

Unit 2: The Forces of Wind and Water

WEEK 3 Lesson 1

Science and Engineering: Quadrat Study 3

Mapping

This lesson connects to and continues the year-long Quadrat Study, first introduced in Unit 1, Week 3.

S & E Big Ideas	Changes happen over time.
S & E Guiding Question	What does our Earth look like? What makes it look that way?
Content Objective	I can map a small area of land. (Practice 5, 2-PS1-1)
Language Objective	I can describe a material and its properties in speaking and writing. (L.6.2.a, W.2.2.b)
Vocabulary	distribution: the way something is shared in a group or spread over an area isolate: to set apart material: what a thing is made of, such as wood, paper, metal, plastic, cloth, or cardboard quadrat: a small area of habitat, usually selected to collect data about the distribution of plants or animals solid: firm and having a stable shape
Materials and Preparation	• 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 • hand lenses, one for each child • chart paper and markers Review children's entries in Science and Engineering packets from the first quadrat study. Select a few that show different and informative observations.

	Review outdoor safety protocols
Opening 10 minutes	<i>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.</i> <i>Let's take a look at a couple of observations from our last quadrat study, when we looked at different solid objects.</i> Show the selected examples. Use a simplified Science Circle protocol to guide the conversation, informally introducing this routine. <i>How do you think your observations today might be similar or Different?</i> Model setting down a hula hoop or circle of rope, reminding them that this isolates their area of study. <i>This time, instead of drawing everything you see, you will draw a map of your quadrat. As you are drawing, think of some features mapmakers include in their maps.</i> Demonstrate looking at the area from different perspectives (from the top and side) to see how the area changes in elevation, and ask children how they might represent elevation on their maps. Suggest other kinds of features children may find to include in their maps and/or on a map key. As a group, review any outdoor safety rules/precautions. Add any new precautions children suggest. Distribute children's packets and hand lenses. Take the children out to the schoolyard with quadrat markers (hula hoops/ropes). Direct children to return to the same spots they observed for their initial quadrat studies, in Unit 1.
Investigation 15 minutes	Once outside and in a good spot for this observation, offer reminders as needed for placing the quadrat marker on the ground, observing everything within its frame, and identifying and describing as many features of the area as possible. Emphasize features of maps, differentiating from precise observational drawing of each object or detail. As children work, circulate to support children's observation and representation. Guide them with the following questions. ● What is the highest point of your area? What is the lowest?

	• What is a unique feature of this tiny landscape? • Is there any water in your quadrat? • What does this map remind you of? Identify a few children to share their work with the whole group.
Discussion	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. Prompt classmates to discuss similarities and differences among maps.
Closing	<i>What did you learn about your quadrat by creating a map?</i>
Standards and Practices	W.2.2.b With guidance and support from adults, use a variety of digital tools to produce and publish writing, including peer collaboration. L.6.2.a Use words and phrases acquired through conversations, reading, and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., When other kids are happy, that makes me happy). 2-ESS1-1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly. 2-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid.
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. - What features do they include in their maps? - How do they represent elevation? - Have they included a map key? - Have they included any labels? 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.