Garden Lesson: Seed Dissection

Season: Fall | Grades: 2nd and 3rd

Ohio Science Concept

- Grade 2 (PS): Changes in motion- forces change the motion of an object
- Grade 3 (PS): Matter and forms of energy- All objects and substances in the natural world are composed of matter

Science Inquiry and Application Practices

- Observe and ask questions about the natural environment
- Employ simple equipment and tools to gather data and extend the senses
- Use appropriate mathematics with data to construct reasonable explanations
- Communicate observations

Next Generation Science Standards

- 2-LS4-1: Make Observations of plants and animals to compare the diversity of life in different habitats.
- 3-LS4-2: Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates and reproducing.

Ohio Mathematics Standards

- Grade 2: Add and subtract within 20
- Grade 3: Solve problems involving measurement and estimation of masses of objects.

Objectives

Students will…

- Use a scale to measure and collect data on the weight of different seeds
- Investigate the internal components of a seed
- Learn practical gardening skills by harvesting seeds

Materials

- *Observe Station*: beans soaked 24 hours, hand lenses, paper towels
- *Explore Station*: seed packets, scale, "How Much Do Seeds Weigh" worksheet, clipboard, pencil
- *Garden Station*: hand lenses, paper bags, marker

Overview

The focus of this lesson is to use tools and data to develop scientific observations about seeds. The Ohio Science Concepts focusing on forces and matter and the science inquiry and application practices are developed through experience. Science vocabulary is briefly mentioned and intended to support teachers as they build upon these topics in the classroom. At the observation station, students will investigate the internal structure of a seed. At the explore station, students will use a scale to measure the weight of different seed types and quantities. At the gardening station, students will collect and save seeds from plants in the garden. The lesson will close with a group discussion reviewing what students learned and enjoyed and how they can make sure their garden stays healthy.

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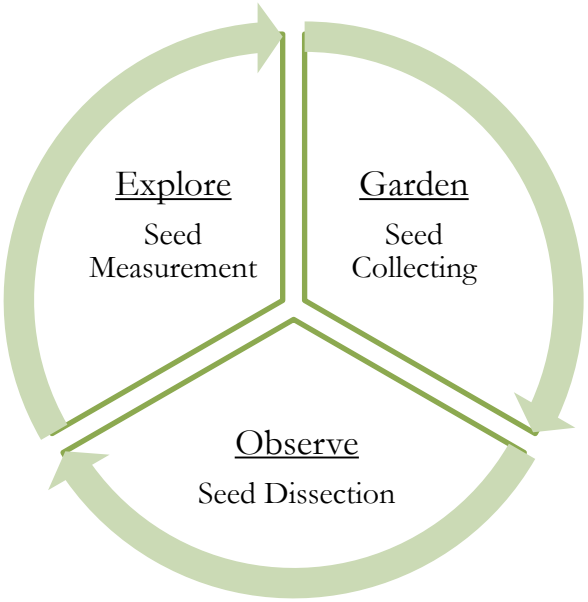
10 minutes **Introduction**

- Garden tour, observations and expectations
- Overview of stations
- Break into three groups for station time

15 minutes **Station Rotation** (5 minutes per station)



Observe: Seed Dissection

- Materials: beans soaked 24 hours, hand lenses, paper towels, student handout/worksheet
- Open the bean seeds and ask the students to describe what they see
- Encourage them to find the outer seed coat, cotyledons and embryo inside.
- Share that we used a force to open the resting beans. Ask if students have ideas for what forces are involved in plant growth.
- *Standards and practices connection: Forces and how they are involved in seed growth and dissection; Forming and communicating observations.*

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Explore: Seed Measurement

- Materials: seed packets, scale, "How Much Do Seeds Weigh" worksheet, clipboards, pencils
- Prep: pass out the "How Much Do Seeds Weigh" worksheet
- Explain that students will be using a scale to weigh different seeds
- They will record the weights on the "How Much Do Seeds Weigh" worksheet and answer the questions
- *Standards and practices connection: Matter and weight; Using appropriate mathematics with data to construct reasonable explanations.*

