WEEK 3 Lesson 2

Science and Engineering: Quadrant Study 1

This lesson connects to but interrupts the study of Matter and Its Interactions to introduce the year-long Quadrat Study, in which children will carefully study a small area of the schoolyard to observe changes over time.

Big Ideas	Materials have observable properties. The properties of materials impact how they are used for specific purposes.
Guiding Questions	What solid matter is in my environment?
Content Objective	I can describe the properties of objects I observe on a small piece of land. (Practice 5, 2-PS1-1)
Language Objective	I can describe a material and its properties in speaking and writing. (SL.2.2.b, W.2.5b)
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**: something that is firm and has a stable shape
Materials and Preparation	Ahead of the lesson, identify an area of the schoolyard where Science and Engineering lessons will reliably start.At least once, to differentiate this time from recess (also from fire drills and end of day dismissal), have children practice going outside to this area of the schoolyard and listening to directions. : Identify a large, outdoor area where children can observe a variety of different solids, such as asphalt, rock, soil, plants, wood or plastic equipment or furniture. ● 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 lens, one for each child • chart paper and markers
Warm Up 10 minutes	*We're going to do something very different today: we're going to work outside! This will begin something we'll continue at different times throughout the whole school year: a quadrat study. In a quadrat study scientists study the distribution of objects or organisms in an area—or how many of something there are. Sometimes scientists use a square frame with a grid to mark or isolate an area, but we can use anything that shows the space we will observe. We're going to use these [hula hoops/ ropes/ etc.]. When we are working outside as scientists, it is important that we follow some safety guidelines.* Review safety expectations with the class. Remind children which materials are safe to touch and which should not be touched. Distribute children's packets and hand lenses. Take the children out to the schoolyard with quadrat markers (hula hoops/ropes).
Instruction/ Practice 30 minutes	Once outside and in a good spot for this observation, demonstrate how to place the quadrat marker on the ground. Model observing everything within its frame and identifying and describing as many solid objects as possible. Demonstrate making a precise observational drawing. Include information about the properties of the objects in both drawings and with labels. Assign children to different spots in the schoolyard as previously identified for this activity. As children work, circulate to support children's observation, identification, description, and recording. Identify a few children to share their work with the whole group.
Synthesis/ Cool Down 10 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. Prompt classmates to provide additional words describing the same materials as they might have observed them in their own quadrats. *We have discovered solid matter outside in our schoolyard—different kinds of matter than we find inside. We are also finding out that the more carefully we describe the properties of a material, the more likely someone else will know what the material is.*

Standards (Boston Science Standard)	**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-PS1-1** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
Assessment	Observe and listen in as children work together, noting their vocabulary, how they handle materials, and what kinds of knowledge they bring to the experience. Make note of children's discoveries and misconceptions. Pay attention to how children interact with their partners.

Notes