#### **GRADE 4**

## EPSD Unit 1: Weather and Erosion (part II) 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.

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

#### **Science Dimensions Program Resources**

#### **Unit 7: Rocks and Fossils**

Unit Video (discoveries of fossil remains); Unit Overview p. 453; Vocabulary p. 455; Unit Project p. 455I; Unit Performance Task p. 518-519; Unit Review pp. 520-522

**Standard for all Units:** Interactive Glossary (D); Leveled Readers (D); Unit Pretest (D/P); Lesson Quizzes (D/P); Unit Test (D/P)

**Lesson 1:** How Do Rock Layers Change? pp. 456-481

D/P- CYEI (digital picture) Rock formations in the Niobrara Chalk Area p. 457

ENB (prompt) Refer to Rock formations in the Niobrara chalk area. Gather information to answer the following questions: How do you think these rocks formed? Which rock layer is the oldest? Which is the youngest? p. 457

**Lesson 2:** What Do Fossils Tell Us about Ancient Environments? pp. 482-499

D/P- CYEI (digital picture) Petrified Forest National Park. p. 483

ENB (prompt) Refer to
Petrified National Park.
Gather evidence to answer
the following questions:
Think about the type of
environment this used to
be. Was it like the presentday environment of the

**Lesson 3:** What Are Some Patterns Fossils Show Us? pp. 500-517

D/P- CYEI (digital picture) Fossilized sea turtle in a desert. p. 501

ENB (prompts) How did this fossilized sea turtle end up in the desert? What can fossils like this tell us about the past? p. 501

P- AWYK HO Activity Layer By Layer (Students collaborate with their

#### **EPSD Curriculum and**

### **HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE**

Objectives: Explain how the processes of weathering and erosion change and move materials that become soil. Weathering:
Students will understand 4 types of weather processes: wind, running water, plant growth, and freezing water. Weathering and Erosion Splashdown: Students will investigate how the roots of a plant can help slow the erosion process. Fun With Fossils: 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. Fossil Inferences:
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 ● Environmental Literacy ● 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?

P- AWYK HO Activity Layered Landforms p. 458 D/P- Layers Upon Layer (Students explore about what rocks have in common) pp. 459-460 D/P- LS Students research rock layers near their house or in their state p. 461

P- ENB (prompt) Students use what they have learned thus far to explain how the Niobrara chalk may have formed p. 461 D/P- LS Telling a Story: A Long, Long Story (students use drawing tools to show where layers begin and end on a mushroom rock) p. 462 D/P- DTM Canyon Clues (Students use clues to

determine the relative ages of rocks) p. 463
D/P- LS Students conduct research to find a relationship between types of rocks and the color of the layers p. 462
P- ENB (prompt) Using the rocks in the photos in the

Petrified Forest? What can be inferred about this area millions of years ago from the presence of fossil trees? p. 483

ENB (prompt) Take a look at the plesiosaur fossil (refer to p. 484). Write down all the features that can be identified from the fossil. Infer what these features might have been used for. p. 485 D/P- LS Compare and Contrast: Compare the body shape of the plesiosaur to something else that looks similar to the fossil. Draw the object that fossil is being compared to. Circle similar structures in the drawing and the fossil on the previous page. Explain the comparison. p. 485 P- AWYK HO Activity Old and New (Students collaborate with others in their group to identify the structures and features of fossils) p. 486-487

group to investigate how to use evidence to determine what an environment was like) p. 502-504 D/P- Seeing History (Students explore more about fossils and past environments. p. 505 ENB (prompt) Refer to eBook or p. 507. Make a statement about the type of environment one rock laver indicates. Use evidence to support your statement. p. 507 P- AWYK HO Activity Where Else (Students choose one fossil from the lesson that interest them and research to find out where else in the world the fossil has been found. List places on a sheet of paper and use a world map and colored pencils to mark where similar fossils have been found.) p. 508 D/P-LS Put It Together (Students respond to the following questions: How can fossils serve as

evidence of specific events

#### **EPSD Curriculum and**

### **HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE**

eBook or on p. 466, how do observations help answer the question at the beginning the lesson? p. 466 D/P- Rock and Rolled? (Students explore about how rock layers change) p. 467 P- AWYK HO Activity Modeling How Rocks Can Form and Change pp. 468-470 D/P- AWYK HO Activity The Story of the Canyon and Slow and Steady (video) pp. 470-472 D/P- ENGIT Measuring Earthquakes p. 473 D/P- Video of how canyons form. p. 474 D/P- Changing Landscapes p. 475 P- ENB (prompt) Consider what has been learned about how landscapes change overtime. Write down thoughts. p. 475 P- LS Citing Evidence (Students identify evidence that shows how a landscape has been changed.) p. 476

