The purpose of this lesson is for students to study seeds that fly and understand how and why seeds disperse or travel. Students will engage in different seed observational activities as well as a plant design project that will allow them to explore the various ways that seeds travel. This lesson can also be used to support the 1st Grade ELA Cornerstone, *I am an Aeronautical Engineer*.

By the end of the lesson, students will be able to explain why seeds move and the different ways they are dispersed.

**TIME**

90-120 minutes, depending on which activities are done. Can be done in one long block, or in 20-30 minute shorter lessons over multiple days by breaking small groups into individual lessons.

**GUIDING QUESTIONS**

Why do seeds need to move around and be dispersed?

What can we learn about flight by observing seeds that fly?

How are seeds that fly similar to different flying machines? *(Use this question if your students are covering the 1st Grade ELA Cornerstone “I am an Aeronautical Engineer”)*.

**MATERIALS**

1. White Board/Chart Paper/Blackboard for brainstorming
2. Seed Packet Directions/Scissors/Scotch Tape/Pencils/Colored Pencils for Seed Packets (attached to lesson)
3. Seeds of all types from the school yard and/or school garden for tossing as well as seed sorting. Example seeds include maple tree seeds, dandelion, thistle, milkweed, paulownia, catalpa, elm, and many grass plant seeds.
4. Recycled paper towel/toilet paper rolls/construction paper/recycled cardboard/boxes, recycled bottles for plant model creation
5. Scissors/Tape for plant model making
6. Recipe ingredients and materials

**NOTES**

This lesson includes the guiding question “How are seeds that fly similar to different flying machines?” to help 1st Grade Educators cover some of the content from the 1st Grade Cornerstone Project “I am an Aeronautical Engineer.” While this lesson does not include Cornerstone activities, it does support conversations surrounding the topic of flight. A description of the Cornerstone is on p. 4.

**DEFINITIONS**

*Seed:* A part of a plant from which a new plant can grow

*Dispersal:* To go or move in different directions; to spread apart; to travel

*Flight:* Moving through the air by use of wings

**BOOKS**

*Flip Float Fly* by Joann Early Macken
**ENGAGE / EXPLORE**

**Begin with a brainstorming session about things that fly.** Make a list as students generate ideas. If seeds were not listed, add them now. Ask if students have ever seen a seed flying or floating? Show students the pictures featured below of seeds that can fly and ask them why plants might develop seeds that can move around easily?

**Read students the book, *Flip Float Fly* by Joann Early Macken.** Remind students to think about these questions as you read: “*Why is it important for the seeds to move around and be dispersed?*” “*How are the seeds that fly similar to different flying machines?*” “*What can we learn about flight by observing seeds that fly?*”

**After you read the book, lead a discussion in which students have the opportunity to answer the guiding questions listed above in italics.** If students need prompting to answer guiding questions, explain that an airplane is a machine that flies, and ask them if they can describe how the seeds in the book moved like airplanes? To prompt ideas about flight, ask students to describe how the seeds take off and land, and how they move through the air.

**Close the discussion** by saying that they will observe seeds in order to learn about the importance of seed dispersal, about how things are able to fly, and how we can compare seeds that fly to machines that fly.
A variety of different learning activities are listed below. Please choose those activities that fit best with your students, class time, and teaching style.

1. **Garden - Science:** Search for seeds that are ready to be harvested in the garden and around the school yard. Collect and observe the harvested seeds. What can we learn about these seeds by observing their shape and where they grow? Give each student a few seeds to toss in the air and observe their flight patterns. If there aren’t many seeds accessible in your schoolyard or garden, it is a good idea to collect seeds elsewhere. Common seeds that you can collect that help demonstrate flight include dandelion, thistle, milkweed, paulownia, catalpa, elm, and many grass plant seeds. Students will describe how the seeds fly/disperse themselves around the garden, and draw sketches of the different seeds. Students will talk in small groups to compare the seeds flying to a machine that flies.

