

Seeds That Soar



Objective: Students make observations of seeds that soar in order to create a physical model of a seed dispersal structure.



2nd GRADE

INDOOR OR
OUTDOOR

ANY SEASON

45 MIN

Lesson Summary

In this lesson, students examine physical structures that allow some seeds to soar on the wind. Students then make paper models of soaring structures to attach to non-soaring bean seeds.

Next Generation Science Standards

Disciplinary Core Idea

K-2-ETS1-2 - Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps its function as needed to solve a given problem.

Science and Engineering Practices

Developing and Using Models - Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization or storyboard) that represent concrete events or design solutions.

Crosscutting Concepts

Structure and Function - The shape and stability of structures of natural and designed objects are related to their function(s).

Cause and Effect - Events have causes that generate observable patterns and simple tests can be designed to gather evidence to support or refute student ideas about these causes.

Materials

- At least 30 samaras, such as those sourced from maple, ash, elm, linden trees. A samara is a type of fruit surrounding a seed in which a flattened wing of papery tissue develops, allowing the wind to carry the seed away from the parent plant. If you can't find real samaras, you can instead show a [short video showing samaras flying](#) and hand out photos of samaras.
- Photocopied sentence frames to display (available at the end of the lesson)
- Whiteboard or chart paper
- Markers
- Bean seeds (2 per student)
- Tape
- Miss Maple's Seeds* by Eliza Wheeler
- Printer paper or science journals
- 1 Make a Samara handout per student
- 1 premade paper samara model
- Pencils
- Clipboards



- ❑ Edible seeds to eat with students (i.e. pumpkin seeds, or sunflower seeds)

Preparation

- ❑ Gather samaras from a local tree, such as a maple, ash, elm, or linden.
- ❑ Use the included handout to make a sample paper model of a samara.



Engage

1. Gather students in a circle and stand in the center. Explain: ***I have a surprise for you!*** Throw thirty seeds with samara up into the air. They should twirl and glide in the air on the way down to the ground.
2. Ask each student to pick up up one of these objects and ask: ***What do you notice about these seeds? What do you wonder about them? What do they remind you of?*** Have them hold onto these seeds for the next activity.

Explore

1. Distribute bean seeds, paper (or science journals), and pencils. Have your students draw a detailed scientific illustration of their soaring seed alongside a detailed sketch of the bean seed, which does not soar. (For a lesson plan on detailed scientific illustrations, see Grade 1, Lesson 3: Illustrating Plant Structures).
2. Have students discuss in pairs and then record the following sentence: ***These seeds are different from each other. The bean seed ... while the other seed ...***

Explain

1. Using a whiteboard or chart paper and markers, demonstrate for students how to use an arrow to indicate the structure on each seed that contains the baby plant. Then demonstrate how to use an arrow on the soaring seed structure that helps it fly through the air.
2. Attach scientific vocabulary to the structures the students found: ***The baby plant is called the “embryo.”*** Have students repeat that word and then add this label to their diagram. ***The structure that allows the seed to soar on the wind is called a “samara.”*** Have students repeat that new word and then add this label to their diagram.
3. Ask students to recall why it is important for seeds to travel. If they don't remember, explain: ***A seed has a baby plant inside of it, and for that baby plant to grow, it needs to land in a place where it won't have too much competition from other plants for water and nutrients. Since a parent plant can drop thousands of seeds at a time, many seeds will need to end up at some distance from their parent plant to survive. But seeds aren't like us. They can't take walks or drive cars or travel in many of the ways we travel. So soaring on the wind is one way seeds travel far distances from their parent plant.***
4. Build excitement for adding paper samaras to their bean seeds: ***Let's see if we can add some adaptations to make our non-soaring bean seeds fly!***
5. Demonstrate how to follow the directions on the Make a Samara handout to make a paper model of a samara. Have students follow along step by step as you cut out the model on the solid lines and fold it into shape along the dashed lines. Help each student tape a bean seed to the bottom of their model samara.
6. Give your students time to toss and observe their new, soaring bean seeds.

Elaborate and Evaluate

1. Explain the nature of a model: ***This paper samara is a model of a real samara on a real seed. A physical replica like this can help us understand or show our thinking about how something works. Let's compare the real samara with the model.***
2. Invite students to conduct races between their real samaras and their models. ***How can we make this a fair race?*** Invite students' ideas and, if no one mentions it, suggest dropping both objects from the same height and timing the descent. Give students time to try this.
3. Compare the models and the real samaras. ***How are these models similar to the samaras? How are they different? How could we modify our models to extend their flight time?*** (This question is a good preview for the following lesson, **Seed Engineers**, in which students will modify their model samaras to extend the descent time). Give students time to discuss in small groups and then with the whole class.

