

# Anoka Hennepin K-12 Curriculum Unit Plan

Department: Science

Course/Grade Level: 1

Unit Title: Pebbles, Sand and Silt

Number of Lessons/Days: Trimester One- 10 60-minute sessions

**Unit Summary:** Students will investigate the natural world by using simple tools to describe, sort and classify earth materials. They will group earth materials based on properties of size, shape and color and observe their similarities and differences. The students will explore places where earth materials are found and used in everyday life. Students will organize and communicate observations through drawing and writing. They will acquire the vocabulary related to the earth materials unit.

## DESIRED RESULTS (STAGE 1)

### Program Understanding and/or Minnesota State/Local/Core Standards and Technology Standard(s) addressed:

- I. Students will understand that earth and space are composed of different systems and cycles that influence their daily lives.
- IV. Students will understand that the study of science involves processes that unify science disciplines and provide students with ideas and structures to help them understand the natural world.
- V. Students will understand that the process of inquiry is the collection of information verified through observation and experimentation which allow scientists to critically analyze, draw conclusions and make inferences about the natural world.
- VI. Students will understand that scientists use various communications to share knowledge and promote understanding about our natural world.
- VIII. Students will understand that scientists use and design technology to answer questions, share information and solve problems.
- IX. Students will understand that science reflects its history and is an ongoing, changing enterprise that often leads to looking at old observations in new ways.

### MN Standards and Benchmarks

- 1.1.1.1 Scientists work as individuals and groups to investigate the natural world, emphasizing evidence and communicating with others.
  - 1.1.1.1.1 When asked "How do you know?," students support their answer with observations. *For example:* Use observations to tell why a squirrel is a living thing.
  - 1.1.1.1.2 Recognize that describing things as accurately as possible is important in science because it enables people to compare their observations with those of others.
- 1.1.3.2 Men and women throughout the history of all cultures, including Minnesota American Indian tribes and communities, have been involved in engineering design and scientific inquiry.
  - 1.1.3.2.1 Recognize that tools are used by people, including scientists and engineers, to gather information and solve problems. *For example:* Magnifier, snowplow and calculator.
- 1.3.1.3 Earth materials include solid rocks, sand, soil and water. These materials have different observable physical properties that make them useful.
  - 1.3.1.3.1 Group or classify rocks in terms of color, shape and size.
  - 1.3.1.3.2 Describe similarities and differences between soil and rocks. *For example:* Use screens to separate components of soil and observe the samples using a magnifier.
  - 1.3.1.3.3 Identify and describe large and small objects made of Earth materials.

<p><b>Overarching Understanding(s) from Curriculum Map/Course Understandings:</b></p> <p><i>Students will understand that....</i></p> <ul style="list-style-type: none"> <li>• earth materials have observable properties that we use to describe and sort them and make them useful.</li> <li>• scientists ask questions and make observations to gather data and learn about their world.</li> <li>• scientists work individually and collaboratively to understand the natural world and learn from one another.</li> <li>• men and women throughout the history of all cultures, including Minnesota American Indian tribes and communities, have been involved in engineering design and scientific inquiry</li> </ul> <p><b>Topical Understanding(s) Specific to Unit:</b></p> <p><i>Students will understand that....</i></p> <ul style="list-style-type: none"> <li>• scientists use a variety of methods and tools to observe the natural world and communicate their discoveries with others.</li> <li>• solid rocks, sand and soil have observable physical properties that make them useful.</li> <li>• men and women throughout the history of cultures have utilized earth materials to sustain and enhance life.</li> </ul>	<p><b>Essential Question(s) from Curriculum Map/Course Essential Questions:</b></p> <p><i>To understand, student will need to consider such questions as...</i></p> <ul style="list-style-type: none"> <li>• How and why do we sort earth materials?</li> <li>• How do scientists make observations?</li> <li>• Why and how do scientists share ideas?</li> <li>• What are science tools? How do we use them?</li> <li>• What contributions have been made to engineering and science?</li> </ul> <p><b>Topical Essential Questions for Unit:</b></p> <p><i>To understand, student will need to consider such questions as...</i></p> <ul style="list-style-type: none"> <li>• How do scientists observe and share their ideas?</li> <li>• How do properties help scientists sort earth materials?</li> <li>• How are earth materials used in everyday life?</li> </ul>
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<i>To understand, student will need to...</i>	
<b>know...</b> Student will need to know the following in order to...(e.g. facts, concepts, generalizations, rules, theories, principles)	<b>be able to...</b> (Students will be able to DO...skills, procedures, processes)
<ul style="list-style-type: none"> <li>• there are different kinds of earth materials (solid rock, sand, soil and water).</li> <li>• objects can be describe by their properties such as color, size and shape.</li> <li>• scientists make, record and communicate observations.</li> <li>• what designed and natural systems are and that they exist in the world.</li> <li>• throughout history, man/woman of many cultures have been involved engineering design and scientific inquiry.</li> </ul>	<ul style="list-style-type: none"> <li>• identify and classify earth materials.</li> <li>• describe similarities and differences between earth materials.</li> <li>• sort earth materials based on properties (color, size and shape).</li> <li>• use tools and senses to make, record, and communicate observations using science notebooks.</li> <li>• describe ways in which humans have used earth materials to enhance everyday life.</li> </ul>

**Essential new vocabulary:**

- **clay:** a type of soil made up of very, very small pieces of rock
- **earth material:** things from the earth: rocks, minerals, soil and water
- **geologist:** a scientist who studies rocks
- **gravel:** rocks that are smaller than pebbles
- **humus:** bits of dead plant and animal parts in the soil
- **pebble:** a rock that is smaller than a cobble
- **property:** something you can observe about an object
- **rock:** a solid earth material
- **sand:** rocks that are smaller than gravel.
- **screen:** a piece of mesh used to separate a mixture
- **separate:** to take apart the ingredients of a mixture.
- **silt:** rocks that are smaller than sand; particles that are often found in sand.
- **soil:** a mixture of humus and different-sized earth materials.
- **sort:** to put objects together by similar properties.
- **texture:** how something feels; such as rough or smooth
- **tool:** an object that makes a job easier

**Common misunderstanding(s):**

- Rocks are made of only one substance.
- Any earth material is called a rock.
- For an object to be natural, it must be untouched or unchanged by humans.
- Soil and dirt are the same.
- Plants can only grow in soil.
- Making assumptions about their observations based upon what they think should happen.