Unit 3 - Mapping Our Changing Earth

Pacing Guide using Mystery Science

*Informational writing standards are now being covered in science. Please use these resources to address the informational writing standards. These lessons can be incorporated at any point during the unit.

Unit & Lesson #	Focus	Standards Addressed	Day (20-30 minutes)	Overview	Writing Activities	Additional Activities
Erosion & Earth's Surface Anchor Phenomenon Strange River	Mapping, Earth's Surface Features, & Erosion	2-ESS2-2	1	The anchor phenomenon for this unit is a pair of rivers that flow together but look very, very different from one another. Students explore what causes rivers to have such different colors. During the introduction, students generate observations and questions about the phenomenon and create an initial conceptual model to explain the phenomenon. Students will gather clues during and after each lesson in this unit to help them improve their explanations. It is important to encourage students to recognize that even if they don't	See-Think-Wonder Chart	

				know the perfect answer yet, they are going to learn a lot throughout the unit and will have an opportunity to change or add to their first explanation.		
Erosion & Earth's Surface Lesson 1 Where's the best place to hide a treasure?	Mapping Landforms & Bodies of Water	2-ESS2-2	2	In this session, students explore maps as useful tools for understanding where landforms and bodies of water are located.		
			3	In the hands-on activity, Mystery Mapmaker, students identify different land and water features based on their shapes. Then, they use those landmarks to complete a map and locate a treasure of their very own. Wrap-up slides & teacher-led discussion.		
			4	Anchor Connection Students wonder: Which way do the	Science Journal entry to answer anchor connection question.	

				rivers flow? Students learn: Maps have different shapes drawn on them to represent different land and water features.		
			5	Lesson 1 Assessment Extensions include: Readings, an online resource, and activities		
Erosion & Earth's Surface Lesson 2 If you floated down a river, where would you end up?	Mapping: Mountains & Rivers	2-ESS2-2 2-ESS2-3	6	In this session, students develop a model of the earth's surface and use it to discover an important principle about how rivers work.		Book - Rivers: Learning about the Earth
			7	In the hands-on activity, Paper Mountains, students take turns using a spray bottle to make rain fall on paper models of mountains to observe patterns of how water and rivers flow. Wrap-up slides & teacher-led discussion.		

			8	Anchor Connection Students wonder: Do rivers carry anything other than water downhill? Students learn: Even though the rivers look very different, they have a great deal in common. They both start in mountains, and they both flow out to the sea.	Science Journal entry to answer anchor connection question.	
			9	Lesson 2 Assessment Extensions include: Readings, an online resource, and activities.		Article - Oceans, Rivers & Lakes Article - The Mighty Mississippi
Erosion & Earth's Surface CER #1		2-ESS2-3	10		CER Activity #1 (use slides 3 & 4)	
Erosion & Earth's Surface Lesson 3 Why is there sand at the beach?	Rocks, Sand, & Erosion	2-ESS2-2	11	In this session, students investigate the effects of rocks tumbling in a river. Based on their observations, they construct an explanation for why there is sand at a beach.		
			12	In the hands-on activity, Rocking the River, students pretend to be a		Article - What is a Rock? Article - Explore the

				river and tear up pieces of construction paper to model what happens to rocks as they travel along the river. Wrap-up slides & teacher-led discussion.		Seashore
			13	Anchor Connection Students wonder: What happens to the land when water causes erosion? Students learn: The water for both rivers starts the same color. Something must be changing the color of the Strange River farther downstream.	Science Journal entry to answer anchor connection question.	
			14	Lesson 3 Assessment Extensions include: Readings, writing, and activities.		
Erosion & Earth's Surface Lesson 4 Where do flash floods happen?	Mapping & Severe Weather	2-ESS1-1 2-ESS2-2	15	In this session, students explore the phenomenon of flash floods and create an		

				explanation of why these severe weather events are more or less likely in different regions. They specifically attempt to locate and explain a unique region in Texas known as Flash Flood Alley.		
			16	In the hands-on activity, Find Flash Flood Alley, students develop a map to document how land and water interact across the state. Students then use that map to explain how different shapes and kinds of land increase or decrease the chances of rainfall causing a flash flood. Wrap-up slides & teacher-led discussion.		Extension Video - Flash Flood Book - Floods
			17	Lesson 4 Assessment Extensions include: Readings, activities, and videos		

Erosion & Earth's Surface Lesson 5 What's strong enough to make a canyon?	Erosion, Earth's Surface, & Landforms	2-ESS1-1	18	In this session, students make hypotheses and investigate the causes of canyons.		Book - Canyons
			19	In the hands-on activity, Cornmeal Canyons, students create a model landform using cornmeal. Then they drip water over this "land" to observe how water can change its shape and to understand how, over long periods of time, canyons can be formed through a similar process. Wrap-up slides & teacher-led discussion.		
			20	Anchor Connection Students wonder: How can we stop erosion? Students learn: The Strange River flows through an area with brown sand and rocks. When the sand and rocks erode into the river, it changes the river's color.	Science Journal entry to answer anchor connection question.	

			21	Lesson 5 Assessment Extensions include: Readings, activities, discussions, and background information.		Article - Weathering & Erosion Article - A Grand Old Canyon
Erosion & Earth's Surface Lesson 6 How can you stop a landslide?	Erosion & Engineering	2-ESS2-1 K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	22	In this session, students compare multiple solutions for preventing erosion.		Book - Erosion
			23	In the hands-on activity, Erosion Engineering, they design and test ways to keep water from washing away a hill modeled out of cornmeal. Wrap-up slides & teacher-led discussion.	Save the Hills	
			24	Anchor Connection Students learn: All rivers can change color if enough sand and rocks erode into them. This is something that all rivers have in common	Science Journal entry to answer anchor connection question.	
			25	Lesson 6 Assessment		Book - How Do Water and Wind

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				Extensions include: Readings and activities		Change Rock? Book - Soil Erosion and How to Prevent it
Erosion & Earth's Surface CER #3		2-ESS2-1	26	CER Activity #2 (use slides 1 & 2)		
Erosion & Earth's Surface Unit Assessment			27	Erosion & Earth's Surface Unit Assessment		
Erosion & Earth's Surface Performance Task How long is the shortest river?	Water, Plants & Animals, & Habitats	2-ESS1-1 2-ESS2-2	28	In this performance task, students explore the difficulty of measuring the length of a river. Figuring out which river is the shortest river is difficult to do if you can't decide where a river starts or ends. After a review of the Work of Water unit, students will learn about two rivers that are each possibly the shortest rivers in the United States. Then, they map those rivers out and attempt to determine which river is the shortest. The activity can be broken into two parts: the	Shortest River	

				introduction, and the activity. We suggest a point to do this in the lesson itself.		
Benchmark 3			29	Benchmark 3		