

STORYLINE: 2.2.3 Seed Dispersal

Strand 2.2: LIVING THINGS AND THEIR HABITATS

Living things (plants and animals, including humans) need water, air, and resources from the land to survive and live in habitats that provide these necessities. The physical characteristics of plants and animals reflect the habitat in which they live. Animals also have modified behaviors that help them survive, grow, and meet their needs. Humans sometimes mimic plant and animal adaptations to survive in their environment.

Standard(s) 2.2.3: Develop and use a model that mimics the function of an animal dispersing seeds or pollinating plants. Examples could include plant that have seeds with hooks or barbs that attach themselves to animal fur, feathers, or human clothing, or dispersal through the wind, or consumption of fruit and the disposal of the pits or seeds. (LS2.A)

Phenomena Statement: Butterflies use their interesting mouthparts to eat and pollinate flowers.

Expected Student Explanation: Students will learn how butterflies and other animals pollinate flowers and help plants to disperse seeds.

Science & Engineering Practices (SEP)

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, storyboard) that represent concrete events or design solutions.

- Use a model to represent relationships in the natural world.

Crosscutting Concepts (CCC)

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

Disciplinary Core Ideas (DCI)

LS2.A: Interdependent Relationships in Ecosystems

Plants depend on animals for pollination or to move their seeds around.

Storyline Narrative

Documents for Storyline

This second grade storyline on animal pollination and seed dispersal begins with students observing a phenomenon, butterflies have interesting looking mouthparts that help them get food from the different flowers they stop at. Students *engage* in **observing** pictures of butterfly mouthparts and **develop questions** to investigate. Students will share their observations and questions with small groups/whole class and explain their reasoning. Students then *explore* the structure and function of a butterfly's mouthpart by **investigating** and **developing a model** of how butterflies get food. They will *explain* how the mouth part of the butterfly functions in getting food but also how butterflies pollinate plants. The students will *elaborate* on seed dispersal by **observing** how burrs stick to things. Students will **investigate** and **develop models** to show how seeds are dispersed by animals. Students will *evaluate* by **developing arguments from evidence** to describe how animals function to disperse seeds. Students will then be assessed by **drawing a model** to describe how a dog can *function* as a seed disperser.

Review and/or print out the following documents for this storyline. To edit the following documents you must open, then make your own copy.

Links:

[Storyboard Slides](#) - episode instructions are in the slide notes

[Storyline Matrix](#)

[Student Journal](#) - or use composition notebook

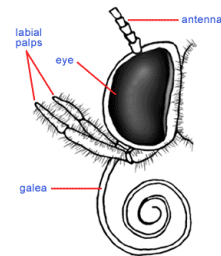
[Supply List](#)

[Teacher prep](#) to begin two weeks prior to starting storyline

[Summative Assessment](#)

STORYLINE: Episodes Matrix 2.2.3

Episode	Phenomenon/Next Questions	Episode Descriptions & Student Performance Prompts	Conceptual Understandings	
			What We Figured Out	Next Questions or Steps
Engage / Explore/ Explain Time: 60 min. Can be broken into smaller segments Adapted from Going 3D with GRC https://docs.google.com/document/d/14BBGkFcy7zNSReeAN9dWD7k5yS	Butterflies have interesting mouthparts to eat their food. 	Gather- Students observe and develop questions to investigate how the structure of the butterfly mouth functions. <i>Teacher Suggestion: Ask students about what they wonder about the mouth part and what they might investigate about the mouth part.</i> Students obtain information about how the structure of a butterfly's mouth part helps them get food and pollinate flowers. <i>Teacher Suggestions: Use the book, <u>National Geographic, Explore My World Butterflies</u>, for students to read in small groups and/or read <u>Butterflies Eat Nectar</u>. (Consider uploading the slides into</i> 	A butterfly's mouthpiece helps it obtain food and pollinate plants. The butterfly uses its mouthpiece to obtain food and in the process, it pollinates flowers. The butterfly uses the structures of its mouthparts to obtain food and to pollinate plants.	Animals can help pollinate plants but can they also help spread seeds?



[nearpod](#) if you have access. This allows it to be read together, in groups, or individually.)

Reason-

Students **develop a model** that mimics the structure of the butterfly's mouthpart and use the model to show how the butterfly gets food from different flowers.

Teaching Suggestions: Students are going to create a model to simulate how a butterfly moves from flower to flower pollinating as it goes. During this simulation students should be investigating and reasoning about how butterflies pollinate. To do this, give students pre-cut felt butterflies and coffee straws. Then use false flowers for students to use in the model. Flowers should be of different sizes and shapes. Some should be shallow and others should be deep. Sprinkle flour (you may want to color the flour different colors to see how it transfers) on the flowers to represent the pollen. Students then use their felt butterflies to mimic how the mouthpart works as they fly the butterfly from one plant to another. Make sure students land on the different flowers and focus on the mouthparts needing to reach the bottom of the flower.

Class Discussion:

Questions to initiate Discussion:

- Q: How do other plants or animals benefit from the butterfly obtaining their food in this way?*
- Q: How does the structure of the mouth help the butterfly have better access to the flower?*
- Q: How does the plant benefit from the butterfly; how does the butterfly benefit the plant?*
- Q: Why does the butterfly's mouth getting close to the flower helps the plant be pollinated.*

Teaching Suggestions: Focus questions on the relationship of structure and function and how pollen from plants from one place to another.

Students **construct an explanation** to describe how the structure of the butterfly also functions to pollinate flowers.

Class Discussion:

Have students in either group or class discussion share their explanations. Give students time to revise the explanations after discussing other students thinking.

Communicate Reasoning

		Students use their model and writing to communicate how a butterfly's <u>structure</u> helps them to eat and also pollinate flowers.		
Elaborate/ Evaluate Time: 60 min. Can be broken into smaller segments	I went for a hike and burrs stuck to my boots and sweater!  Photograph by: Russel Wills, CC by SA 2.0 https://www.geograph.org.uk/photo/5546257  Photograph by: Burdock (Arctium Kappa), CC by SA 2.0 https://www.flickr.com/photos/138014579@N08/23705446076	Gather- Students will observe and develop questions to investigate about the structure of burrs and how they stick to boots and gloves. <i>Teacher suggestion: If you have access, consider bringing some burrs for students to investigate.</i> Students will obtain information about burrs and their <u>structure</u> from a reading. Reason- Students will investigate and develop a model that mimics the <u>structure</u> of burrs and how they stick. <i>Teacher Suggestions: Give students about 10- ¼" pieces of velcro, including both the soft and hard sides of the velcro. Give students several strips of different materials (some that velcro will stick to and some that it won't, ie paper, foam paper, normal cotton, fleece, etc.) Let students investigate the different materials as they develop a model that mimics the burrs and how they stick.</i> Students develop an argument from evidence for how cows and other animals might function in dispersing the burrs. <i>Teaching Suggestions: Show pictures of cows with burrs stuck to them. Have students discuss how those burrs got there and how they might be helping disperse seeds.</i> Class Discussion: <i>Questions to initiate discussion:</i> Q. Why would the burrs stick to the cows? Q. Will the burrs stay on the cow forever? Q. How might the cows be helping the plant?	Seeds can stick to animals like velcro and they can also move with water or wind.	



Communicate-
Students **use their model** and **writing to communicate their argument** describing how an animal's structure helps them disperse seeds.

Teaching Suggestions: Help students recognize their investigation and model can be used for evidence.

**Summative
Assessment**

Draw arrows to the model and write to show how a dog could function as a seed disperser.

[Summative Assessment](#)