Celebrate

Eat seeds! Check for allergies first. Some great, edible seed options include:

- Harvesting dry sunflower seeds from a sunflower to enjoy together.
- Harvesting or purchasing shelling peas and having students pop them out of their pods to enjoy them together.
- Harvesting or purchasing an ear of corn, cutting the kernels off the cob and enjoying them together.
- Bringing in a coconut, floating it in a bucket of water, discussing how coconuts travel between islands in the ocean, and then eating pieces of the coconut or dehydrated coconut chips.
- Eating pomegranate seeds, pumpkin seeds, popped popcorn or amaranth, or fava beans.
- Making a seedy trail mix.

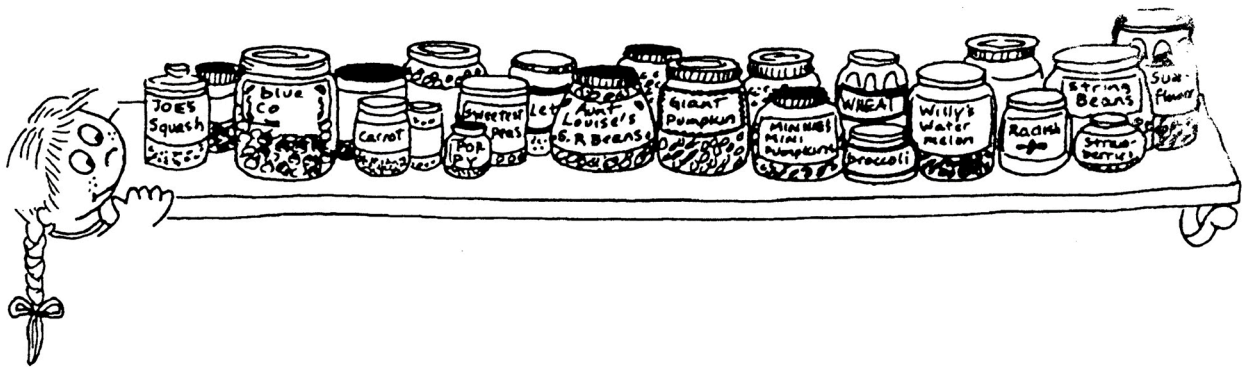


Extensions

- ✦ Provide students with materials such as paper clips, pipe cleaners, etc. Have student pairs design their own seeds with various adaptations that would help them travel, and share with the class. Test their ideas outside!
- ✦ Read aloud or have students read a relevant informational text about seed dispersal, such as **SEEDS: Pop, Stick, Glide** by Patricia Lauber. You can also find texts by using a free, searchable online library of nonfiction books and articles categorized by grade-level, such as that found at readworks.org or using your school's resources. As they read, have students pause regularly to identify the main topic of specific paragraphs. As they finish, have students work together to identify the main purpose of the entire book
 - ✦ **CCSS.ELA-LITERACY.RI.2.6** – Identify the main purpose of a text, including what the author wants to answer, explain, or describe.
 - ✦ **CCSS.ELA-LITERACY.RI.2.2** – Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.
- ✦ Read aloud or invite students to read a relevant literature book, such as **Who Will Plant a Tree?** by Jerry Pallotta. Pause regularly to have students ask and answer questions such as who, what, where, when, why and how.
 - ✦ **CCSS.ELA-LITERACY.RL.2.1** – Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- ✦ Read students a literature book about human immigration, such as **Pancho Rabbit and the Coyote** by Duncan Tonatiuh or **All the Way to America: The Story of a Big Italian Family and a Little Shovel** by Dan Yaccarino. Have students recount the story and determine the central message. Then have students discuss the parallels between human immigration and plant migration.
 - ✦ **CCSS.ELA-LITERACY.RI.2.2** – Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral

