Wildflower Seed Dispersal

The challenge: a plant has little to no mobility and needs to disperse its seed so that the seedling doesn't have to compete with the parent plant for resources. Explore the basics of flight and how the Dandelion plant uses wind to disperse seeds in this hands-on activity.

Duration

Approximately 10-15 minutes

Supplies

- Paper
- Scissors
- Paperclips
- Markers, colored pencils, or crayons
- Paper Twirler Template provided below
- Timer (optional)

An individual dandelion seed, called an achene, is adapted to be carried away by wind to a new location.

Background

Most plants disperse their seeds so that seedlings will not have to compete with the parent plant for resources like nutrients, sunlight, and water. The scattering of seeds has another advantage: greater land coverage. When a plant species covers a larger area, overcrowding and the sharing of nutrients decreases and destruction from localized disease lowers.

There are several different methods of seed dispersal. Every plant has special adaptations that allow it to use a specific method of dispersal.

- **Water**
  - Seeds that are less dense than water can float and drift to a new location. Examples: Mangrove and Coconut.
- **Animals**
  - Brightly colored fruits with sweet-tasting flesh may attract some animals to ingest the fruits of a plant. The animal then becomes a carrier since most seeds cannot be digested. The seeds pass through the digestive system of the animal and is then dispensed through the animal's waste. Examples: Blackberries and strawberries.
  - Some seeds have specialized hooks and spikes that can attach to hair and fur of mammals. A plant called "Burdock Plant" is the inspiration behind Velcro! Examples: Sweet Gum and Cocklebur.
  - Some animals collect seeds and bury them for later. In some cases, the animal forgets where they buried the seed. For example, a squirrel burying acorns.
- **Force**
  - Evaporation of water within some seedpods can create great pressure. The additional pressure of an outside force (like a rain drop) can cause the pod to explode, shooting the seeds in many directions. Examples: Touch me Nots and the Squirting Cucumber. Video: https://www.youtube.com/watch?v=24kAPSpdXaI

- **Wind**
  - Light and aerodynamic seeds can float, drift, and glide across great distances in a gust of wind. "Fluffy" features on the seeds can give them more surface area and a better chance of getting swept up by wind. Examples: Milkweed and Dandelion.

In this activity, we'll explore how dandelions use wind to send their seeds to new locations by creating a paper twirler. A paper twirler uses to flaps to create an upward force, called lift, that is caused by the twirler passing through the air. On a dandelion seed there is an umbrella of hairs that provide lift for the seed to be carried away by wind.

Instructions for Assembling Twirler

1. Print the template below or cut a sheet of paper into 3in by 8in rectangle.
2. Cut the solid line between letters D & E.
3. Cut the solid lines above letters A & B.
4. Fold the flap above letter D toward you. Fold the flap above letter E away from you.
5. Fold along the dotted line beside the letter A and crease it so that flap A is behind C.
6. Fold along the dotted line beside the letter B and create it so that it is behind flap A.
7. Fold and crease the dotted line above letter C so that the flap is behind B. Secure with one paper clip. (See completed twirler in picture).
8. Decorate as desired.

A Completed Twirler

Experimentation

Drop the twirler and watch how it falls. Remember gravity is the force that pulls all objects downward. An upward force that works to slow the effect of gravity is called lift. To experiment with lift, think about what happens when a crumbled sheet of paper is dropped versus a flat sheet of paper. The flat sheet of paper takes longer because it has more surface area.

1. Drop the twirler and time how long it takes to fall at a specific height.
2. Adding them one at a time, add paperclips to the bottom of the twirler and time how long it takes for the twirler to touch the ground. Make sure to drop the twirler from the same height each time.

Drop Height: _____

Number of Paperclips	Fall Time (seconds)
1	
2	
3	
4	
5	

Reflection

1. How does adding paperclips change the twirler?

2. Did the fall time change with the addition of more paperclips? If so, how did the fall time change?

Paper Twirler Templates