Big Idea: In what ways do humans slow or prevent wind or water from changing the shape of the land?

Guiding Questions:

What evidence can we find to prove that Earth events can occur quickly or slowly?

In what ways do humans slow or prevent wind or water from changing the shape of the land?

21st Century Themes/Skills:

DCI (Disciplinary Core Ideas)	Science and Engineering Practices	Cross Cutting Concepts	Student Learning Objectives	Differentiated Activities (Consider the 5 Es)	Resources/Technology	Formative Assessments	Benchmark Assessment
ESS1.C: The History of Planet Earth Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)	Constructing Explanations and Designing Solutions · Make observations from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1) · Compare multiple solutions to a problem. (2-ESS2-1)	Things may change slowly or rapidly. (2-ESS1-1) Things may change slowly or rapidly. (2-ESS1-1) Things may change slowly or rapidly. (2-ESS2-1)	Define and describe weathering and erosion. Recognize ways that plants can help reduce erosion. Model erosion.	ENGAGE : Start the lesson by asking students to visualize a sand pile on the playground. Give students a moment to visualize, then ask a volunteer draw the sand pile on the board. Label the drawing "Before." Ask students to imagine that a great storm, with wind and rain, occurs. Ask them to describe what help think will happen to the sand pile. Ask another volunteer to draw the "After" sand pile on the board. Explain that what happens to a sand pile in a rainstorm is an example of erosion. Say: Erosion is a process that shapes the surface of Earth. It is one of the processes you will learn about in this lesson. Say: Erosion is a process that shapes the surface of Earth. It is one of the processes you will learn about in this lesson. Say: Erosion is a process that shapes the surface of Earth. It is one of the processes you will learn about in this lesson. Have three large, clear plastic bins prepared at the front of the room, along with a full bucket of water. Share a brief demonstration with the class. Have three large, clear plastic bins prepared at the front of the room, along with a full bucket of water. Slowly pour water over the dirt, and allow students to witness what happens to the pile (it washes away). Direct their attention to the first bin, which contains a pile of brown dirt. Source the students' attention to the second bin, containing a medium-sized pile of sand. Four water over the sand, and allow students to witness what happens to the sand, and rocks? This readies students to learn more about weathering and erosion. ENGAGE : Use the video segments Weathering and Erosion (1:52) and The Forces of Wind and Water: Weathering and Erosion (1:52) and The Forces of Wind and Water: Weathering and erosion (3:00) to introduce the processes of weathering and erosion. After students readies that constitute what students will be learning. Students may read then to themselves or you may wish to read the questions alow dors they when the theory the reading pasage Getting to Know: Weathering and Erosion. Post	Unit A Resources	EVALUATE: Lesson Questions: What is version? What is version? How can plants help reduce erosion? Students use the Board Builder tool to create a board that shows what they know about the focus question. Emphasis should be placed on the evidence they have collected to support their findings.	