2. **Garden - Science:** Students will make seed packets for saving seeds. Use the seed packet directions attached at the end of this lesson to decide the exact method you want your students to use to make seed packets. In general, students cut out and tape together little envelopes that will be used to place seeds into. Next, students collect seeds from the garden that they want to save. Show students how to collect seeds without damaging any plants whether by collecting seeds that have fallen off of the plant or carefully extracting seeds from the flowers on the plants. Students then place a few seeds into their envelopes. Students write the name of the plant from which their seeds comes from and draw a picture of their plant on the front of their seed packet. To the best of their ability, students also write the planting instructions on the back of their seed packet. Students can use actual store-bought seed packets to help them design their own seed packet.

3. **Classroom - Science:** Sort seeds based on their mechanism for dispersal (flying, sticking, falling, etc.). Once students sort the seeds into groups, they can create a seed chart or poster to teach fellow students about how seed dispersal works.

4. **Classroom - Science:** Design a plant that uses flight to disperse its seeds. Students can first draw a plant of their own creation that uses flight to disperse its seeds (students should also draw the plant’s seeds). Then, using scrap/recycled materials and art supplies, students can make an actual model of this plant.

5. **Classroom - Cooking:** Prepare a recipe using seeds (beans, sesame seeds, sunflower seeds). See end of lesson for suggested recipes.
EVALUATE / ASSESSMENT

Ask Guiding Questions listed above to the whole class at the beginning and end of the lesson to compare gains in knowledge.

RECIPES

The following recipes (and many more) can be found at http://freshfarm.org/foodprints-recipes.html.

- **Simple Seedy Slaw**
- **Kale Salad with Pear, Sunflower Seeds & Cheese**
- **Seeded Whole Grain Soda Bread**

---

### UNITS, STANDARDS, CORNERSTONES

<table>
<thead>
<tr>
<th>ELA UNIT</th>
<th>ENVIRONMENTAL CONTEXT FOR LEARNING:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Taking Flight:</strong> In this unit, students will learn that: ● Science plays an important role in flight. Different forces work together to make objects fly. ● Different flying machines have been made and modified over time to become the modern day airplane.</td>
<td><strong>Patterns and Growth:</strong> How do natural patterns affect living things? How do plants and animals change over the course of their lives?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NGSS</th>
<th>ELA CORNERSTONE</th>
</tr>
</thead>
</table>
| K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs | **I am an Aeronautical Engineer**

First graders will become aeronautical engineers as they engage in a unit of study on flight to learn about the invention and development of flight over the last 100 years. They will make predictions about where flight might take us over the next 100 years. Through reading and writing, students will explore the invention of flight and how it has developed over time, so that by the end of the unit, they can engage in this cornerstone and build their own airplane.

<table>
<thead>
<tr>
<th>COMMON CORE ELA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>W.2.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question</td>
<td>SL.2.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media</td>
</tr>
<tr>
<td>SL.2.5 Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings</td>
<td></td>
</tr>
</tbody>
</table>
1. **Method 1:** Provide students with small mailing envelopes or small manila envelopes. Students collect seeds from the garden that they want to save and place them in envelopes organized by seed type. Students write the name of the seed on the front of the envelope and draw a picture of the seed or plant, too. Students write the planting instructions on the back of the envelope. Students use actual store-bought seed packets to help them design their own seed packet.

2. **Method 2:** Students use plain white paper or colorful construction paper, and fold the paper into a simple envelope. Students fold the edges over and tape them up to prevent the seeds from slipping out. Students collect seeds from the garden that they want to save and place them in envelopes organized by seed type. Students write the name of the seed on the front of the envelope and draw a picture of the seed or plant, too. Students write the planting instructions on the back of the envelope. Students use actual store-bought seed packets to help them design their own seed packet.

3. **Method 3:** Students can make origami envelopes. You can easily find directions online ([https://www.instructables.com/id/Mini-Origami-Envelopes/](https://www.instructables.com/id/Mini-Origami-Envelopes/)) and print them out. Next, students collect seeds from the garden that they want to save. Show students how to collect seeds without damaging any plants whether by collecting seeds that have fallen off of the plant or carefully extracting seeds from the flowers on the plants. Students then place a few seeds into their envelopes. Students write the name of the plant from which their seeds comes from and draw a picture of their plant on the front of their seed packet. To the best of their ability, students also write the planting instructions on the back of their seed packet. Students use actual store-bought seed packets to help them design their own seed packet.