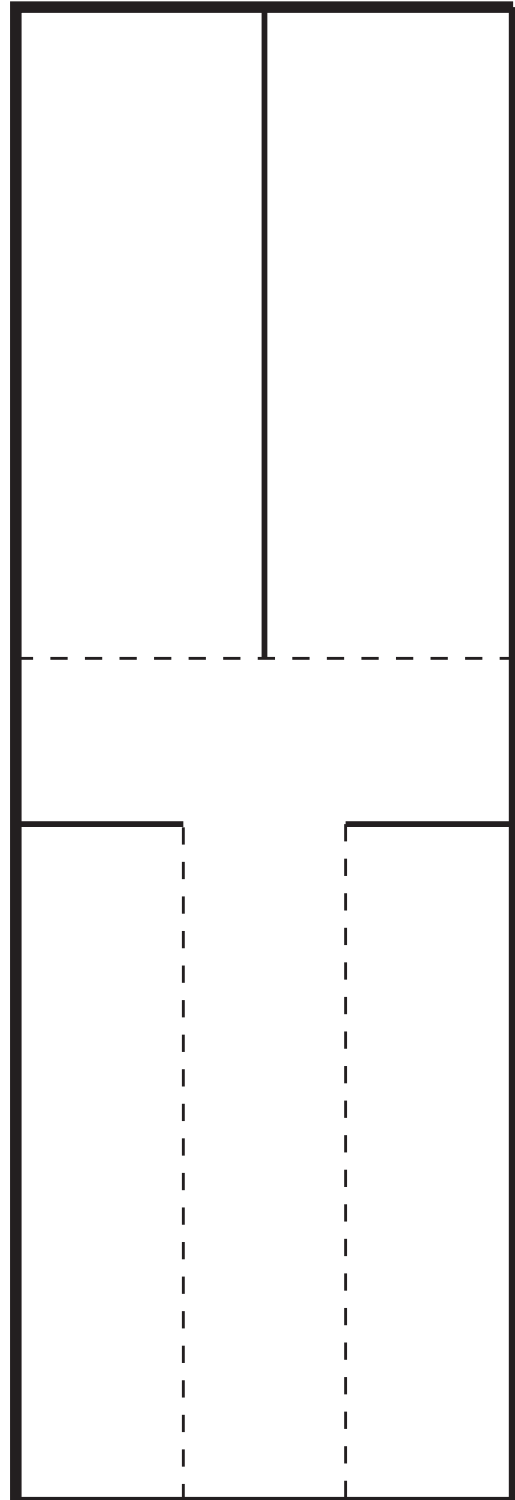
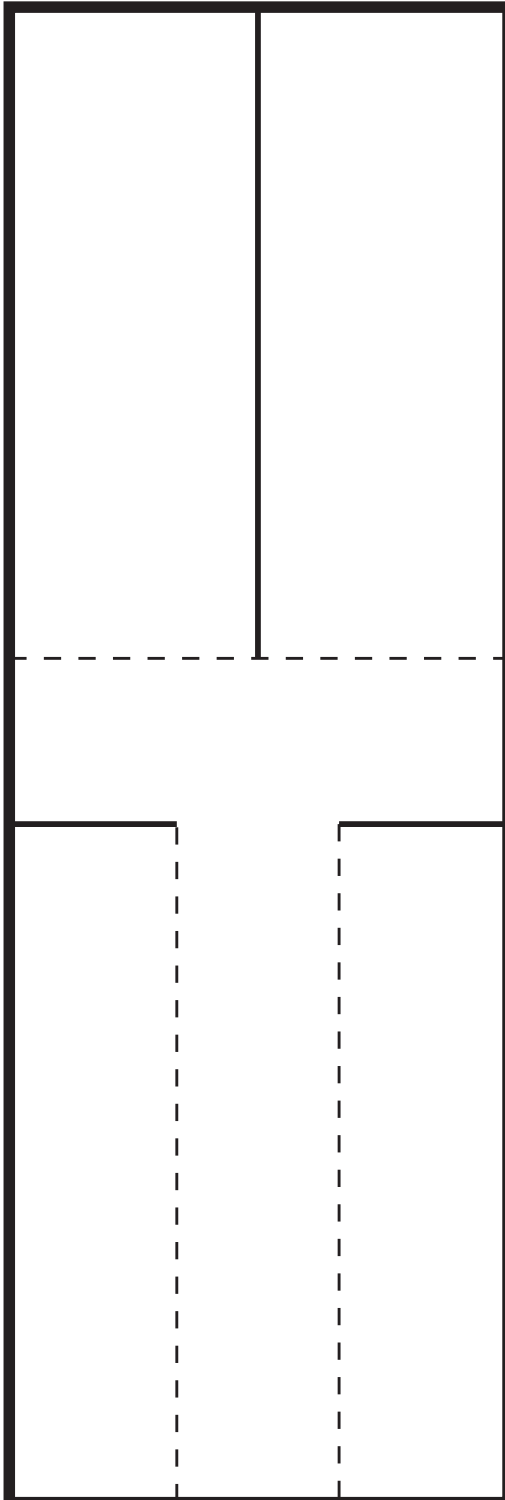
Rainy Day Option

This lesson can work indoors. You can even use a fan to create more air flow when students are testing their soaring seeds.



Make a Samara

Cut the solid lines
Fold the dotted lines



**These seeds are different
from each other.**

The bean seed is

while the other seed is

