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| **Grad 2: Ecosystems: Interactions, Energy, and Dynamics** |
| **Content Area:** Earth Science |
| **Unit Title:** Pebbles, Sand, And Silt |
| **Target Course/Grade Level:** Second Grade |
| **Unit Summary:**Students engage with the anchor phenomenon of earth materials that cover the planet’s surface. |
| **Primary interdisciplinary connections:** ***ELA/Literacy*** **RI 1:** Ask and answer questions to demonstrate understanding. **RI 2:** Identify the main topic of the text. **RI 3:** Describe the connection between scientific ideas or concepts. **RI 4:** Determine the meaning of words and phrases in the text. **RI 5:** Know and use text features. **RI 6:** Identify the main purpose of the text. **RI 7:** Explain how images contribute to and clarify text. **RI 8:** Describe how reasons support points the author makes in the text. **RI 9:** Compare and contrast two texts on the same topic. **RF 4:** Read with accuracy and fluency to support comprehension. **W 3:** Write narratives. **W 5:** Strengthen writing by revising and editing. **W 7:** Record science observations. **W 8**: Recall information from experiences or gather information from provided sources to answer a question.**SL 1:** Participate in collaborative conversations.**SL 2:** Recount or describe key ideas.**SL 3:** Ask and answer questions.**SL 4**: Recount an experience.**SL 5**: Add drawings or other visual displays to recounts of experiences.**L 4:** Determine or clarify the meaning of unknown or multiple-meaning words and phrases. **L 5:** Demonstrate understanding of word relationships and nuances in word meanings.**L 6:** Use acquired words and phrases.**MP.2** Reason abstractly and quantitatively. (2-ESS2-1),(2-ESS2-2)**MP.4** Model with mathematics. (2-ESS2-1),(2-ESS2-2)**MP.5** Use appropriate tools strategically. (2-ESS2-1)**2.NBT.A** Understand place value. (2-ESS1-1)**2.NBT.A.3** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. (2-ESS2-2)**2.MD.B.5** Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers)and equations with a symbol for the unknown number to represent the problem. (2-ESS2-1) |
| **21st Century Themes:**Digital media will be used incorporated in project presentations. This module will develop students’ abilities to do and understand scientific inquiry. Students will identify questions, design and conduct scientific investigations to answer those questions, employ tools to gather, analyze, and interpret data. They will use data to construct reasonable explanations, develop and communicate investigations and evidence and understand that scientists use different kinds of investigations and tools to develop explanations using evidence and knowledge. This module will develop and extend students’ understandings about science and technology. Students will work collaboratively in teams and use tools and scientific techniques to make better observations. |
| **Unit Rationale**Students observe the properties of rocks of various sizes and study the components of soil, study the results of weathering and erosion, locate natural sources of water,and determine how to represent the shapes and kinds of land andbodies of water on Earth. The driving questions are what are theproperties of earth materials? and how do they interact and change?Students use simple tools to observe, describe, analyze, and sortsolid earth materials and learn how the properties of the materialsare suited to different purposes. The investigations compliment thestudents’ experiences in the Solids and Liquids Module witha focus on earth materials and the influence of engineering andscience on society and the natural world. Students explore howwind and water change the shape of the land and compare ways toslow the process of erosion. Students learn about the important rolethat earth materials have as natural resources. |
| **Learning Targets** |
| **Disciplinary Core Ideas** **PS1.A: Structure and properties of matter*** Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.
* Different properties are suited to different purposes.
* A great variety of objects can be built up from a small set of pieces.

**ESS1.C: The history of planet Earth*** Some event happen very quickly; others occur very slowly over a time period much longer than one can observe.

**ESS2.A: Earth materials and systems*** Wind and water can change the shape of the land.

**ESS2.B: Plate tectonics and large-scale system interactions*** Maps show where things are located. One can map the shapes and kinds of land and water in any area.

**ESS2.C: The roles of water in Earth’s surface processes*** Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.

**ETS1.A: Defining and delimiting engineering problems*** Before beginning to design a solution, it is important to clearly understand the problem.

**ETS1.B: Developing possible solutions*** Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people.

**ETS1.C: Optimizing the design solution*** Because there is always more than one possible solution to a problem, it is useful to compare and test designs.
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| **Cross- Cutting Concepts:**  ***Patterns***Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.***Cause and effect***Events have causes that generate observable patterns.***Scale, proportion, and quantity***Relative scales allow objects and events to be compared and described.***Energy and matter***Objects may break into smaller pieces, be put together into larger pieces, or change shapes.***Stability and change***The shape and stability of structures of natural and designed objects are related to their function(s). |
| **PE #** |  **Performance Expectations** |
| **2-ESS1-1.** | Use information from several sources to provide evidence that Earth events can occur quickly or slowly. |
| **2-ESS2-1.** | Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land |
| **2-ESS2-2.** | Develop a model to represent the shapes and kinds of land and bodies of water in an area. |
| **2-ESS2-3.** | Obtain information to identify where water is found on Earth and that it can be solid or liquid. |
|  **PS1.A:** |  Structure and properties of matter |
| **ETS1.A:**  | Defining and delimiting an engineeringproblem |
| **ETS1.B:**  | Developing possible solutions |
| **ETS1.C:**  | Optimizing the design solution |
| **ETS2.A:** | Interdependence of science, engineering, andtechnology |
| **ETS2.B:** | Influence of engineering, technology, and science on society and the natural world |
| **Unit Essential Questions*** What are properties of rocks and how do they change?
* How are small pieces of rock made and moved to change Landforms?
* How are different sizes of rock used as resources to make useful objects?
* How can we apply what we know about the ways that land and water interact?
 | **Unit Enduring Understandings**• Rocks can be described by their properties.• Smaller rocks (sand) result from the breaking(weathering) of larger rocks.• Rocks are the solid material of Earth.• Rocks are composed of minerals.• Volcanoes are mountains built up by melted rocksthat flow out of weak areas in Earth’s crust.Rocks are earth materials.• Rocks can be described by the property of size.• Rock sizes include clay, silt, sand, gravel, pebbles,cobbles, and boulders.• Weathering, caused by wind or water, causes largerrocks to break into small rocks.• Some Earth events happen rapidly; others occurslowly over a very long period of time.• Earth materials are natural resources.• The properties of different earth materials make eachsuitable for specific uses.● Different sizes of sand are used on sandpaper tochange the surface of wood from roughto smooth.• Earth materials are commonly used in theconstruction of buildings and streets.Earth materials are natural resources.• Soils can be described by their properties (color,texture, ability to support plant growth).• Soil is made partly from weathered rock andpartly from organic material. Soils vary by location.• Natural sources of water include streams, rivers,ponds, lakes, marshes, and the ocean. Sources ofwater can be fresh or saltwater.• Water can be a solid, liquid, or gas.• Wind and water can change the shape of land.• The shapes and kinds of land and water can be represented by various models. |
| **Unit Learning Targets - Last paragraph**Throughout the Pebbles, Sand, and Silt Module, studentsengage in science and engineering practices to collect and interpretdata to answer science questions, develop models to communicateinteractions and processes, and define problems in order to comparesolutions. Students gain experiences that will contribute tounderstanding of crosscutting concepts of patterns; cause and effect;scale, proportion, and quantity; energy and matter; and stability andChange. |
| **Evidence of Learning** |
| **Embedded Assessments:*** Response Sheets
* Performance Assessments
* Science Notebook Entries

**Benchmark Assessments:*** Investigation I-Checks
* Surveys
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