

Garden Lesson: Harvesting Seeds

Season: Fall | Grades: 7th and 8th

Ohio Science Concept

- Grade 7 (ESS): Cycles and Patterns of Earth and the Moon- Hydrologic cycle
- Grade 7 (LS): Cycles of Matter and Flow of Energy- Biomes and their processes
- Grade 8 (ESS): Physical Earth- Physical features of Earth and how they formed
- Grade 8 (LS): Species and Reproduction- Reproduction and genetic transfer

Next Generation Science Standards

- MS-LS1-5: From Molecules to Organisms: Structures and Processes- Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms

Science Inquiry and Application

- Develop descriptions, models, explanations and predictions
- Think critically and logically to connect evidence to explanations
- Communicate scientific procedures and explanations

Objectives

Students will...

- Use a dichotomous key and observation practices to identify seed characteristics and types
- Save seeds from plants in the garden to preserve genetic diversity
- Collect evidence supporting relationships between plant traits and their survival and reproduction rates

Materials

- Transition signal (bell, chime, etc.)
- *Observe Station*: 10 different seed types in unmarked packages, dichotomous keys, clipboards, pencils, student worksheets
- *Explore Station*: clipboards, pencils, paper, student worksheets
- *Garden Station*: paper bags, permanent marker (optional: hand lenses)

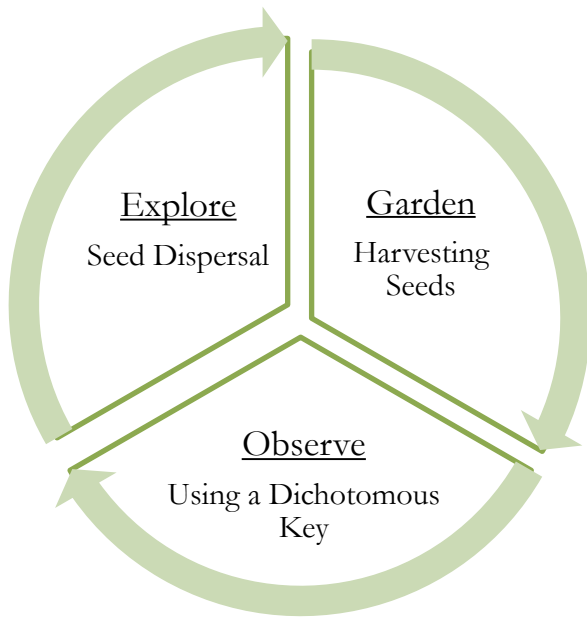
Overview

The focus of this lesson is to help students understand the full lifecycle of a plant through seed harvesting. In this lesson students practice science skills while examining seed and plant diversity. At the Observe Station students use a dichotomous key to identify seed types based on different characteristics. At the Explore Station students examine the habitat around the school and adaptations aiding species survival. At the Garden Station students collect and save seeds from different plants and discuss the value of preserving genetic diversity. The lesson will close with a group discussion about how students can apply what they've learned to preserve their garden and natural spaces.

5 minutes Introduction

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

20 minutes Station Rotation (5 minutes per station + 1 minute for transition)



Observe: Using a Dichotomous Key

- Materials: 10 different seed types in unmarked packages, dichotomous keys, clipboards, pencils, student worksheets
- Prep: Divide the students into teams of three and distribute the materials
- Ask students why seeds have diverse characteristics
- Demonstrate the use of the key and explain that this tool is used by botanists and agricultural professionals
- Challenge the students to identify all of the seed types using the key
- Students will record their findings on the worksheet

Explore: Seed Dispersal

- Materials: clipboards, pencils, student worksheets
- Prep: Divide the students into teams of three & distribute materials
- Ask students about traits and adaptations that help plants disperse seeds
- Encourage them to think about how these traits are the result of genetic transfer and the relationship between the species and the resources of the biome
- Students will walk around the garden identifying seed dispersal mechanisms and drawing observed adaptations

Garden: Harvesting Seeds

- Materials: paper bags, permanent marker (optional: hand lenses)
- Ask students to explain a plant's lifecycle and the function of a seed
- Look for plants with seeds ready to be harvested (Beans, Cilantro, Peas, Sunflowers, etc.)
- Harvest the seeds, placing them in the bags and making sure to label them properly

5 minutes Conclusion: What Can You Do?

- While you collect the materials, ask the students what they can do to make sure the garden is preserved
- What are the benefits of harvesting seeds instead of purchasing them from the store?
- Ask if they have any questions

Dichotomous Key

- 1A. Are the seed diameters about 0.5cm? If yes, go to 2A
1B. Are the seed diameters less than 0.5cm? If yes, go to 2B
- 2A. Are the seeds light green or yellow in color? If yes, they are peas!
2B. Are the seeds light or dark brown, black or white in color? If yes go to 3
- 3A. Are the seeds round but rough around the edges (almost spikey)? If yes, they are Swiss Chard!
3B. Are the seeds free of spikes or sharp edges? If yes, go to 4
- 4A. Are the seeds round? If yes, go to 5
4B. Are the seeds flat or almost flat? If yes, go to 6
- 5A. Are the seeds smooth? If yes, go to 7
5B. Are the seeds rough? If yes, go to 8
- 6A. Do the seeds come in black and white varieties? If yes, they are lettuce!
6B. Are the seeds brown and oval shaped? If yes, they are carrots
- 7A. Do the seeds come in multiple shades of the same color? If yes, go to 9
7B. Are the majority of the seeds the same dark (almost black) color? If yes, they are Sorrel!
- 8A. Are the seeds ball shaped with lines? If yes, they are Cilantro!
8B. Are the seeds different shapes, some with points? If yes, they are Spinach!
- 9A. Are the seeds shades of light brown or almost red in color? If yes, they are Radish!
9B. Are the seeds various shades of darker brown? If yes, go to 10
- 10A. Are the seeds 0.1 of an inch or larger? If yes, they are Kale!
10B. Are the seeds less than 0.1 of an inch? If yes, they are Arugula!

Dichotomous Key Student Worksheet

Directions: Use the dichotomous key to identify the seed type in each package. Write the names of the seed types on the lines below. Every seed package is a different type of seed.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Seed Dispersal Observations

Find a plant that disperses its seeds by wind. Draw the plant and its seed below. Use at least three descriptive words to explain why you think the seeds are dispersed by wind.

<u>Plant</u>	<u>Seed</u>
<u>Explanation</u>	

Find a plant that disperses its seeds by animals. Draw the plant and its seed below. Use at least three descriptive words to explain why you think the seeds are dispersed by animals.

<u>Plant</u>	<u>Seed</u>
<u>Explanation</u>	

Extensions

- Students can create their own dichotomous keys to identify plants and in the garden
- Connect with seed saving organizations around the world that are working to preserve genetic diversity—view our [teacherworkshop.archive](#) for more information on seed saving