

Soil & Natural Resources

2013 National Conference Highlights



Time to Trade!

(Presented by Susan Schultz, National Association of Conservation Districts)

Common Core:

CCSS.ELA-Literacy.RI.4.1; SL.4.1

Next Generation Science Standards:

Structure, Function, and Information Processing: 4-LS1.A

Suggested Reading:

Soil Ag Mag

Energy Ag Mag

Materials needed:

- Trading cards (made from construction paper)
- For a group of 30 students you will need approximately:
 - ◇ 30 white
 - ◇ 30 yellow
 - ◇ 60 orange
 - ◇ 60 brown
 - ◇ 60 blue
 - ◇ 60 green
 - ◇ 150 solid green rectangles (made from green construction paper)
 - ◇ 30 envelopes

- In each envelope:
 - 1 white, 1 yellow, 2 brown, 2 orange, 2 blue, 2 green and 5 solid green cards

Directions:

1. Tell the students that the ORANGE cards represent gold and the SOLID GREEN cards represent money. Do NOT tell them what the other cards represent. **Give them two minutes to trade with AT LEAST two people.** Example: They can trade two brown for two blue, one white for one yellow, etc. You should have no more and no less than 15 cards in your hand at all times.
2. Have the students sit down and sort their cards by color.
3. Have the students all stand. Ask if they have a WHITE card (if they don't they must sit down).
 - Explain that the white card represents air. Air is a resource that plants and animals need to survive. Animals breathe in oxygen and exhale carbon dioxide. Plants take in carbon dioxide, use it to make food, and give off oxygen. Animals will then breathe it in again.
4. Ask if they have a YELLOW card (if they don't they must sit down).
 - Ask the students what they think the yellow card represents. Explain that it represents sunlight. Sunlight is a resource that provides warmth. Without the sun, plants and animals would not survive.
5. The students with a BLUE card may remain standing.
 - Blue represents water. Water rains down on the land. Water collects in oceans, rivers, lakes and streams. Water helps our plants grow.
6. The students with a BROWN card will remain standing.
 - Brown represents the soil. Soil is among the most important natural resource on the earth's surface.

Time to Trade!

7. Lastly, students with a GREEN card will remain standing.
 - Green represents the plants that grow from the soil. Plants provide food for animals.
8. Those still standing have survived! Discuss the importance of the things that are necessary for plants and animals to survive and those that are usually associated with wealth. Money can't buy air, sunlight, rain water, etc. and without those things plants and animals couldn't live. So we ALL must take care of our natural resources.

Lesson Extender:

Let's make Soil art!

Materials:

- Soil (dried in air)
- Hammer or mallet
- Mortar and pestle (rubber-tipped) or nylons and a cup
- Paper cups (4 oz.)
- Pencils, color pencils, markers
- Ink pens
- Paint brushes
- White glue watered down or liquid starch
- White paper or water color paper
- Masking tape
- Clothes line and clothes pins to use for drying



Directions:

1. Gather soils of various colors.
2. Place each dried soil sample on a piece of paper or cloth and crush into pieces with a hammer or mallet.
3. Place some of the crushed soil into a mortar. Use a rubber-tipped pestle to crush the soil into a fine powder. Repeat to crush all of the different colored soils. You can also use nylons (panty hose) to sift the soil into cups.
4. Place the different soils in paper cups.
5. Lightly sketch art work on water color paper with a pencil. Use ink to trace over the pencil lines.
6. With masking tape, carefully tape paper edges to table. This is done so that the art work will dry flat. Pour small amounts of the white glue that is watered down, or the liquid starch in small paper cups and add a variety of colors. Add small amounts of soil.
7. Use different sizes and kinds of paint brushes.
8. When your art work is dry, you may apply another layer of soil paint.
9. You may want to use a black ink pen to make finishing touches on your artwork.
10. The younger students can make soil creatures by using their thumb to dip into the paint and place their thumb print on the paper. Use markers, pens or pencils to make the creatures.

⇒ Follow this link to see many other lesson ideas from the National Resources Conservation Service (NRCS).

<http://soils.usda.gov/education/resources/lessons/painting/>

Blue

Blue

Blue

Blue

Blue

Blue

Blue

Blue

Blue

Brown

Brown

Brown

Brown

Brown

Brown

Brown

Brown

Brown

Green	Green	Green
Green	Green	Green
Green	Green	Green

Orange

Orange

Orange

Orange

Orange

Orange

Orange

Orange

Orange

White

White

White

White

White

White

White

White

White

Yellow

Yellow

Yellow

Yellow

Yellow

Yellow

Yellow

Yellow

Yellow

Fun with Soil

(Presented by Susan Schultz, National Association of Conservation Districts)

Learn about your state's soil and why it is one of the most important natural resources.

