

Unit 2: The Forces of Wind and Water

WEEK 7 Lesson 1

Science and Engineering: Earth's Systems

Testing Approaches to Slowing and Preventing Erosion: Walls, Windbreaks, and Terracing

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 resources can we use to understand changes in the shape of the land?
Content Objectives	I can draw and write plans for an investigation. (W.1.2.a) I can work with a group to plan an investigation about slowing and preventing erosion. (Practice 3, 2-ESS2-1)
Language Objective	I can talk with classmates to plan an investigation. (SL.1.2.b, SL.1.2.c)
Vocabulary	approach: a way of doing something terracing: sloping land that has been formed into a number of level flat areas resembling steps windbreak: a row of trees or a fence, wall, or screen that provides protection from the wind
Materials and Preparation	Assign children to stable, small groups (about four children each) to work together during Lessons 1 and 2. ● Erosion Control slides ● collection of materials such as sticks, popsicle sticks, straws, rocks ● scraps of wood, container lid, pieces of fabric ● Science and Engineering packets, one for demonstration ● writing tools ● aluminum trays, one for each group outdoors Note: Be sure to provide fresh trays, preserving the Week 6 investigation trays for this week's Lesson 3.

	● scraps of paper, one for each group, to label trays of materials at the end of the lesson
Opening 10 minutes	<i>Last week you planned investigations to test barriers and planting as approaches for slowing and preventing erosion. This week you will go through the same process to test other approaches: walls, windbreaks, or terracing.</i> Briefly review the three Approaches to Slowing and Preventing Erosion slides. <i>Today you will work with a small group to plan an investigation to test one approach. Like last week, we will plan today and then conduct the investigations tomorrow.</i> Open a packet to the Week 7 Slowing Erosion Investigation Planning page. <i>This is the page your group will use to plan your investigation; it's the same one you used last week. The first line says "Approach." According to which group you are in, you will write "walls," "windbreaks," or "terracing" on this line.</i> <i>Below is space to draw a diagram. Again, like last week, you will test your approach on an island. In the box, first draw an island, and then draw a diagram showing your approach. As a group, plan where on the island you will build your wall or windbreak or plant your terrace, and what this area will look like.</i> Show the bin of materials. <i>Your investigation will be a model of an approach to slowing or preventing erosion. Here are some materials you might choose to use. If you are building a wall, which materials do you think might be useful? [container lid, piece of cardboard or wood, rocks, fabric]</i> <i>If you are building a windbreak, which materials might you use to represent trees or a fence? [sticks, popsicle sticks, straws]</i> <i>If you are forming terracing, what could you use as tools to shape the land? [sticks, popsicle sticks, straws]</i> <i>In addition to these materials, you might find something else in the classroom that would be useful for your model.</i> Refer again to the Slowing Erosion Investigation Planning page. <i>With your group, decide which materials you will use, and record them here, under "Materials needed."</i>

	Hold up an aluminum tray. <i>As your group identifies materials, send one group member to gather them in this tray, so you will be ready to do your investigation tomorrow.</i> Refer again to the Week 7 Slowing Erosion Investigation Planning page. <i>The last section is labeled “Prediction.” Here you will record what you think might happen in this investigation. After building a wall, windbreak, or terracing, what do you think will happen when wind and water hit the island?</i>
Investigation 20 minutes	Divide the class into the small groups, with two groups each planning walls, windbreaks, and terracing. As children plan, circulate to support their work. Help them identify and gather classroom materials to use in their investigations.
Discussion	<i>Discussion about this experience will happen in Lesson 3.</i>
Closing	Make sure that children label their group’s tray. <i>Next time you will conduct your investigations and record the results!</i>
Standards and Practices	W.1.2.a Investigate questions by participating in shared research and writing projects. 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-ESS2-1. Investigate and compare the effectiveness of multiple solutions designed to slow or prevent wind or water from changing the shape of the land. * Clarification Statements: • Solutions to be compared could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.
Ongoing assessment	Review each group’s plan. What materials did children choose? Are they appropriate? Are there other materials that might be helpful? What predictions have children articulated? Are they plausible? What understandings about approaches to slowing and preventing erosion do children’s plans reflect?