

# Grade Earth Science Unit

Grade level: K

Unit: My Earth

Time Frame: April (2 weeks)

## Unit Essential Questions:

- How can we use our senses to sort things from the earth?
- How are rocks alike and different?
- How are soils alike and different?
- How can I describe a rock?
- How can I describe soil?

## Big ideas:

- The Earth is made of materials (rocks, sand, soil, and water) that have many different properties.

## GLCE's:

E.SE.00.11 Identify Earth materials that occur in nature (rocks, sand, soil and water).

## NGSS:

ETS 1.A: Defining Engineering Problems

A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions.

## Vocabulary

- soil
- water
- rock
- sand

## *PRE-PLANNING CONSIDERATIONS*

## Misconceptions that need to be addressed:

- Children assume that rocks are rocks. They do not discriminate. They also call hard large objects, concrete, tar, clay etc rocks. At KS2 they need assistance in simple rock classification. Children find the idea that soil is formed from very small bits of rock conceptually difficult.
- Rocks must be heavy.
- Soil must have always been in its present form.

MISCONCEPTIONS	PROPER CONCEPTIONS
Rocks do not change.	Rocks can be changed naturally by water or weather.
Rocks are all made of the same things.	There are different kinds of rocks often varying by location.
All soil is the same.	Soil has observable differences such as color and texture.

## Suggested Supplies to Gather:

Rocks

Sand

Soil

Clay

## LEARNING CYCLE INSTRUCTIONAL MODEL FOR SCIENCE

### ENGAGE (Choose 1 or 2)

*Whole Group*

<http://www.youtube.com/watch?v=IX4IZ5Y22sw&list=PLBE8AEEA7B326DA42>

<http://www.youtube.com/watch?v=WOcwF7SXkfM&list=PLDJqncXBGIMjfD0pz3EPb0krz11LfUXbj>

<http://www.youtube.com/watch?v=hTdvjRueBIM>

### EXPLORE (Inquiry )

*Part*

<https://www.georgiastandards.org/Frameworks/GSO%20Frameworks/KK%20Science%20Framework%20Rocks%20and%20Soil.pdf> (complete unit)

<http://www.brighthubeducation.com/pre-k-and-k-lesson-plans/118693-three-soil-experiments-for-kindergarteners/> (3 soil investigations)

<http://lifestyle.howstuffworks.com/crafts/other-arts-crafts/science-projects-for-kids-soil-experiments.htm> (Soil investigation)

<http://www.growingthenextgeneration.com/just-for-kids.html> (online activities)

### EXPLAIN (Choose 2-3)

*Part*

<http://rescu.rice.edu/scope/51> (Rocks, Soil, and Water -5 E lesson plan with worksheets)

<http://www.childrenoftheearth.org/soil-facts-for-kids/soil-facts-for-kids-09.htm> (digital book on soil)

<http://www.kindergartenkindergarten.com/rocks-and-soil/> (Rocks & Soil unit)

<http://www.prometheanplanet.com/en/Resources/Item/45071/young-explorer-garden-helpers#.U86shYBdUuV> (Garden Helpers Flipchart)

[http://web.b.ebscohost.com/ehost/ebookviewer/ebook/ZTg2MHhuYV9fMzkyMDMzX19BTg2?sid=9648deaa-d428-436f-b2d4-8150bd451dc6@sessionmgr110&vid=18&format=EB&lpid=lp\\_3&rid=0](http://web.b.ebscohost.com/ehost/ebookviewer/ebook/ZTg2MHhuYV9fMzkyMDMzX19BTg2?sid=9648deaa-d428-436f-b2d4-8150bd451dc6@sessionmgr110&vid=18&format=EB&lpid=lp_3&rid=0) (Rock uses ebook)

[http://web.b.ebscohost.com/ehost/ebookviewer/ebook/ZTg2MHhuYV9fNDAyNzYwX19BTg2?sid=9648deaa-d428-436f-b2d4-8150bd451dc6@sessionmgr110&vid=11&format=EB&lpid=lp\\_3&rid=0](http://web.b.ebscohost.com/ehost/ebookviewer/ebook/ZTg2MHhuYV9fNDAyNzYwX19BTg2?sid=9648deaa-d428-436f-b2d4-8150bd451dc6@sessionmgr110&vid=11&format=EB&lpid=lp_3&rid=0) (Digging on Dirt ebook)

[http://web.b.ebscohost.com/ehost/ebookviewer/ebook/ZTg2MHhuYV9fMzkyMzUyX19BTg2?sid=9648deaa-d428-436f-b2d4-8150bd451dc6@sessionmgr110&vid=11&format=EB&lpid=lp\\_3&rid=0](http://web.b.ebscohost.com/ehost/ebookviewer/ebook/ZTg2MHhuYV9fMzkyMzUyX19BTg2?sid=9648deaa-d428-436f-b2d4-8150bd451dc6@sessionmgr110&vid=11&format=EB&lpid=lp_3&rid=0) (Soil ebook)

[http://web.b.ebscohost.com/ehost/ebookviewer/ebook/ZTg2MHhuYV9fNjZlNDA1X19BTg2?sid=9648deaa-d428-436f-b2d4-8150bd451dc6@sessionmgr110&vid=11&format=EB&lpid=lp\\_4&rid=0](http://web.b.ebscohost.com/ehost/ebookviewer/ebook/ZTg2MHhuYV9fNjZlNDA1X19BTg2?sid=9648deaa-d428-436f-b2d4-8150bd451dc6@sessionmgr110&vid=11&format=EB&lpid=lp_4&rid=0) (Soil ebook-longer)

## **ELABORATE**

(Engineering Challenge)

*Whole class introduction & then Part*

### **Sand Castle Challenge**

*Materials:*

Containers for each team (i.e. cups or bowls)

1 tray per team (i.e. aluminum baking tray, lunch tray, etc...)

Soil

Sand

Rocks

Clay

1. Introduce the lesson by reading aloud or retelling the story of the Three Little Pigs.
2. Have a class conversation about the how the materials that each pig chose impacted the strength of the house. Then help them connect this understanding with the engineering project from the previous unit.
3. Tell them that the engineering challenge for this unit will be for each team to create a castle using the Earth materials that they have been studying. Let them know that they will need to build their castles so that they fit on the tray, are at least 6 inches tall, and can withstand the force of a fan.
4. Place the students into design teams of 2-3 students.
5. Have the teams discuss their ideas for building the castle.
6. Have each team choose one member to come to the materials table to gather supplies.
7. Next, have each team work on designing and building their castle.
8. After about 30-40 min. you can let the students know that the testing will begin. (You may want to have the teams store their materials in an out of the way location in the classroom if time is limited and you want to test on another day.)

### **Test Day**

9. Test each team's castle by measuring to be sure it is at least 6 inches tall. Then test it by letting an electric fan blow on it for about 30 sec. (You can decide on the fan's speed setting.)
10. At this point you can talk about and celebrate the castle designs.
11. Debrief the activity by asking each group to describe their reasons for the various features of the design. Ask them questions such as:
  - ▼ What materials did you choose to use and why?
  - ▼ Did you change your design as you went along and if so why did you make changes?
  - ▼ Can you think of ways to make your design even better?

## **EVALUATE**

*Whole*

- Student investigations and explanations.
- Circle the earth material with the smallest parts. (E.SE.00.11)
- Circle the place on the map that is made of water (E.SE.00.11)
- Circle the object that is not an earth material. (E.SE.00.11)
- Circle the object would not be a part of soil. (E.SE.00.11)