WEEK 7 Lesson 2

Science and Engineering

Designing Hand Pollinators

Big Idea	Pollination is a result of animal behavior.
Guiding Question	How does pollination happen?
Content Objectives	I can think of different designs to create a hand pollinator that will pick up and deposit pollen on a flower model. (2-PS1-1, 2-LS2-3 (MA), Practice 6) I can sketch my ideas on paper. (W.3)
Language Objective	I can discuss with my partner and give reasons for testing a particular model. (SL.2.2.b)
Vocabulary	**brainstorm**: a conversation to come up with ideas **sketch**: a rough drawing
Materials and Preparation	● Engineering Design Process chart, from Lesson 1 ● Science and Engineering packets ● writing and drawing tools ● materials from the previous lesson Prepare a small bag, container, or tray for each pair of children with: ● plain white paper, 1 sheet ● eraser, 1 piece (one third of the provided eraser sticks) ● marble, 1 ● aluminum foil or wax paper, 1 2-inch square ● pompom, 1 ● pipe cleaner, 1 2-inch piece ● tape, 1 piece about 2 inches long ● selected model flower ● 1 craft stick ● 1 straw ● 1 piece of floral wire, 6” long ● 1 piece of string, 6” long

Opening 5 minutes	*Yesterday we started the Engineering Design Process with the first step: <u>Ask</u>. You identified constraints of the flower structure you're working with and materials available.* Review the Engineering Design Process chart. *Today we'll move to the next step: <u>Imagine</u>. In this step you'll brainstorm ideas of possible hand pollinator designs and choose one. You'll begin by thinking on your own and then share your ideas with your partner. Please include labels or lists of materials that you will need. Try to come up with three or four possible designs together—don't just think the first design you come up with will be the best one! Sketch each design idea, look at the sketches together, and then decide one you would like to try.* *When you decide, record it on the <u>Plan</u> page. You'll have the rest of today's session to come up with a design idea.*
Investigation 25 minutes	Children work first independently, quietly sketching their ideas. Then, they share their ideas with a partner and discuss which one they think is best and why. Finally, they agree on a design and record it in their packet. Circulate as they work. Some questions to support them: ● What will your hand pollinator look like? Why might that be a good design? ● How large or small will your hand pollinator be? Why? ● What materials will you use? Why? ● How will you attach the materials that will pick up and drop off the pollen to the handle?
Discussion	*No discussion in this lesson.*
Closing	Have children clean up and organize their materials. Bring the group back together. *Today you brainstormed ideas for a hand pollinator design for your flower and discussed them with your partner. If you have not yet completed your plan, you can do that at the Discovery Studio. Your design needs to be ready to build next week!*
Standards and Practices	**W.3** Routinely produce a variety of clear and coherent writing in which the development, organization, and style are appropriate to task, audience, and purpose **SL.2.2.b** Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue. **2-LS2-1** Plan and conduct an investigation to determine if plants need sunlight and water to grow**.**

	2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
Ongoing assessment	Reflect on children's work. What variety of ideas are children coming up with? How do children discuss their ideas with their partners? Do children capture important details in their sketches? How do children integrate knowledge of properties of materials into their designs? To what degree do children keep in mind the structure of the particular flower they are designing for?

Notes