# Kindergarten Mini-Unit 2 – Attributes of Earth Materials

| Elaborated Unit Focus | In this unit, students will focus on their natural interest in the world around them. Students will look at and compare rocks and other earth materials by their physical attributes. Students will also understand:  
- Earth is made of materials including rocks, soil, water and air.  
- Rocks can be recognized and grouped/sorted by physical properties.  
- Senses can be used to observe soil. |
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<tbody>
<tr>
<td>Culminating Task</td>
<td>At the end of this unit, students will cut and paste the label for Earth’s materials and write an attribute for each one on the line provided.</td>
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| GSE for Science (standards and elements) | SKE2. Obtain, evaluate, and communicate information to describe the physical attributes of earth materials (soil, rocks, water, and air).  
   a. Ask questions to identify and describe earth materials—soil, rocks, water, and air.  
   b. Construct an argument supported by evidence for how rocks can be grouped by physical attributes (size, weight, texture, color).  
   c. Use tools to observe and record physical attributes of soil such as texture and color. |
| Cross-cutting Concepts | **Structure and function:** The way in which an object or living thing is shaped and its substructure determine many of its properties and functions.  
**Patterns:** Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them. |
| Connection to Literacy Standards for Science (reading and/or writing) | **Literacy standards**  
ELAGSEKRI1: With prompting and support, ask and answer questions about key details in a text.  
ELAGSEKRI10: Actively engage in group reading of informational text with purpose and understanding. |
ELAGSEKSL1: Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion). b. Continue a conversation through multiple exchanges.

ELAGSEKSL2: Confirm understanding of written texts read aloud or information presented orally or through media by asking and answering questions about key details and requesting clarification if something is not understood.

ELAGSEKSL3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

ELAGSEKSL4: Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.

ELAGSEKSL5: Add drawings or other visual displays to descriptions as desired to provide additional detail.

ELAGSEKSL6: Speak audibly and express thoughts, feelings, and ideas clearly.

Available Literature to enhance instruction

Booksource (6 copies per school)
- **Dirt** (Level L)
- **Sand** (Level L)
- **Scoop on Soil** (Level M)
- **Let’s Go Rock Collecting** (Level N)
- **Erosion: Changing Earth’s Surface** (Level N)
- **Rocks: Hard, Soft, Smooth, and Rough** (Level N)

Essential Questions and Related Supporting/Guiding Questions

Essential Question 1
- How can we use our senses to sort Earth materials?

Troup County Schools 2017-18
Kindergarten Science
Quarter 1
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<tbody>
<tr>
<td>Essential Question 2</td>
<td>● How are rocks alike and different?</td>
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<tr>
<td>Guiding Questions</td>
<td>1. What conclusions can you draw about rocks?</td>
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<tr>
<td>Essential Question 3</td>
<td>● How can I observe and record the physical attributes of soil?</td>
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<tr>
<td>Guiding Questions</td>
<td>1. How would you organize your thoughts to show the physical attributes of soil?</td>
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<tr>
<td>Essential Question 4</td>
<td>● How can I describe Earth’s materials?</td>
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<tr>
<td>Guiding Questions</td>
<td>1. How would you demonstrate your understanding or Earth materials?</td>
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</table>
| Learning Targets | ● The students will be able to ask questions and identify earth’s materials.  
|                   | ● Using evidence, the student will be able to defend how rocks are grouped.  
|                   | ● The student will be able to observe and record the physical attributes of soil. |
**Phenomenon:**

Explain to students that you are going camping for a weekend at Lake West Point and you were curious about things you would find on your trip (in nature). Use the flip chart for students to sort objects/materials you would find on your trip. Move the materials/objects found onto the picture of West Point Lake. Discuss the materials found on the trip vs. the objects not found. Discuss what is natural and what is not.

Additional Files for Lesson:
[Phenomenon- Earth Science Flip Chart](#)
Lesson 1:

1. Explain to students that you will be taking a nature walk in an effort to find some of Earth's resources. Discuss each of the resources you will be searching for (rocks, soil, water, and air). Have a brief discussion of what these resources are.

2. Give each student a “snack” size plastic bag for rocks and several “snack” size bag for soils samples. Also have plastic water bottles to fill with water found if possible. (If not, water bottles can be prepared for later lesson.)
   a. soil samples can be found in potted plants, under grass, planting beds, or school gardens

3. Using these bags, take students on a nature walk to gather earth materials, along with rocks and soil samples from the perimeter area of your school. (You may wish to limit the number of samples students bring into the classroom.) You may also want students to bring rock samples from home in order to have a broader selection.

4. Have students place samples into the plastic bags. Soil samples should be placed in different bags to keep items from mixing together.

5. When samples are collected, bring them back to class and organize onto white paper. Be sure to let students to decide how rocks and soils should be grouped for this activity. You may wish to keep soil samples in the bags.

6. Examine attributes and decide which are the same and different. Use sticky notes to label samples by children’s description using their senses.

7. Make sure to reference the air as one of Earth’s natural resources. Have children ponder how they would collect a sample of air.

