

Unit 2: The Forces of Wind and Water

WEEK 5 Lesson 1

Science and Engineering: Earth's Systems

The Forces of Wind on Land

Notes: This lesson requires significant set up of materials. This investigation is best conducted in pairs, but it can also work in small groups (no more than four children).

S & E Big Ideas	Wind and water can change the shape of the land. Changes happen over time.
S & E Guiding Question	What resources can we use to understand changes in the shape of the land?
Content Objectives	I can conduct an investigation to model and observe wind's effects on land. (Practice 2, Science 2-ESS2-4(MA)) I can write and draw what I observed during an investigation about the force of wind on Earth's materials. (Practice 4, 2-ESS2-2) I can draw and write about the effects of wind on land, based on my observations. (W.3.2)
Language Objective	I can discuss my observations with my peers while we conduct an investigation by listening and adding onto what they say. (SL.1.2.b)
Vocabulary	topsoil: the layer of soil in which plants grow
Materials and Preparation	For each pair, assemble: ● aluminum trays (without holes), two ● topsoil, one cup ● sand, one cup ● spoons, two ● container of water Prepare two trays per pair of children, one with sand and the other with topsoil. Make sure that the soil and sand are evenly damp (not wet). Spread each material over about half of the bottom of its tray. For additional help with setup, watch the Tray Preparation video . It may be useful to have several children help set up the trays before the lesson.

	• straws, one for each child and one for modeling • tablecloths (optional, for controlling mess) • writing tools • Science and Engineering packets • goggles, one pair for each child, if available
Opening 10 minutes	<i>Over the last two weeks we investigated how water affected different types of soil: sand and topsoil. What did we learn? [water eroded the sand quickly; the topsoil did not erode as quickly and produced runoff; slope impacted erosion]</i> <i>Today we will explore how wind affects the shape of the land. What do you think will happen to sand and topsoil when wind blows on them? What makes you say that?</i> Show the appropriate page in a Science and Engineering packet. <i>Today you will draw and write your observations for two investigations, one with sand and one with topsoil.</i> Talk through the pages, as needed. <i>In this investigation, you will blow through a straw to represent a soft wind.</i> Model blowing through the straw softly. <i>We're all going to conduct this investigation together, step by step.</i> Send the children to the tables with their writing tools and Science and Engineering packets.
Investigation 20 minutes	Guide the children through the investigation, using the steps below. 1. Predict <i>Turn and talk to your partner. What do you think will happen when you blow softly on the sand? Record your prediction.</i> 2. Investigate [Put on goggles.] <i>Both partners, please stand on the same side of the tray, so that you don't get sand in your eyes.</i> <i>Sand Blower, place the straw on the edge of the sand tray and blow air <u>softly</u> through the straw several times.</i> 3. Observe and talk <i>Observe what is happening and talk to your partner.</i>

	4. Record <i>Draw and write your observations.</i> Repeat Steps 1-4, this time with the topsoil. 5. Clean up <i>When you finish, label your trays with your names. Leave the sand and topsoil in place and put the trays [in the designated area].</i> Throughout the investigation, circulate to support and observe children's work.
Discussion	<i>Discussion about this experience will happen in Lesson 2.</i>
Closing	Refer to the self-assessment questions at the bottom of the page. <i>Take a moment to reflect on the investigation. Turn to your partner and ask yourself these questions:</i> <i>Did we use our five senses to gather information about an object or something that happened?</i> <i>Did we draw or write what we thought or observed?</i> <i>Today you investigated to see how wind affects sand and topsoil. Tomorrow we will discuss your observations.</i> Look over and choose several trays with different outcomes. Set these aside, without disturbing the Earth materials, for the Lesson 2 discussion.
Standards and Practices	SL.1.2.b Build on others' talk in conversations by linking their comments to the remarks of others. W.3.2 Use a combination of drawing and writing to communicate a topic with a beginning, middle (including details), and an end. 2-ESS2-1 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
Ongoing assessment	Observe and take notes as the children do the investigation. What do the children observe? How do they record their observations? What do children notice about the effects of wind on sand and topsoil, compared to the effects of water on each? Review the children's packets in preparation for the next day's discussion.