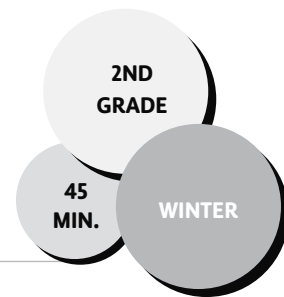


How Seeds Travel

Adapted from Life Lab's *The Growing Classroom*

THEME: EXPLORING THE ECOLOGY OF FOOD



ESSENTIAL QUESTION

How do seeds travel?

LEARNING OBJECTIVE

✓ Students will be able to explain how seeds are transported through various methods.

CONCEPTS

edible explosive seeds transportation

ENGAGING THE CLASSROOM TEACHER

During Action Step 3, suggest that the teacher support students as they're sorting, and ask open-ended probing questions.

LESSON DESCRIPTION

In this lesson, students observe a variety of seeds and use their observations to hypothesize about how the seeds travel. Students then read a book about seed dispersal, and taste pomegranate seeds to reinforce the idea that sweet fruits are adapted to attract animals to eat them. This lesson can be taught in conjunction with lessons Seed Tape, Saving Seeds, and Bean Buddies.

MATERIALS

- *A Fruit is a Suitcase for Seeds* by Jean Richards
- Seed Travel Sorting Cards (pp. 247–248)
OR envelope of a variety of seeds
for each group of 4–6 students
- Video of explosive seed dispersal on Youtube (optional)
- Chart paper or class board
- Tape (optional)
- 2 pomegranates
- Knife
- Bowl of water
- Colander
- Cutting board
- Bowl to hold pomegranate seeds
- Paper towels

PREPARATION

- › Begin a seed collection well in advance of this lesson to use instead of the sorting cards. Hunt for velcro-like seeds such as burs, helicopter seeds such as maple tree seeds, edible seeds such as pumpkin seeds, and seeds that float such as a coconut. If you aren't able to collect enough for students to sort in small groups, you can display them for students to observe.
- › Photocopy and cut out the Seed Travel Sorting Cards for each group of students, if using.
- › Create a chart with the following categories for travel: wind, water, edible fruit, explosive, or velcro (or sticky) to share with students for sorting during Action Step 2.



- › To efficiently cut your pomegranate, score the bottom into six sections. To score, run your knife along the bottom of the fruit just deep enough to pierce the skin. Submerge the pomegranate in a bowl of cold, clean water and break apart, using your hands to peel away the skin and loosen the seeds underwater. The pith will float on top of the water, and the seeds will settle, while keeping the juices from making a mess. During the lesson, you'll score and loosely break apart the second pomegranate in the same fashion, but keep it intact as a model for students at the beginning of the lesson.
- › Cue up your video of explosive seed dispersal, if using.

METHODS OF SEED DISPERSAL				
Velcro-Like Seed	Edible Seed (Fruit)	Wind-Dispersed Seed	Water-Dispersed Seed	Explosive (Self-Propelled) Seed
• Burdock • Cleavers (bedstraw)	• Grape • Tomato • Raspberry • Acorn	• Dandelion • Thistle • Maple tree	• Coconut	• Pea pod • Wisteria • Jewelweed

ACTION STEPS

1. Reading: Gather students in a circle, and explain that today they'll be exploring seeds. Introduce the book *A Fruit is a Suitcase for Seeds*. Ask students to turn and talk to their neighbor about what they think the title means. After reading, ask, *Why are fruits so appealing to eat?* (because they're sweet, juicy, and tasty!) Say, *A sweet fruit can help a seed travel. When an animal eats a fruit, it walks, swims, or flies somewhere else and poops out the seeds. Have you ever seen a bird fly overhead and poop? Have you ever thought, "Hey! That bird just planted a blackberry bush!" This is how sweet fruits help seeds travel. (10 min.)*

2. How do Seeds Travel?: Ask students, *But why does a seed want to travel anyway?* Have them turn and talk to their neighbor to think of reasons and then share a couple responses with the class. Ask students, *What's inside a seed?* (a tiny baby plant). Say, *To thrive, a baby plant must travel away from the parent plant to find a spot of its own in which to grow.* Explain that you've brought seeds (or pictures of seeds, if using) for them to look at and figure out how the seeds travel. Go over each method of seed dispersal on your chart paper, pantomiming each method. Consider showing students a video of an exploding seed to help them conceptualize. Say, *With your group, sort the pictures based on how you think they travel. For example, you might think, "This seed is shaped kind of like a boat, so I think it floats on water." Maybe a couple different seeds look similar, so you think they get around the same way. (5 min.)*

3. Sorting: Pass out the Seed Travel Sorting Cards (or envelopes with sets of real seeds) to groups of students, and give them time to sort. Circulate through the room, observing students' sorting and asking questions. **(5 min.)**