Common Core:

CCSS.ELA-Literacy.SL.4.1; RI.4.3

Next Generation Science Standards:

Structure, Function, and Information Processing: 4-LS1.A

Suggested Reading:

Soil Ag Mag

A Handful of Dirt by Raymond Bial (ISBN-13: 978-0802786982)

Seed Soil Sun by Cris Peterson (ISBN-13: 978-1-59078-713-7)

Diary of a Worm by Doreen Cronin (ISBN-13: 978-0060001506)

Materials needed (per student):

1 large piece graham cracker

1 rounded T chocolate frosting OR vanilla frosting

1 strip blue gel frosting

1 tsp green sugar crystals

1 gummy worm sweet or sour

Food coloring (to use with the vanilla frosting)

Directions:

1. First, choose five states to concentrate on for this activity. Break the students into groups of five and allow the small groups time to research a specific state's soil. Have the groups make a small list of important facts about the soil.
2. Give each individual a graham cracker. Have the students bite the edges of the graham cracker to match the outline of the state assigned to them.

3. Have the students spread chocolate frosting on their graham cracker. The students can also use vanilla frosting and add food coloring to match the state's soil they researched. Have a class discussion about the importance of soil and about the five different soils.
 - **Soil is one of the most important natural resources. Most life on earth depends upon the soil for food. Everyone must take an active role in improving and preserving our Earth's soil. It can take, on average, 500 years to form one inch of topsoil. Topsoil is where the plants grow. If farmers don't protect this layer, wind or water erosion can wash away this valuable layer. Most nutrients, organisms, and roots are in this layer.**
4. Sprinkle green sugar on your graham cracker.
 - **Living plants are rooted in the soil and get nutrients from it. Animals also get nutrients from eating the plants grown in the soil.**
5. Squeeze a small strip or small circle of blue gel frosting on your graham cracker.
 - **Rain/water is needed for the plants to grow. Use a strip of blue gel frosting to create one of the main rivers in the state given to you or a small circle to show a main lake.**
6. Lastly, add a gummy worm.
 - **Earth worms take care of the soil. They help to increase the amount of air and water that get into the soil. They break down organic matter into things that plants can use.**



I have..... Who has?

(Presented by Karrie Perrin, Toccoa Elementary School, Georgia)

Common Core:

CCSS.ELA-Literacy.RI.4.1; SL.4.1

Next Generation Science Standards:

Ecosystems: Interactions, Energy, and Dynamics: 5-LS2-1

Suggested Reading:

Soil Ag Mag

Materials needed:

- Questions located on page 14 (print and cut out)
- Notecards (questions will be glued to the notecards)
- Glue sticks
- Soil Ag Mags (one per student)

Directions:

1. Begin the lesson by allowing time for the students to read through the Soil Ag Mag.
2. As a class, discuss the Ag Mag and have students take turns sharing what they have learned from each section.
3. Next, mix up the notecards and hand them out to the students.
4. Begin with the individual that has the notecard that says, "I have topsoil. Who has the soil that is made up of mostly sand?" They will start by ONLY reading the question. The class will continue with the questions until they reach the final question, "Who has the layer of soil where plants grow?" The person who began will have the answer to that question which will end the game.
5. Mix up the cards and play again! This is a great way for the students to study for an upcoming quiz/test.

Lesson Extender:

Tie-Dye shirts using soil!

- Find soils from many different states before you begin this activity. Soils come in black, red, yellow, white, brown and gray!

Directions:

1. Prewash a white shirt.
2. Roll and/or tie shirt with rubber bands.
3. Soak in a water/soil mixture (3:1 ratio).
4. Remove from soil after allowing shirt to soak for at least 4 hours.
5. Rinse using cold water and allow time to dry.
6. Heat set using an iron or hot dryer.
7. Wash shirt with like colors.

TAGriculture activity submitted by Julie Heyen

<p>I have topsoil.</p> <p>Who has the soil that is made up of mostly sand?</p>	<p>I have sandy soil. Sandy soil feels gritty and allows water and air to move through it.</p> <p>Who has the fertilizer found in the air and soil?</p>	<p>I have nitrogen. Farmers add nitrogen to the soil to plant different crops, at different times, in the same field.</p> <p>Who has the most important natural resource on the earth's surface?</p>	<p>I have soil. Most life on earth depends upon the soil for food.</p> <p>Who has the bottom layer of soil?</p>
<p>I have parent material. It is found about three feet below the surface in the Midwest. It is more compact and often has stones and rocks in it.</p> <p>Who has how soil is formed?</p>	<p>I have from rocks and minerals very slowly breaking down and organic matter slowly accumulating as humus.</p> <p>Who has how many layers soil has?</p>	<p>I have three layers. Topsoil, Subsoil and Parent Material are the three layers of soil.</p> <p>Who has what percentage of soil is made up of water?</p>	<p>I have 25%.</p> <p>Who has the percentage of organic matter in the soil?</p>
<p>I have 5%.</p> <p>Who has how much mineral matter is found in the soil?</p>	<p>I have 45%.</p> <p>Who has the layer of soil where plants grow and where most nutrients, organisms, and roots are found?</p>		

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