EPSD Curriculum and HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE

GRADE 4

EPSD Unit 1: Weathering and Erosion (part I)
First Marking Period

Overview: In this unit of study, students develop understandings of the effects of weathering and the rate of erosion by water, ice, wind, or vegetation. The crosscutting concepts of patterns and cause and effect are called out as organizing concepts. Students demonstrate grade-appropriate proficiency in planning and carrying out investigations and constructing explanations. Students are also expected to use these practices to demonstrate understanding of the core ideas. This unit is based on 4-ESS2-1 and 4-ESS1-1.		**HMH Science Dimensions Program Resources**			
		Unit 6: Changes to Earth's Surface **Unit Video** (volcanic activity); **Unit Overview** p. 349; **Vocabulary** p. 351; **Making Connections** p. 351J; **Unit Project** p. 351K; **Unit Performance Task** p. 448--449; **Unit Review** pp. 450-452			
		Standard for all Units: Interactive Glossary (D); Leveled Readers (D); Beginning-of-Year Test (D/P); Unit Pretest (D/P); Lesson Quizzes (D/P); Unit Test (D/P) **Note:** Refer to the Curriculum Alignment Common Language (CACL) Guide to decipher acronyms.			
Standards: (4-ESS1-1) Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. 4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	**Instructional Days:** 10- 15	**Lesson 1:** How Does Water Shape Earth's Surface? pp. 352-377 D/P- CYEI (video) River flowing through the bottom of a canyon p. 353 P- ENB (prompt) How do you think the canyon	**Lesson 2:** How Do Other Factors Shape Earth's Surface? pp. 378-403 D/P- CYEI (digital picture) Arbol de Piedra rock found in Bolivia p. 379 P- ENB (prompt) How do you think natural processes	**Lesson 3:** How Can Maps Help Us Learn about Earth's Surface? pp. 404-427 D/P- CYEI (digital picture) A topographic map with lines and numbers p. 405 ENB (prompt) Students imagine	**Lesson 4:** What Patterns Do Maps Show Us? pp. 428-447 D/P- CYEI (digital picture) A Rift Valley in the desert of eastern Africa p. 429 P- ENB (prompt) Predict how the land and bodies of

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Objectives 1: Explain how the processes of weathering and erosion change and move materials that become soil. **Objective 2:** Students will understand 4 types of weather processes: wind, running water, plant growth, and freezing water. **Objective 3:** Students will investigate how the roots of a plant can help slow the erosion process. **Objective 4:** Students will examine how fossils are formed and understand how fossils provide evidence of plants and animals that lived long ago as well as the environmental conditions at that time. **Objective 5:** Students will be able to place fossils in order based on geologic age of rock they are found in. **Topics:** Weathering and Erosion Twenty-First Century Themes and Skills include: Environmental Literacy • The Four C's • Global Awareness **Essential Questions**: How can evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation be observed or measured? What can rock formations tell us about the past?	formed? What could have reshaped the rock? p. 353 D/P- Watery Trail (Students watch video to discover more about how a river changes.) pp. 354-355 P- ENB (prompt) Explain how the information (i.e., the path of a river from its source to its mouth) might relate to the canyon presented at the beginning of the lesson. p. 355 D/P- Over Its Banks: Effects of a Flood (Students explore hotspots online to discover more about the effects of a flood.) p. 356 P- AWYK HO Activity Water Effects (Students conduct research to find	on Earth's surface formed the Arbol de Piedra rock? p. 379 D/P- Organisms and Environments: Water World p. 380-381 P- AWYK HO Activity Dry Plants (Students do research to find two key features that help the saguaro cactus plant thrive in its environment) p. 381 ENB (prompt) Consider what have been learned about plants and animals. Is there any evidence that either played a role in the formation of the "stone tree." p. 382 D/P- LS Conduct research to learn more about how ivy affects its	standing at the placed marked by the red dot and identify what they would see if they looked in the direction of the arrow. Students explain answer and record response in their ENB. p. 405 D/P- A History of Maps (Students explore pictures online to learn more about the history of maps.) pp. 406-407 D/P- How Many Maps (Students study pictures online to discover more about maps.) p. 408 D/P- LS Students compare and contrast a locator map and a floor plan map. p. 409 D/P- ENB (prompt) Students identify which type of map gives information	water in the desert in eastern Africa might change as the rift changes p. 429 D/P- Ring of Fire: Earth in Action (Students watch videos to see an earthquake and volcano in action.) p. 430 D/P- LS Students compare and contrast earthquakes and volcanoes. p. 431 P- AWYK HO Activity Earthquakes and Buildings (Students design and test a building that will survive a model earthquake) p. 431 ENB (prompt) Students identify if any of the images in the eBook or on p. 430 remind them of the African Rift. Students identify how this helps

