
Environmental Scientist

Overview:

This lesson and activity are designed to give students hands-on experience making predictions, collecting data and investigating rocks, soil and water.

Grade: K

TEKS

Scientific processes

K.2(C, E)

K.4 (A, B)

Science Concepts

K.6 (A, B, C)

K.7 (C, D)

K.9 (A, B, C)

Literature

Rocks in His Head

Everybody Needs A Rock

One Small Square:

Woods

Vocabulary

Rock

Soil

Water

Object

Organism

Materials

Soil, Rock and Water

Hand lens or loupe

Discovery Book

Compass

Thermometer

Ziploc Baggies

Mesh Bag w/draw string

A Closer Look

Classroom Activity

1. Begin this activity by playing the game "Rock, Paper and Scissors". Except substitute the words "rock, water and soil" for "rock, paper and scissors." For "rock" make a fist on the opposite hand, for water hold one hand above the other and wiggle your fingers back and forth, for "soil" place one hand on the other like "paper."
2. The rules are:
 - **The Rock**
Wins against the Soil (crushes it)
Looses against the Water (rock sinks in water)
 - **The Water**
Wins against the Rock (rock sinks in water)
Looses against the Soil (soil muddies water)
 - **The Soil**
Wins against the Water (soil muddies water)
Looses against the Rock (crushes it)

Start the game by tapping your fist in your palm and saying "rock, water, soil." On the third tap, use one of the three hand gestures. Make a transparency of the "Rock Water Soil" and place on the overhead projector during the game.

4. Ask your students to play the game 10 times and to keep score of the wins, lose and ties.
5. Use the "Rock Water and Soil Graph" form to make bar graphs of the game results. Ask your students if they notice any patterns. Discuss your students' observations. Spend some time making predictions and have your students record their predictions. Repeat the game again with a different partner. Are the results different? Why or why not?
6. Place a rock, cup of water and some soil on a table. Explain to your students that the class will begin a scientific study of Rocks, Water and Soil. Can your students give you examples of something made from rocks, water or soil? Discuss with your students the importance of each and give specific examples of how rocks, water and soil are important for human survival.
7. Take the class on a "Rock, Water and Soil" hike around your school. Look for examples of each in their "natural" condition and also look for examples of how each is being used to help people survive. Walk slowly and listen to your students' observations about rocks, water and soil. Be sure to take several ziploc baggies along for samples of rocks, water and soil your students will find on the hike.
8. Set up a "discovery table" in your classroom for the rocks, water and soil samples.
 - From a local creek or pond, fill a plastic gallon container with 3 inches of mud from the water source and then fill the container with the pond/creek water. Place the container near a window and observe the changes over time. This is a great activity to help students understand the concept of "succession."
 - Fill second gallon container with tap water and make predictions about when all the water will evaporate. Each week date and mark the level of water in the container.
 - Ask your students to bring in rocks from their backyards. How many different colors and textures can your class collect?
 - Ask your students to bring in a sample of the soil from their backyards. Is there a difference in colors? What about smells?
3. Read *Rocks in His Head* by Carol Otis Hurst to your class. Lead your class in a discussion about careers. How do people decide on a career? How did Carol Hurst's father finally find the job connected to his childhood passions? What careers interest your students?
10. Prior to visiting the Eastman Nature and Wildlife Habitat Center, take your class on a virtual tour of the nature trail at <http://www.eastman.com/EastmanOutdoors/trail.htm> The trail guide developed by Dr. Eric Taylor will give your students an opportunity to learn about the many different trees along the nature trail. How many of the Eastman trees are located in your school's backyard?

In the Field

A Closer Look

1. Prior to leaving your school make sure you have the following items.
 - Discovery Books
 - Ziploc Baggies (1 gallon size)
 - Pencils (inexpensive mechanical pencils are excellent)
 - Compass
 - Thermometer
 - Water
 - First Aid Kit
 - Sack Lunch or light snack
 - Camera
 - Backpack
 - Hula-Hoops
2. Before getting on the trail, remind students their observations and data collected will be used back in the classroom to create charts and graphs of their observations.
3. Set your behavior expectations before leaving the parking lot. Explain how students are to behave along the trail and in small groups. State specifically what behaviors you want to see along the trail. Remind students the higher their voices are the less likely they will see wildlife along the trail.
4. Distribute Discovery Books to students and record weather data observations. Teachers a gallon size ziploc baggie make an excellent container for pencils and Discovery Books during lunch or at the end of the day.
5. Walk through the gate and follow the trail. Remember to go slow and listen to your student's observations along the trail.
6. If you have enough adult supervision, divide your class into two groups. Have each group go in opposite directions along the trail. This will help reduce the noise level and also give your students an opportunity to share their observations when the class comes together at the halfway point. This is a good opportunity reinforce the idea that scientists share data too.

Post Eastman Activities

A Closer Look

- Ask your students to discuss their experiences while at the Eastman Nature and Wildlife Habitat Center. Did any of your students find the perfect rock?
- Write a narrative about their experiences at the Eastman nature trail.
- Have your students create charts and graphs of the data they collected while at the Eastman Nature and Wildlife Habitat Center. Compare the Eastman data with the data collected at your school. Have your students draw conclusions about their observations.
- Have your students write a narrative about their experiences. Pictures are worth a thousand words.
- Invite a Biologist to visit your classroom and discuss the importance of observation skills.
- Invite a Geologist to visit your classroom and discuss the geology of the East Texas area.
- Invite an Aquatic Biologist to visit your classroom and discuss the importance of having clean water.
- Where's Waldo is an excellent and fun activity to reinforce observation skills. A recent study found that people that can easily find Waldo make good Biologists.
- Student produced books about their observations.
- Lead your class in a discussion about careers connected with soil, water and rocks.

Weather Data

Date: _____ Time: _____

Location: _____

Present Weather: _____
(Clear, Cloudy, Overcast or Raining)

Air Temperature: _____ Celsius

Air Temperature: _____ Fahrenheit

Wind: _____
(Which direction is the wind coming from?)

Rock Water Soil

The Rock

Wins against the Soil (crushes it)

Looses against the Water (rock sinks in water)

The Water

Wins against the Rock (rock sinks in water)

Looses against the Soil (soil muddies water)

The Soil

Wins against the Water (soil muddies water)

Looses against the Rock (crushes it)

Rock Water Soil Graph

	Wins	Loses	Wins	Loses	Ties
10					
9					
8					
7					
6					
5					
4					
3					
2					
1					
0					
Name					Cat

Resources

Publications

Rocks in His Head by Carol Otis Hurst

Everybody Needs A Rock by Byrd Baylor

The Other Way to Listen by Byrd Baylor

Peach and Blue by Sarah Kilborne

One Small Square: Woods by Donald M. Silver

Field Guide for the Eastman Nature and Wildlife Habitat Center by Eric L. Taylor, Ph.D.

Web Pages

One Inch Square Project

<http://www.hhmi.org/coolscience/inchsquare/index.html>

Who Eats What

<http://www.kidport.com/GradeK/Science/WhoEatsWhat.htm>

Collecting Rocks

<http://pubs.usgs.gov/gip/collect1/collectgip.html>

Rock Hound

<http://www.fi.edu/fellows/fellow1/oct98/act/index.html>

The Magic School Bus Games

<http://www.scholastic.com/MagicSchoolBus/games/home.htm>

Using Live Insects

<http://insected.arizona.edu/uli.htm>

Children's Literature

<http://www.carolhurst.com/profsubjects/tchgphysclscience.html>