



Beyond the Book Activity

Violet the Pilot

by Steve Breen

Once you have read the book, it is time to move outside. Take a few minutes to prepare for the outdoors and remember, the more comfortable you are the more success you will have on this endeavor. Follow the guide below to an adventure beyond the book!

Engage: Biomimicry	Extend: Be An Engineer
<p>Violet loved to create elaborate machines from scratch and used anything she could find in her yard to make her wonderful contraptions.</p> <p>Engineers have long taken inspiration from nature. Observations of stork wings, herring gulls, and rainbow trout inspired some of the first gliders and planes. Aircraft inspired by peregrine falcons have shown increased fuel efficiency.</p> <p>More recently Japan's <i>bullet train</i> was redesigned after the kingfisher's long, narrow, and streamlined bill. The downy leg feathers that help to make the owl a stealthy hunter have inspired ways to reduce noise and wind resistance in wind turbines and cars.</p> <p>This process of using ideas from the natural world to inspire our human inventions is called biomimicry.</p> <p>One of the most well-known examples of biomimicry is Velcro.</p>	<p>Plants cannot move because they are rooted into the ground, but plants are found all over the world. They have discovered many ways to spread their seeds far and wide.</p> <p>Some plants have created a tasty and protective vessel for their seeds: a delicious fruit! Animals (like humans!) enjoy eating fruit – which is full of seeds. We digest the sweet sugars, and when the seeds pass through our digestive system they are released far away from the original plant.</p> <p>Some seeds float in water, others float in the air. Many trees are able to convince squirrels to actually plant their seeds for them! Whatever nuts and acorns the squirrel buries and then forgets to dig back up and eat in the winter are perfectly prepared to grow into the next tree.</p> <p>Go outside and find a small pebble. Imagine that it is a seed in need of traveling to its ideal planting spot. Can you create something that will help that seed either float, fly, or hook onto something else?</p> <p>What materials can you find in your yard or neighborhood to work with? Can you borrow any ideas from nature to inspire your creation?</p>
Explore: Seed Dispersal	Resources
<p>Velcro was inspired by the burdock plant (pictured below) which produces balls of seeds covered in tiny hooks. When an animal brushes by the plant, the seeds grab onto their fur with the tiny hooks and the seeds catch a ride to the next great growing spot!</p> <div data-bbox="345 1528 560 1671" data-label="Image"> </div> <p>Have you ever pulled burrs out of your clothing after being outside? If so, you've encountered a plant that travels in the same way as the burdock does: by using tiny hooks.</p>	<p>The Story of Velcro https://pbskids.org/loopscoops/about-velcro.html</p> <p>Plagiarizing Nature: Biomimicry https://www.youtube.com/watch?v=V2GvQXvjhLA</p> <p>Time lapse of Dandelions Taking Flight https://www.youtube.com/watch?v=gEs6kF90xOc</p> <p>Miss Maples Seeds by Eliza Wheeler, read by Michelle Obama https://www.youtube.com/watch?v=ShaO355bpDQ</p>