	images that depict the ways floods can damage the roads; student use evidence from research to respond to questions.) p. 357 D/P- LS Away It Goes (Students use images in text to help answer questions.) p. 358 D/P- Watch It Go! (Students watch video to see a change happening at Birling Gap.) p. 359 D/P- Water Power: Changing the Shape of Land (Students watch videos to learn more about weathering, erosion, and deposition.) p. 360 P- ENB (prompt) Students have learned about ways weather can cause weathering and	environment. p. 383 D/P- LS Understanding Cause and Effect (Students fill in chart with the missing cause or effect.) p. 385 D/P- ENGIT Blast Off (Students think about what process may have inspired the invention of the first sandblaster.) p. 386 P- AWYK HO Activity A Slower Process (Students use sandpaper to remove rust, paint or other substance from a piece of metal or wood, keeping track of how much time was spent sanding the material.) p. 387 D/P- Desert Erosion p. 387-391	most like the one they saw at the beginning of the lesson and the kinds of information that map provides. Students record evidence in their ENB. p. 409 D/P- DTM Using a Map Scale (Students watch video to discover more about reading a map scale.) pp. 412-413 D/P- AWYK HO Activity Make a Map (Students use digital drawing tools to draw a map of their school and include a map key that identifies features of their school.) p. 414 P- ENB (prompt) Students think about the different features of a map, such as keys and scale. Students	them begin to understand what is happening in the Rift Valley. p. 331 D/P- Up and Down (Students explore hotspots online to discover more about mountains and ocean trenches.) p. 432 D/P- ENGIT Mapping the Ocean Floor (Students watch video to discover more about how scientist discover what the sea floor looks like.) p. 433 D/P- Finding Patterns on Land: Earth's Features on Land (Students explore online to select each layer to see where on land each feature is found.) p. 434 P- ENB (prompt) Students identify how the map patterns in the

	erosion. In their ENB, students make a list that summarizes the information and writer a sentence or two for each entry on their list, explaining how it provides evidence for how a canyon is formed. p. 361 D/P- LS Categorizing Information (Students complete a table that identifies the causes and effects of: waves, swift current, mudslide, or flooding.) p. 361 D/P- Cold Stuff: Water, Ice and Water (Students study pictures online to discover more about how freezing water can change rocks.) pp. 362-363 P- AWYK HO Activity	P- ENB (prompt) What ideas do you have about how the tree rock, presented at the beginning of this lesson, formed? p. 389 D/P- LS Gravity and Weathering (Use the information presented in eBook or p. 390 to identify which of these formations were affected by gravity. How did gravity affect these processes?) p. 390 P- AWYK HO Activity Finding Change (Students collaborate with their team to model processes that produce change on Earth's surface.) pp. 392-394 D/P- Always Changing: Evidence of Change pp. 395-398	record, in their ENB, how these features can be used to read a map. p. 414 D/P- LS Make a Presentation (Students make a digital presentation that shows how to use a key, scale, and compass rose to read a map; students list parts of their presentation in the provided section.) p. 414 D/P- Its on the Map! (Students study pictures to discover more about types of maps.) p. 415 D/P- How High? (Students explore online and select each elevation to see how the topographic map is made.) p. 416 D/P- ENB (prompt) What do the lines	eBook or on p. 435 can help them predict what is happening in the African Rift Valley p. 435 D/P- Finding Patterns on the Ocean Floor (Students explore online to learn more about Earth's features on the ocean floor, Earthquakes and Volcanos, and Mountains.) pp. 436-439 P- AWYK HO Activity Modeling Features of the Ocean Floor (Students use modeling clay to make a 3D model of the features of the ocean floor.) p. 438 D/P- LS Understand Graphics (Students choose one map from the lesson and write

	Watching Water Grow (Students observe how water expands when it freezes.) p. 363 P- LS Recalling Information (Students predict what will happen to the rock as the pattern of freezing and thawing continues.) p. 363 D/P- Pushing Through (Students watch video to see how glaciers move over time and study pictures online to learn more about glaciers) p. 364 P- ENB (prompt) Students think about what they have learned about how glaciers shape the land and consider the canyon they saw at the beginning of the lesson. In their ENB, students	P- ENB (prompt) What similarities can you find in both tables on? p. 396 D/P- DTM A Waterfall Over Time (Students review and complete table that depicts the effect of waterfall over time). p. 398 P- ENB (prompt) Think about all the ways the surface features of the desert environment changed. List the causes in two columns titled: Cold have formed the rock and Could not have formed the rock. p 398 D/P- TIF (enrich) Seeking Stability pp. 399-400 D- Extremes D- The Science Slopes P- ENGIT Slowing Change p. 399-400	and numbers on a topographic map indicate? What does it mean when the lines are close together or far apart? Students record answers in their ENB. p. 418 D/P- LS Use Reasons and Evidence (Students plan a road trip across the country to do some hiking. Students identify the types of maps that will be useful for their trip and support their choices with reason why they chose those maps.) p. 418 D/P- HO Activity Park Designer (Students collaborate with peers to design a park and think about how a park designer uses a map to do his or	sentences that explain what the map shows.) p. 439 P- AWYK HO Activity Tracking Quakes (Students examine data to find out where most earthquakes occur) p. 440-442 D/P- TIF (enrich) People in Science & Engineering: Lewis and Clark pp. 443-444 D- Volcano Formation D- Volcanic Islands P- AWYK HO Activity Making Mountains p. 443 D/P- Lesson Check pp. 445-446 D/P- Lesson Roundup p. 447 D- Lesson Quiz P- DI (ELL/RTI) p. 351I P-Extension p. 351I