P- CER Students work with at partner to critique each other's claims and evidence in Step 6 of the HO Activity. p. 487 D/P- Students explore more about fossil organisms and how they might have looked in real life. pp. 488-490 D/P- LS Comparing Structures: Students research two methods scientists use to learn about fossils. p. 489

ENB (prompt) List the parts of the organisms that give clues to the environment where the organisms lived. Then identify the type of environment where organisms with those parts lived p. 489 P- AWYK HO Activity Past Meets Present (Students research two fossils, find a related or similar modern-day organism for each fossil and determine what type

and environments in Earth's history? How can they show patterns in that history?) p. 508 D/P- AWYK HO Activity Disordered Days (Students follow instructions in eBook or on p. 509, and compare and contrast the two sets of layers) p. 509 D/P- LS Students respond to the questions in eBook or on pp. 511-512 ENB (prompt) Using questions in eBook or on p. 512, students determine which layers were oldest, which layers were youngest, and the evidence used to make the determinations. Students also answer the following question: How does analyzing rock layers like these help explain why a sea turtle fossil might be found I a desert? p. 512 D/P- LS Refer Explicitly to Text: Students research respond to the following question: How could fossils in the rock layers help to determine their

#### **EPSD Curriculum and**

### HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE

D/P- TIF (enrich) People in Science & Engineering: Bernard Hubbard pp. 477-478

D- Rock Diversity

D- Why It's Grand

D/P- Lesson Check pp. 479-480

D/P- Lesson Roundup p. 481

D- Lesson Quiz

P- DI (ELL/RTI) p. 455G

P-Extension p. 455G

P- COLLAB p. 455H

P- Making Connections p. 455H

D- Science Safety HB

D- CCC-HB

D- ELA-HB

D- M- HB

D- SEP - HB

D- ScienceSarurs Reference HB

D- YSI Simulation Layers of Change

of environment both lives in. p. 491 D/P- Fossils and **Environments (Students** explore what fossil organisms tell us about the environment in which they lived.) pp. 492-493 D/P- DTM Clues in Footprints (Students solve a problem using measurements) p. 493 P- ENB (prompt) Compare fossils just observed to fossils observed at the start of the lesson. Which are most like those observed at the beginning? What clues does this provide to where the fossils at the beginning lived? Record ideas. p. 493 D/P- LS Compare and **Contrast (Students** describe how they would determine where an

organism lived by

analyzing its fossil

**D- Fossil Hangouts** 

D/P-TIF (enrich) Where

Are They? pp. 495-496

remains) p. 494

age if the layers were moved out of their original order? p. 512

D/P- TIF (enrich) People in Science & Engineering: Edward Cope and Mary Higby Schweitzer pp. 513-516

D- Changes in Environments

D- Careers in Science

D/P- Lesson Check pp.

515-516

D/P- Lesson Roundup p.

517

D- Lesson Quiz

P- DI (ELL/RTI) p. 455G

P-Extension p. 455G

P- COLLAB p. 455H

P- Making Connections p. 455H

D- Science Safety HB

D- CCC-HB

D- ELA-HB

D- Math-HB

D- SEP-HB

D- ScienceSarurs Reference HB

# EPSD Curriculum and HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE

| D- How Do They Compare  D/P- Lesson Check pp. 497-498 D/P- Lesson Roundup p. 499 D- Lesson Quiz  P- DI (ELL/RTI) p. 455G P-Extension p. 455G P- COLLAB p. 455H P- Making Connections p. 455H  D- Science Safety HB | D- YSI Simulation Layers of<br>Change |
|--|---------------------------------------|
| D- Science Safety HB D- CCC-HB D- ELA-HB   |                                       |
| D- M- HB   |                                       |
| D- SEP-HB  |                                       |
| D- ScienceSarurs   |                                       |
| Reference HB   |                                       |
|  |                                       |
|  |                                       |

# EPSD Curriculum and HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE

#### **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<br>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.  |

# EPSD Curriculum and HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE

| 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.  |  |
| НВ     | Handbooks                         |   |  |
| ССС-НВ | Crosscutting Concepts             | Students who need extra support in grasping concepts  |  |
| ELA-HB | English Language Arts             | or to refresh student knowledge of skills.  |  |
| М-НВ   | Math                              |   |  |
| SEP-HB | Science and Engineering Practices |   |  |
| НО     | Hands-On (Activity)               | Student collaboration activities.   |  |
| LS     | Language Smarts                   | Integrated subject learning.  |  |
| Р      | 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.  |  |