Optional Activity:

- binoculars for students to use on the nature walk -
  http://www.pbs.org/parents/crafts-for-kids/binoculars-for-kids/

Science Journal Entry: What are some ways you might capture air?
Lesson 2:
1. Place the collection of rocks from the nature walk (with any others you may have) in a backpack. Set the backpack (bag) next to you, and tell students that for the next few days, they are going to become Geologists. (Geology is the study of the solid Earth and its rocks and minerals. Geologists are the people who study them.)
2. Say: In this bag, I have some of the tools that geologists use.
3. Take out the goggles (if available), and introduce them as a tool for safety. Have a brief discussion on the correct use of goggles.
4. Take out the hand lens (magnifying glass). Introduce the hand lens as a tool for observation. Have a brief discussion on the correct use of the hand lens.
5. Take out the small bag of rocks. Ask: What are the objects in this bag called? Are all the rocks in this bag the same size, shape, and color?
6. Take out the observation forms, pencil, and book on rocks. Introduce these as other tools scientists use when making observations.
7. Place students into cooperative work groups. Give each group a collection of rocks, magnifying glasses, scales (optional) for them make observations and discuss.
8. Groups should be responsible for:
   a. Observe, describe, compare, and sort rocks by size (length).
   b. Observe, describe, compare, and sort rocks by size (weight/mass).
   c. Observe, describe, compare, and sort rocks by color.
   d. Observe, describe, compare, and sort rocks by texture.
9. Ask the groups to choose 3 rocks to place in order from smallest to largest and record findings on the form.
10. Next, ask the groups to sort their rocks by color and complete the organizer based on findings.
11. Lastly, explain the concept of texture. Have students discuss the concept, choose 2 rocks, and record their findings on observation form.
Additional Files for Lesson:
- Observation Form Size
- Observation Form Color
- Observation Form Texture

Science Journal Entry: Observation forms completed during the task.

Lesson 3:

1. Students will work in pairs to explore a soil sample. (Optional: groups of 3)
2. Say: Today, you are going to make observations about a sample of soil. You will use a toothpick as a sorting tool and hand lens to look very closely at any organisms or ‘bits’ you may find in the sample.
3. Provide a paper plate and about ¼ cup of soil that is rich in organic matter for each pair of students along with one toothpick, a pair of safety goggles (optional), and a hand lens per student or pair of students.
4. You may wish to divide your plates like this:

   Divide the plate into sections before emptying the soil. This would provide a clear section for sorting.

5. Review any safety precautions students should follow.
6. Demonstrate how to carefully empty the soil onto the paper plate. Instruct students to empty their soil onto the paper plates. Say: As you are observing your soil sample, sort the objects you find into categories. Use different parts of the paper plate for each category. Use the toothpick to help move the soil and the hand lens to observe carefully.

7. Allow time for students to investigate the objects (or organisms) they find in their sample.

8. When students have completed their observations, discuss their findings. Ask: What kinds of objects did you find in your soil sample? Answers may vary, but might include twigs, ‘bits’, insects, very small rocks. Was anything living? Answers will vary. What were other observations your group made? Answers will vary.

9. Record findings on observation form.

Additional files for lesson:
- Soil Observation Form

Science Journal Entry: Complete soil observation form with findings.

Lesson 4:

1. Give each student, or pair of students, a clear, plastic bottle filled about half way with clean water. Provide students time to explore the water. Encourage students to observe how the water moves in the bottle: tip it, rock it, roll it, spin it, swirl it, shake it, and lay it over a piece of paper and read through it.

2. Ask: (Ask the questions, but do not provide responses or have students answer until step 3 below.) What happens to the water when you turn the bottle sideways? (The water moves but is still at the bottom of the container with the air on the top.) Upside down? (The water moves to the end that is at the bottom (where the cap is located). The air is still on the top. How would you describe the ‘shape’ of water? (The water is the shape of the container on the bottom and sides and is flat on the top.) What do you see when you shake the bottle? (The water bubbles, and then becomes clear again.) Can you see through the water?
(Yes, you can see through water. Letters look magnified (bigger) when observed through the water.

3. After observing for about five minutes, call on students to share their observations about water. If students are finding it difficult to express their observations, they can be encouraged to respond to the questions listed above. After observing for about five minutes, call on students to share their observations about water. If students are finding it difficult to express their observations, they can be encouraged to respond to the questions listed above. Students may have had limited exposure to the ways water behaves and its physical properties. In this lesson, they will be gaining understanding through experiences. Guided questioning will be critical to stimulate thinking and for the completion of a KLEW chart.

4. Record observations on a KLEW chart. Students should be able to discuss what they know (K), what they are learning so far (L), and the evidence (E) to back up their claims.

5. Hold up a bottle of clean water. Ask: Why is water important? Answers may vary, but could include that it’s good when we are thirsty; we need it to live; plants need water; pets need water, etc.

6. Hold up a bottle of dirty water, and facilitate a discussion. Does this water look safe to drink? (No) Would it be healthy for our pets to drink this water? (No) (Holding the dirty water) You will work in pairs to make observations about the water in these bottles. Draw a picture of the water. Observe the water carefully, and add details about the water in your picture.

7. Distribute the drawing paper (1 piece per student) and a bottle of ‘dirty water’ per pair of students. Hand lenses would be useful tools.

8. Allow students time to draw their ‘dirty’ water in the bottle. When it appears most students have completed the task, review what students have learned.

9. Ask: What were some observations you and your partner made about the dirty water? Answers will vary, but may include that the water was brown, there were “bits” in the water, there was ‘dirt’ in the water, that it was ‘yucky’, etc. What does the word ‘clear’ mean when we are discussing water? Answers will vary, but may include that it means you can see through it, there are no bits in the water.

10. Add the student understandings to the KLEW chart. Ask if they have any questions or things they are wondering about. If appropriate, add to the ‘W’ section of the chart.
**Culminating Task**

**Lesson 7:**
1. Give each student a copy of the cut and paste.
2. Have students glue the correct word for each picture. (You may read the words aloud to students.)
3. Next, have students write one attribute on the line provided for each of Earth’s materials.

Additional Files for Task:
- Earth’s Materials Cut and Paste

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**Other lessons provided by the Georgia Department of Education:**

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<th>Activity</th>
<th>Title</th>
<th>Summary</th>
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<td>Rock Hounds</td>
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