	explain whether or not the canyon could have been formed by glaciers and support their explanation with evidence. p. 365 P- HO Activity The Rate of Change (Students collaborate with a partner to investigate the effect of slope on erosion.) pp. 366-368 D/P- What About Us? At the Beach (Students watch the video to discover more about waves hitting the beach and explore online to learn more about how weathering, erosion and deposition change the shape of the shorelines.) p. 369 D/P- On the Road (Students explore online to study the	D/P- Lesson Check pp. 401-402 D/P- Lesson Roundup p. 403 D- Lesson Quiz P- DI (ELL/RTI) p. 351I P-Extension p. 351I P- COLLAB p. 351J P- Making Connections p. 351J D- Science Safety HB D- ELA-HB D- M- HB D- SEP-HB D- ScienceSarurs Reference HB D- YSI Simulation Changes to Earth's Surface	her job.) pp. 419-421 D/P- TIF (enrich) Careers in Science & Engineering: City Planner pp. 422-424 D- Search Party D- Above and Below D/P- Lesson Check pp. 425-426 D/P- Lesson Roundup p. 427 D- Lesson Quiz P- DI (ELL/RTI) p. 351I P-Extension p. 351I P- COLLAB p. 351J P- Making Connections p. 351J D- Science Safety HB D- CCC-HB D- ELA-HB D- SEP-HB D- ScienceSarurs Reference HB	P- COLLAB p. 351J P- Making Connections p. 351J D- Science Safety HB D- ELA-HB D- SEP-HB D- ScienceSarurs Reference HB D- YSI Simulation Changes to Earth's Surface

	pictures and captions about cracks in road surfaces.) pp. 370-371 P- ENB (prompt) Students study the surface of a sidewalk or road and describe the surface in their ENB. Students explain how the cracks may have occurred. p. 370 D/P- ENGIT Fighting Potholes (Students explore hotspots online to discover more about smart roads.) p. 372 D/P- TIF (enrich) People in Science & Engineering: Anjali Fernandes pp. 373-374 D- Deposition Rate D- The Last Ice Age P- DTM Measuring Erosion p. 374			

	D/P- Lesson Check pp. 375-376 D/P- Lesson Roundup p. 377 D- Lesson Quiz P- DI (ELL/RTI) p. 351I P-Extension p. 351I P- COLLAB p. 351J P- Making Connections p. 351J D- Science Safety HB D- ELA-HB D- M- HB D- Crosscutting Concepts - HB D- ScienceSarurs Reference HB D- YSI Simulation Changes to Earth's Surface			

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Curriculum Alignment Common Language (CACL) Guide K-5		
Acronym	**Word/Phrase**	**Description**
AWYK	Apply What You Know	Hands on opportunities for students to apply learning.
CER	Claims Evidence Reasoning	Students make a claim and gather evidence along the way (during EXPLORATORY activities) to support claim.
CYEI	Can You Explain It	Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson.
CYSI	Can You Solve It	Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson.
D	Digital	Program resources and features in interactive digital form.
DI (ELL/RTI) **Extension** **COLLAB** **Connections to Science**	Differentiated Instruction (English Language Learner/Response to Intervention) Collaboration Connections to Science	A page that lists all learning activities used to differentiate learning, engage students in collaborative activities and connect learning to other subjects.
DTM	Do the Math	Integrated subject learning.

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ENB	Evidence Notebook (prompt)	Student notebook or journal used to gather evidence during EXPLORATORY learning activities to support their claims.
ENGIT	Engineer It	Integrated subject learning.
HB **CCC-HB** **ELA-HB** **M-HB** **SEP-HB**	Handbooks Crosscutting Concepts English Language Arts Math Science and Engineering Practices	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
HO	Hands-On (Activity)	Student collaboration activities.
LS	Language Smarts	Integrated subject learning.
P	Print	Program resources and features in print form.
TIF	Take It Further (enrich)	Enrichment activities for students in print or digital.
YSI	You Solve It (Simulation)	Open-ended simulation-based learning with multiple answer options.