WEEK 6 Lesson 1

Science and Engineering: Quadrat Study 4

Changes by Wind and Water

This lesson connects to and continues the year-long Quadrat Study.
The investigation will be most successfully conducted on ground that is relatively dry.

Big Ideas	Wind and water can change the shape of the land. The changing shape of the land impacts people. Changes happen over time.
S & E Guiding Question	What does our Earth look like? What makes it look that way?
Content Objective	I can plan an investigation to understand how wind and water might change the shape and features of my quadrat. (Practice 3, 2-ESS2-4)
Language Objective	I can talk with my partner to plan an investigation. (SL.1.2.b, SL.1.2.c)
Vocabulary	**distribution**: the way something is shared in a group or spread over an area **isolate**: to set apart **quadrat**: a small area of habitat, usually selected to collect data about the distribution of plants or animals
Materials and Preparation	Review outside expectations with the children. Review children's entries in Science and Engineering packets from the first quadrat study. Select a few that show different and informative observations. ● hula hoops or equivalent lengths of rope or twine knotted to enclose a circle, one for each child ● Science and Engineering packets ● writing and drawing tools, in one or more containers to carry outdoors ● chart paper and markers ● water, at least 1 liter

	• straws, one for each child • small paper cups, one for each child
Opening 12 minutes	*Today we're going back out to the schoolyard to continue our quadrat study. Remember, in a **quadrat study** scientists study the **distribution** of objects or organisms in an area—or how many of something there are.* *When we last observed the quadrats, you drew maps. You used the same color schemes that we have been using to show water and elevation. Let's take a look at a few examples of quadrat maps.* Show the selected examples. Use a simplified Science Circle protocol to guide the conversation. *What do you notice about elevation in these maps?* *Today you are going to investigate how wind and water can change the shape of the land in your quadrat. You'll investigate wind by blowing air through a straw, and you'll investigate water by slowly pouring a small cup of water in areas of your quadrant.* Demonstrate how to model applying forces of water and wind to the land, pouring water on and blowing through a straw at a specific area. Show one example map. Point to an area of elevation. *What do you think might happen to this area when the wind blows? What might happen when water is poured?* *This time, after each investigation, you'll record any changes in your area created by water and wind. What do you think you might record, and how would you record that?* Distribute packets along with a straw and cup to each child. Take the children out to the schoolyard with quadrat markers (hula hoops/ropes). Direct children to return to their same spots.
Investigation 16 minutes	Once outside, offer reminders as needed for placing quadrat markers on the ground. As children work on applying wind pressure with their straws, circulate to support their investigation and representation. Circulate a second time to pour water into each child's cup for the second investigation and observation. Ask the following questions. • *What is the highest point of your area? What is the lowest?* • *What happened to this area with the force of wind?*

	• *What happened to this area with the force of water?* • *What do you think happens to your quadrat when a storm comes through?* Identify a few children to share their work with the whole group.
Discussion 2 minutes	Bring the children back indoors. Set aside all materials except children's packets. Ask identified children to share and describe their work. Encourage them to use precise vocabulary.
Closing	*How do wind and water affect your quadrat?*
Standards and Practices	**SL.1.2.b** Build on others' talk in conversations by linking their comments to the remarks of others. **SL.1.2.c** Ask for clarification and further explanation as needed about the topics and texts under discussion. **2-ESS2-4.** Observe how blowing wind and flowing water can move Earth materials from one place to another and change the shape of a landform. **Practice 3.** Planning and carrying out investigations
Ongoing assessment	As children work to record their observations, take note of their approach to the task, particular interests, and how they might be best supported with ongoing outdoor learning. Review children's packets. How do children represent the forces of wind and water enacted on their area? How do they represent changes? Have they included any labels or other notations? This is a year-long investigation. As children continue this work, look for greater details in their drawing and writing and increasingly meaningful connections to current unit content.

Notes