4. Sharing: Have groups share their groupings and observations. Ask, *What made you put all those seeds together? What do they have in common? How do you think they get around?* When a group has correctly identified the travel method, consider passing out tape and having students affix different examples under the appropriate category. Say, *As we can see, seeds rely on wind, water, and animals to travel and spread their seeds. How do humans help seeds travel?* Briefly discuss how, for years, people have been saving seeds from plants and traveling with them and planting them in new places. Say, *Farmers are really important for planting the seeds for the foods we eat!* **(10 min.)**

5. Hand-Washing Break (5 min.)

6. Tasting: Explain that you've brought a special fruit for them to try today. Show students your intact pomegranate. Ask, *Can you guess what is inside?* Take responses and then demonstrate cutting open the pomegranate. Show students the inside contents. Have student volunteers pass out paper towels. Walk around and give each student a small palmful of pomegranate seeds. Ask students to describe the flavor and texture of the seeds. **(10 min.)**

REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

Social and emotional learning

- Ask yourself: *Was I helpful and taking turns with my classmates today?*

Check for understanding

- Which was the most interesting seed that you saw today? How does that seed travel?
- Why are fruits so tasty and appetizing?
- How is a fruit like a suitcase for seeds?
- How do seeds rely on animals to get around?
- How do seeds rely on wind and water to get around?

ADAPTATIONS

Physical Activity: Play a seed dispersal relay race outdoors. First, introduce a movement to represent each method of seed transport. For example, have the whole class spin like a helicopter for wind transport; have them do the breaststroke with their arms for water transport; have them walk on all fours like a mammal for animal transport; and have them take leap-frog jumps for self-propelled transport. Once students have the various movements and methods committed to memory, have groups of students split in half on either end of the field space. Give a ball representing a seed to each team member starting the relay race. Call out, *On your mark, get set, wind!* and have students travel to their team by spinning like a helicopter to pass off the ball, and so forth.

Garden Setting: Have students look around the garden for seeds, and bring them back to add to the sort.

Math Extension: Pass out a sixth of the pomegranate to small groups of students, and have them estimate how many seeds are in their chunk. They can then practice counting by 2s to check their answer and to determine if they had an odd or even number of seeds.

Literature: If doing this lesson with older students, introduce the Greek myth of Persephone and her mother Demeter, the Goddess of the Harvest, which features pomegranate seeds at the center of the story to explain why we have seasons.

Engineering Extension: Provide students with a variety of building materials, such as pipe cleaners, aluminum foil, empty coffee filters, modeling clay, and the like, and challenge them to build model seeds that can travel by soaring on the wind, floating on water, latching onto fur, or by other means.

ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

NGSS.LS2.A

Interdependent Relationships in Ecosystems

- Plants depend on water and light to grow.
- Plants depend on animals for pollination or to move their seeds around.

English Language Arts Common Core State Standards

CCSS.ELA-LITERACY.RI.2.1

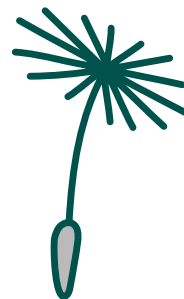
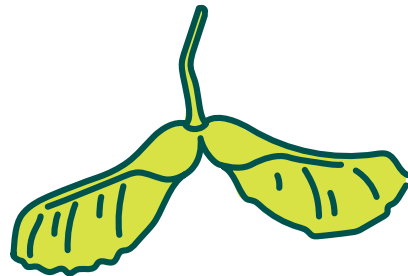
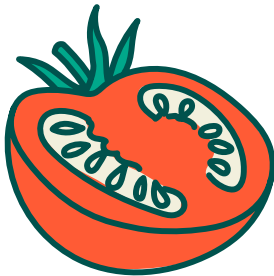
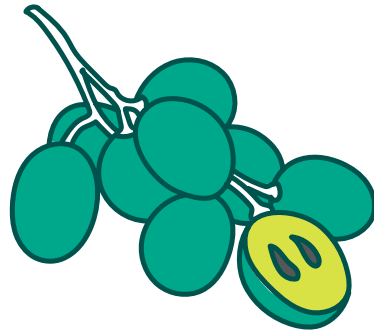
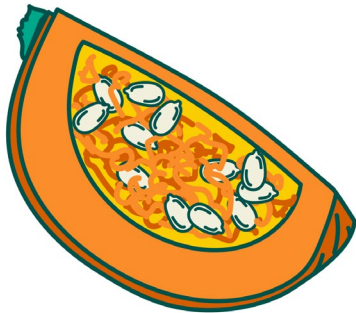
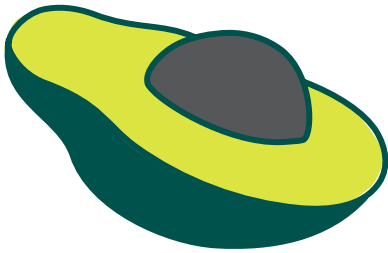
Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details in a text.
(For the Math Extension)

Math Common Core State Standards

CCSS.MATH.CONTENT.2.OA.C.3

Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

Seed Travel Sorting Cards



Seed Travel Sorting Cards