Garden: Seed Collecting

- Materials: hand lenses, paper bags
- Look for plants with seeds ready to be harvested (Sunflowers, Cilantro, Pole Beans, etc.)
- Use tweezers to collect the seeds in the bags
- *Practices connection: Employ simple equipment and form observations.*

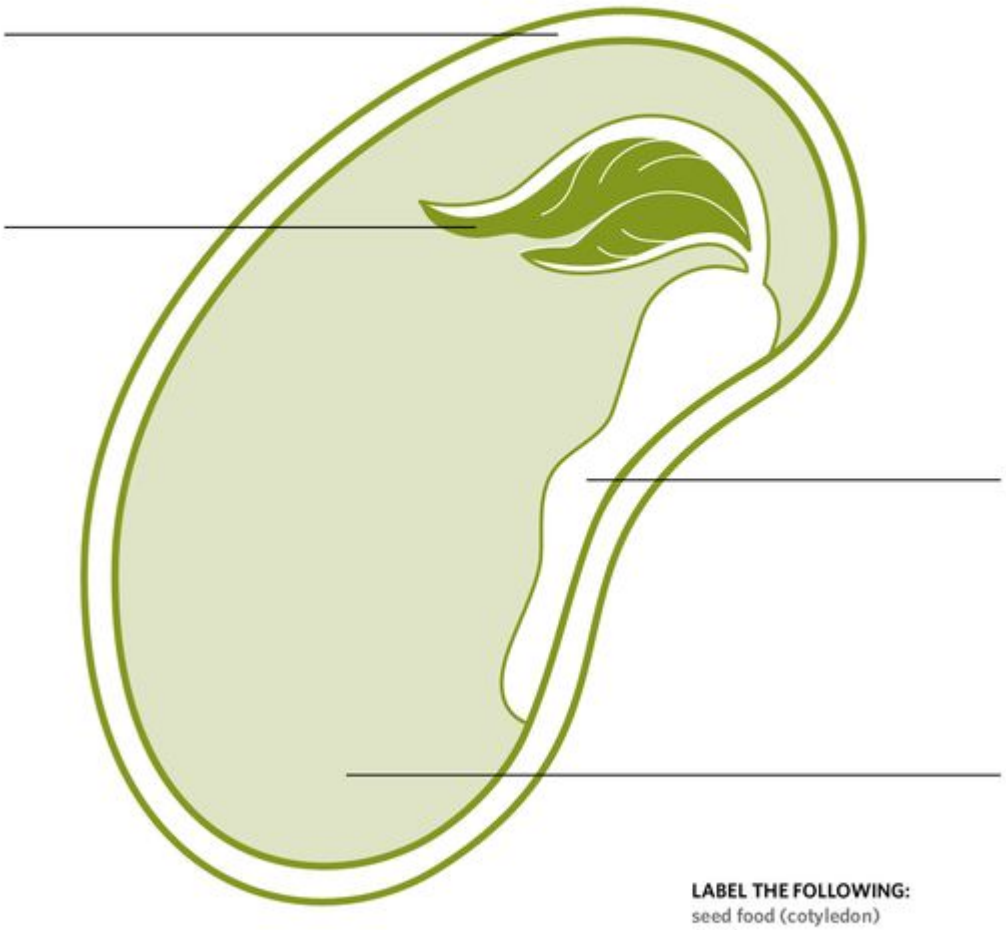
5 minutes **Conclusion: What Can You Do?**

- Ask the students to share one thing they learned or saw in the garden.
- Why did we collect seeds today? What can we do with the seeds?
- Ask if students have any questions

Observe Station Student Worksheet

Seed Diagram

Section 1, Lesson 1



LABEL THE FOLLOWING:
seed food (cotyledon)
root
seed coat
leaf

Explore Station Student Worksheet

How Much Do Seeds Weigh?

Before you start weighing the seeds, make a guess about which seed will weigh the most. Do you think the Lima Bean, Pea or Pole Bean?

Name of plant	Weight of 10 seeds	Weight of 20 seeds	Weight of 30 seeds

What type of seed weighed the most? Was your guess correct?

How much do you think 60 Lima Bean seeds will weigh?