WEEK 8 Lesson 2

Science and Engineering

Designing a Hand Pollinator: Create

Big Idea	Pollination is a result of animal behavior.
Guiding Question	How does pollination happen?
Content Objective	I can work with other engineers to evaluate whether the hand pollinator I designed can pick up and deposit pollen for a specific flower structure. (Science 2-LS2-3(MA), Practice 4, Practice 6)
Language Objectives	I can ask and answer questions in discussions with my partner and my classmates about what works well and what needs improvement in hand pollinator designs. (SL.1.2.b, SL.2.2.b, Practice 4, Practice 6, Practice 7) I can articulate and justify design improvements. (SL.3.2.a)
Materials and Preparation	● all materials from Lesson 1 Plan classroom spaces for children working on the same model flowers to work in proximity to each other, so that they may easily share ideas.
Opening 2 minutes	Refer to the Engineering Design Process chart, pointing to Improve. *Engineers always test their designs so they can identify any problems and think about ways to make their designs better. After we talk about that, you'll have time to continue working with your partners.*
Discussion 10 minutes	Invite pairs of children to present their designs. Run through the questions on the Create page to support children in describing and evaluating their designs. ● *How much pollen did your hand pollinator pick up?* ● *How much pollen did your hand pollinator deposit?* ● *What parts of your hand pollinator worked well? How do you know?* ● *What parts of your hand pollinator did not work well? Why not?*

	Extend the conversation to support children's thinking about possible improvements. Use the following questions. ● *What might this team change about their hand pollinator design?* ● *What makes you think that?* ● *How do you think that would make this hand pollinator more effective for this particular flower?* ● *Have you had a similar problem?* ● *How are you thinking about changing your design?* *Today, as you continue creating your hand pollinator, use the Design #2 space on your sheet.* [Refer to the Flowers for Testing Hand Pollinator Designs sheet.] Send children to work.
Investigation 18 minutes	Circulate to support children with materials, conversations, and processes. Ask children to reflect on what is already successful and what might be getting in the way of successfully reaching, picking up, or depositing pollen. Refer them to the Evaluating Materials for Hand Pollinators chart. In addition, direct them to reflect on and gather information from their completed Create pages. Engage them in conversation or direct them to talk with other children with the same model about the changes they are considering and the rationale behind those changes. Remind children to record their findings in their packets. Identify pairs of children whose work will be most productively shared with the whole group. Choosing one pair that is working with each different model allows all children to make strong connections to their own efforts and to contribute ideas.
Closing	*We are doing the work of engineers: designing, testing, and evaluating. Tomorrow you'll work on improving your design. How will you know if your new design is improved?* [it picks up/drops off more pollen; it is able to better reach the pollen in the model flower; it is easier to maneuver.]
Standards and Practices	**SL.1.2.b** Build on others' talk in conversations by linking their comments to the remarks of others. **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. **SL.3.2.a** Describe people, places, and things, tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.

	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 with partners and on the class discussions. How do children describe and explain their designs to peers? How do they talk about their thinking in designing and evaluating their designs? How do they interact with each other's ideas? What kinds of suggestions do they make? Are they real improvements in the function of the designs? Are they practical, doable?

Notes