# CASTING SEEDS TO THE WIND

A way for plants to get around; a feat without feet

Plants have developed many ways to spread their seeds. Some methods involve moving through the air and using the wind to move seeds farther away. Some seeds have a fuzzy top or a “wing-like” attachment. Each feature can slow the seed’s fall to the ground and move the seed sideways. A longer time to reach the ground means any wind present has more time to carry the seed farther.

**Curriculum topics**

- Biodiversity
- Ecosystems
- Heredity
- Life Cycles
- Seed Dispersal
- Structures and Processes

**Subjects**

- Environmental Science
- Life Science

**Grade range:** 2 – 8

**Who we are:** Resource Area for Teaching (RAFT) helps transform the learning experience by inspiring joy through hands-on learning.

**Share Your feedback!**
http://bit.ly/RAFTkitsurvey

# Materials

Materials in the kit may vary but generally, this kit contains the following:

- Copy paper (1)
- Index cards (4)
- Toothpicks (4)
- Cotton balls or equal (4)
- Paper clips, small (4)
- Modeling clay (1)
- **Optional:** Glue, electric fan, other build materials
- **Not included:** Scissors, ruler, stopwatch/timer

# To Do and Notice

**Questions to investigate:**

- What can be attached to a seed to increase the time spent in the air?
- What attachment will cause a seed to travel the farthest?

1. Think about design features that could slow down a falling seed and features that could catch a "ride" on the wind. Draw possible designs and select one of them.

2. Make and attach the design to a make-believe seed (e.g. small paper clip, bit of clay). Create a name or number for the design (**prototype**).

3. Hold the prototype at about nose height, drop it and start the timer. Stop the timer when the seed lands on the floor or ground. Record the time interval in seconds, from drop to landing, in Data Table 1.

4. Measure the distance (cm or inches) along the floor from the landing spot to the **drop point** (the spot directly below where the prototype was released). Record the distance in Data Table 2.

5. Repeat step 3 to 4 at least 4 times. Note if the design spins or glides.

6. Create a new prototype by changing a feature or material of the original prototype or use a completely different design.

7. Repeat steps 1 to 4 for four or more prototypes.

8. For each prototype, calculate the average drop time and the average floor distance from the drop point. See the example on page 4 below.

9. If no timer or ruler is available, then drop two prototype versions and see which one lands last and/or lands the farthest away from the drop point.

10. **Class Discussion: 1)** What was the average fall time and distance from the drop point for each prototype? **2)** Which features or material worked best at slowing the fall? **3)** Which features or material worked best at moving the seed away from the drop point? **4)** How does, or can, spinning slow the rate of fall?

11. **Share** your learning with RAFT! Submit photos/video via email at education@raft.net or on social media (Facebook, Twitter, Instagram).

**Core Content Skills:**

**Science & Engineering (NGSS)**

Planning and Conducting Investigations, Analyzing and Interpreting Data, Developing and Using Models, Biodiversity, Growth and Development, Interdependent Relationships, Natural Selection, Structure and Function, Information Processing, Inheritance and Variation of Traits, Cause and Effect, Patterns

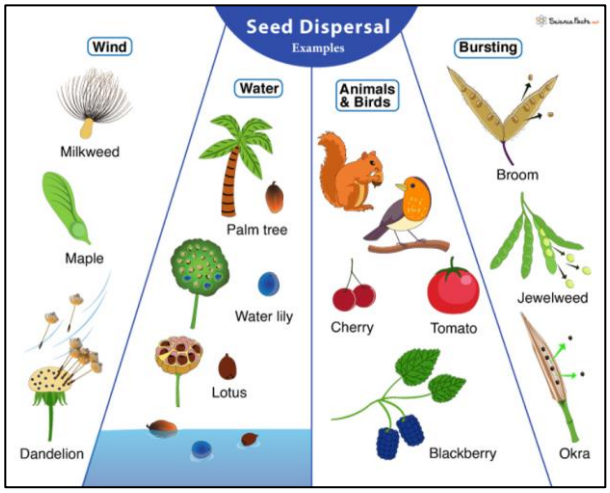
**Social Emotional Learning**

- Self-awareness
- Self-management
- Responsible decision-making

# The Science Behind the Activity

Plants make seeds to create new plants. It is usually best if these new plants grow somewhere away from the "mother" plant. A wider distribution of seeds will reduce the local competition for the resources of soil, moisture and sunlight that the seed needs to germinate and the plant to grow. Being spread around the seeds might land in an area away from the mother plant that is richer in one or more of the essential resources favorable for plant growth. This can increase the chances for species survival which is the main reason for seed production in plants.

Types of seed dispersal include wind, water, animals, explosion, and gravity. Seeds can be carried by the wind if they are light or have "wings" like a dandelion or maple, while others float on water. Animals can spread seeds by eating fruits and passing seeds through their waste or when seeds hitch a ride on their fur, and some plants have "explosive" pods that shoot seeds outward.




# Reuse

This kit uses 100% reusable materials designed for other uses. To continue making a positive impact in reducing waste, reuse these materials in other projects. Additionally, any unused materials can be collected and delivered back to RAFT.

# Feedback

Please comment on this kit by taking this short survey: http://bit.ly/RAFTkitsurvey. Let us know of any material concerns (missing, broken, or poorly fitting parts) as well as any suggestions for improvement.

Visit https://raft.net to view related activities!

- Napkin Nursery
- Seed Ease
- The Germinator

# Resources

- How Do Plant Seeds Travel? (video, 5:46) - https://tinyurl.com/4wm74ykt
- Seed Dispersal (video, 2:02) - https://www.youtube.com/watch?v=-KIYVGXT1IA

raft
RESOURCE AREA FOR TEACHING

# CASTING SEEDS TO THE WIND

**DATA TABLE 1:** Drop Time vs Design

| Prototype (name or number) | Time – drop 1 | Time – drop 2 | Time – drop 3 | Time – drop 4 | Average time |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**DATA TABLE 2:** Drop Distance vs Design

| Prototype (name or number) | Distance – drop 1 | Distance – drop 2 | Distance – drop 3 | Distance – drop 4 | Average distance |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**Calculating Averages:** Below is an example of how to calculate averages for drop time and distance.

Average (Drop Time) = (Drop Time 1 + Drop Time 2 + Drop Time 3 + Drop Time 4) / 4

Average (Drop Time) = (3 sec + 3 sec + 4 sec + 6 sec) / 4 = 16 sec / 4 = **4 sec**