## Phoenixville Area School District Understanding by Design (UbD) Science

## Grade Level 2

Unit Name: Pebbles, Sand, and Silt

D. Krisiewicz, J. Simmons

	Stage 1 Desired Results				
Overarching NGSS & PA Standards:	Transfer         Students will be able to independently use their learning to         1. Ask questions and/or define problems         2. Develop and/or use models         3. Plan and/or carry out investigations         4. Obtain, evaluate, and communicate information (supported by evidence)         5. Construct explanations and design solutions				
Earth and Space Sciences <b>3.3.2.A</b> Make observations from several					
sources to	Meaning-Making				
construct an evidence-based account that Earth events can occur quickly or slowly. <b>3.3.2.B</b> Compare multiple solutions designed to slow or prevent wind or water from changing	<ul> <li>Students will understand that</li> <li>Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.</li> <li>Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter (i.e., rocks) can be described and classified by its observable properties.</li> <li>Different properties are suited for different purposes.</li> <li>Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.</li> <li>Wind and water can change the shape of the land.</li> <li>Maps show where things are located. One can map the shapes and kinds of land and water in any area.</li> <li>Asking questions, making observations, and gathering information are helpful in thinking about problems.</li> </ul>	ESSENTIAL QUESTIONS <i>Students will keep</i> <i>considering</i> 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?			
68	Knowledge and Skills Acquisition				
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the land.       Students will know       Planning and conducting an investigation collaboratively to produce data to serve as the basis for evidence to answer question.         3.3.2.C       Develop a model to represent the shapes and model to represent the shapes and and bodies of water in an arca.       Procks are earth materials.       Planning and conducting an investigation collaboratively to produce data to serve as the basis for evidence to answer question.         Physical Sciences       Rocks cane be described by the property of size.       Analyzing data from tests of a object or tool to determine if i works as intended.         Physical Sciences       Rocks cane be described by their property of size.       Constructing explanations an arca.         Physical Sciences       The properties of different earth materials are natural resources.       The properties of sand are used on sandpaper to change the surface of wood from rough to smooth.       Making observations to construct an evidence-based account for natural phenome for approperties.         3.3.2.B       Consider: What facts and basic concepts should students know and be able to receal??       Develop a model to represen particly from organic material. Soils vary by location.         Miner Tisting different winds for and water can be as old, liquid, or gas.       (Consider: What facts and basic concepts should students know and be able to receal??)       Dotain information using various texts, text features (e.g., neadings, tables of concent at a will be consellar to will a sophalt coarse engineer materials have         withich materials have       Investigation 1: First Rocks: <th>the shape of</th> <th></th> <th>STANDINGS</th> <th>Students will be skilled at</th>	the shape of		STANDINGS	Students will be skilled at
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<ul> <li>Natural sources of water include streams, rivers, ponds, lakes, marshes, and the ocean. Sources of water can be fresh or salt water.</li> <li>Water can be a solid, liquid, or gas.</li> <li>Wind and water can change the shape of land.</li> <li>The shapes and kinds of land and water can be represented by various models.</li> <li>(Consider: What facts and basic concepts should students know and be able to recall?)</li> <li>(Consider: What facts and basic concepts should students know and be able to recall?)</li> <li>(Consider: What facts and basic concepts should students know and be able to recall?)</li> <li>(Consider: What facts and basic concepts should students know and be able to recall?)</li> <li>(Consider: What facts and basic concepts should students know and be able to recall?)</li> <li>(Consider: What facts and basic concepts should students know and be able to recall?)</li> <li>(Investigation 1: First Rocks: basalt earth materials to determine which materials have</li> <li>(Prestigation 1: First Rocks: geologist materials have</li> <li>(Investigation 3: Using Rocks: materials have</li> </ul>	2			
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intended purpose.	weathering Investigation 2: River Rocks: boulder clay erosion gravel layer mixture separate settle silt	fresh water gas humus liquid retain solid	
	Sta	ge 2 – Evidence	
Evaluative Criteria	Assessment Evidence		
What criteria will be used in each assessment to evaluate attainment of the desired results? Teacher observations notes and rubric	phenomenon that rocks a investigate several kinds understand the properties (using hand lenses), rub describe rocks. After rubb find that rock is hard but Students also begin to or Assessment: Investigation II. Performance Task(s): different-sized river rocks the rocks using a series of of rocks: large pebbles, s gravel, and sand. They ad discover silt and clay. Stu and compare slow landform	Students are introduced to the are not all the same. They of <i>volcanic rocks</i> and begin to s of rocks. Students observe rocks rocks, wash rocks, sort rocks, and oing two samples together, students also susceptible to weathering. ganize a class rock collection.	<ul> <li>Differentiation Considerations:</li> <li>Read tasks and all questions aloud.</li> <li>Provide embedded notes when possible (via FOSS)</li> <li>Accept verbal responses in lieu of written responses.</li> <li>If challenges arise with complexity of the task(s): <ul> <li>smaller steps and/or</li> <li>alternative activities will be provided.</li> </ul> </li> </ul>

**Assessment**: Investigation 2 I-Check

III. Performance Task(s): Students learn how people use earth materials to construct objects. They make rubbings from sandpaper, sculptures from sand, decorative jewelry from clay, and bricks from clay soil. They go on a schoolyard field trip to look for places where earth materials occur naturally and where people have incorporated earth materials into building materials. Students discover that rock as a resource is a natural phenomenon occurring in predictable locations all over Earth's surface.

Assessment: Investigation 3 I-Check

IV. Performance Task(s): Students first investigate a common phenomenon on the surface of Earth—soil. They put together and take apart soils. They are introduced to humus as an ingredient in soil. Homemade and local soils are compared, using techniques introduced in Investigation 2, including water. Students read about sources of natural water, sort images of water sources, both fresh and salt, and discuss where water is found in their community. Students compare different solutions presented in readings to slow the effects of wind and water erosion. They learn about different ways to represent landforms and bodies of water.

**Assessment**: Investigation 4 I-Check

2. Other Unit Activity: What are Minerals:

**Description:** In this lesson, students will learn "that rocks are made up of one or more minerals. The minerals are the components and are pure nonliving materials made up from one or more elements... - the cookie is the rock, and the ingredients are the minerals."

	<ul> <li>Standards: This lesson aligns to Essential Standard 1.E.2.1, "Summarize the physical properties of Earth materials, including rocks, minerals, soils and water that make them useful in different ways." The essential question for today is "What is a mineral?"</li> <li>Task: Students will "dissect" a cookie. They will use popsicle sticks, toothpicks, etc. to break apart a cookie.</li> <li>Assessment: They will draw diagrams, record their observations, and include labels and realistic observational data.</li> </ul>	
What criteria will be used in each assessment to evaluate attainment of the desired results? Rubrics	OTHER EVIDENCE: • Student Notebook Entries	<ul> <li>Differentiation Considerations:</li> <li>For journal entries, consider that some students may wish to: <ul> <li>draw instead of write entries</li> <li>write in their first language</li> </ul> </li> <li>If challenges arise with complexity of the task(s): <ul> <li>smaller steps and/or</li> <li>alternative activities will be provided.</li> </ul> </li> </ul>