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Image: State Stat				Introduce the Evidence section, explaining to students that they will fill this in as they go through the rest of the lesson		
Image: Explores Explores Explores Explores Explores Image: Explores				Have students begin the Evidence section with information gathered during		
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Based on this tears, students should take additional notes in the Erosevin of their Charlts should have additional notes in the Erosevin				Read aloud as a class the section of Explore from the Core Interactive Text titled What Is Erosion?		
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$H_{\text{Have students where the segment Frances in (6.42)}$				of their T-charts about what erosion is, as well as what causes it. Have students view the video segment Frosion (6:42)		
Based on this video, students should take additional notes in the Erosion column				Based on this video, students should take additional notes in the Erosion column		
of their T-charts about what erosion is, as well as the causes and effects of				of their T-charts about what erosion is, as well as the causes and effects of		
erusion. Read aloud as a class the reading passage The Changing Shape of Beaches, and				Read aloud as a class the reading passage The Changing Shape of Beaches, and		
discuss the causes and effects of beach erosion.				discuss the causes and effects of beach erosion.		
When students have thanshed, have them work with a partner and use their notes to complete a cause/Event/Effect Chart detailing the cause of				When students have finished, have them work with a partner and use their notes to complete a Cause/Event/Effect Chart detailing the causes and effects of		
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ETS1.A: Defining and Delimiting Developing and Using Models Influence of Engineering, EXPLAIN 1: Video Segment: Forces of Wind and	ETS1.A: Defining and Delimiting	Developing and Using Models	Influence of Engineering,	EXPLAIN 1:	Video Segment: Forces of Wind and	
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A situation that people want to on evidence to represent a proposed What is crossion?	A situation that people want to	on evidence to represent a proposed		What is erosion?		
change or create can be approached jobject or tool. (K-2-ETS1-2) Developing and using Have students use the evidence that they collected in the Explore residents to be actived three sections of the Scientific Private Sheet Tild "Claim"	change or create can be approached	object or tool. (K-2-ETS1-2)	Developing and using technology has impacts on the	Have students use the evidence that they collected in the Explore sessions to complete the sections of the Scientific Explanations Student Sheat titled "Claim"		
as a provent to contract the sections of the contract term and "My C2-ETS1-1) natural world (.25-ETS1-1) natural world (.25-ETS1-1) and "My C2-ETS1-1) and "My C2-ETS1-1)	engineering. (K-2-ETS1-1)		natural world. (2-ESS2-1)	and "My claim is true because" for the two Lesson Questions. Students may		
Asking questions, making type their responses directly into the digital resource, or they award or draw their interval of the digital resource on a which are the distance of the digital resource of	Asking questions, making			type their responses directly into the digital resource, or they may write or draw		
observations, and gamering dimensional and a second s	observations, and gathering			link to a PDF version of the Student Sheet.		
about problems. (K-2-ETS1-1) Have groups of two to four students share their explanations with each other.	about problems. (K-2-ETS1-1)			Have groups of two to four students share their explanations with each other.		
Before beginning to design a Students should then revise or enhance their explanations based on group discussion.	Before beginning to design a solution, it is important to clearly			Students should then revise or enhance their explanations based on group discussion.		
understand the problem, K2-ETS1-	understand the problem. (K-2-ETS1-					
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		EXPLORE 4: Present students with the third Lesson Question ("How can plants help reduce erosion?"), and have them complete the first section of the Scientific Explanness Student Sher using this question. Students may type their responses directly into the digital resource, or they may write or draw their responses on a predict opy of the resource. The digital resource includes a link to a PDF version of the Student Sheet. Guide students to think about that they already how about this question and record their prior knowledge in the Prior Knowledge section. Encourage students to think about and record how they know what they al cevidence and reasoning.). Remind students that they will complete the Evidence section as they go through the rest of the lesson. In addition, students should continue to look for evidence to answer the Lasson Question "What is erosion?" Have students begin the Evidence section for the new Lesson Question with information gathered previously in the lesson. EXPLORE 5: Have students frequencies section for the new Lesson Question with information gathered previously in the lesson. Remind students that erosion occurs when wind and water move tooks, and, and soil. Read aloud as a class the reading gasage Erosion. Remind students that erosion occurs when wind and water move tooks, and, and soil. Read aloud as a class the reading gasage Erosion. Based on this text, students should take additional notes in the Erosion column of their T- they they students were thisked, have them work the a partner and use their notes to alo to their Cause/Event/Effect Chart detailing the causes and effects of crossion (crossion would be the event in this chart). EXPLORE 6. Begin by viewing the video segment Plants Help Us (1:17) to introduce the Lesson Question How do plants help reduce crossion? As questions to help students summarize the main ideas in the segment: What part of a plants inso the Helpful in reducing erosion? (Crossion Would and a view the helpful in reducing reosion. Clarify that erosion occurs	Video Segment: Erosion	
		Based on these resources, students should take additional notes in the Erosion column of their T-charts about what crosion is and how wind causes it. When students have finished, have them work with a partner and use their notes to add to their Cause/Event/Effect Chart detailing the causes and effects of erosion (erosion would be the event in this chart), focusing specifically on the causes and effects of erosion by wind.		
		EXPLAIN 2: Lesson Questions: What is erosion? How can plants help reduce erosion? Have students use the evidence that they collected in the Explore sessions to complete the sections of the Scientific Explanations Student Sheet titled? My Claim" and "My claim is true because" for the two Lesson Questions. Students may type their responses directly into the digital resource, or they may write or draw their responses on a printed copy of the resource. The digital resource includes a link to a TDP version of the Student Sheet, Have groups of two to four students share their explanations with each other. Students should then revise or enhance their explanations wide on group discussion.	Video Segment: Brosion; Wind, Water, Ice	
		ELABORATE: Lesson Questions: What is weathering? What is erosion? How can plants help reduce crosion? Have the students complete the Virtual Lab: Erosion – Here Today, Gone Tomorrow. Erosion – Here Today, Gone Tomorrow asks students to find ways to decrease soil crosion. In Level 2, students explore how three variables impact amounts of crosion. In Level 2, students test three variables, but compare how these variables affect the crosion of sandy soil, silly soil, and a sand/sile tombination soil. ELABORATE 2: (PROJECT) Have students investigate how weathering and crosion affect different landforms. For example, students can look at photographs of landforms from the Discovery Education website or their own photographs, and discuss how each is formed, breken down, or otherwise changed by weathering and crosion. Once students have completed agod set of notes and explanations for a variety of landforms, they should choose the landform, they think they have described best. Students should then use their laces to make posites about how weathering and crosion have affected their chosen landform, and present these to the class. Students stonal ternatively use Board Builder to present their ideas to their classing the students for their classing the stone for the stone for the class.	Video Segment: Plants Help Us	

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				Video Segment: Erosion in the Desert		
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