct the students to record, on their worksheet, the number of radish seeds placed on the cotton flannel. (**Gardner’s: Spatial-Visual**)
5. Next, roll the flannel into a loose roll and place one end of flannel in a pan of water.
6. Place the pan of water in the window and explain that everyday for 10 days they will check to see if they need to add water.
7. Have the students record on the worksheet their predictions on what might happen to the seeds.
8. On the 10th day unroll the flannel and check for the results.
9. Students will get to inspect the seeds. They will record the number of radish seeds that sprouted and also explain why some seeds did not sprout.

Elaboration

Have the students think back about a sunflower. Ask them, “Do you think that all the seeds from a sunflower grow from a plant? Remember to think about the radish seeds and how they sprouted.” It is important to allow the students to refer back to the experiment and apply it to another idea.

Adaptation/Enrichment:

-Adaptation: Some students may need encouragement as to how to analyze the results and what to look for after the radish seeds have sprouted. Asking more detailed questions that are looking for a specific characteristic will lead them as they are doing their observations. An example question could be, “What is different about the radish seeds that sprouted and the seeds that did not sprout?” This question allows the students to look for one specific idea rather than not knowing what to observe or look for at all.

-Enrichment: Have students who need a challenge to test the growth of seeds in different types of soil such as sand soil, clay soil, loam and humus. Have the students predict the soil in which the seeds will grow the best. Instruct them to observe the plants’ growth, to measure the plants, and to record their information somehow. The teacher can provide a chart for the students to write down their observations.