www.MaineAgintheClassroom.org

The Incredible Edible Soil

by Caroline Moore

from *FoodCorp Maine*

Revised to allow for standards alignment

Grades 2-5

Common Core: ELA

W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
W.3.7 Conduct short research projects that build knowledge about a topic.
W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.
RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.
RI.5.9 Integrate information from several texts on the same topic in order towrite or speak about the subject knowledgeably.

Common Core: MATH

2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks and measuring tapes.
2.MD.D.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole number units.

Lesson Description: Soil is the foundation of our whole food system, but is often cast aside as "just dirt." This hands-on lesson allows students to explore the composition of soil and why it is so important, looking at different soil samples and then building their own edible "soil."

Learning Objectives

The student will:

- Explain what soil is
- Identify the four components of soil (organic materials, inorganic materials, water, air)
- Explain the difference between organic and inorganic materials
- Make predictions regarding soil composition of samples
- Measure and graph soil component results of soil demonstration
- Explain the importance of soil to their lives
- Describe the types of foods found in healthy snacks

Teacher Preparation

1. Collect 3 soil samples, one each from the school yard, garden, and play-ground. Also include 1 sample of potting soil available from gardening stores. Place the samples in plastic bags, labeling each with the location where sample was collected.
2. Collect 4 jars of the same size. Jars that are narrow and tall will work best for showing results (olive jar shape).
3. Purchase snack size zip-lock bags, Chex cereal, dried cranberries, sunflower seeds
4. Have several tablespoons available.

Procedure:

1. Students will brainstorm what they think soil is. Place ideas on chart paper so they can be displayed.
2. Introduce the four components of soil
3. Have students research the 3 types of inorganic materials (sand, silt, and clay), noting the properties of each in terms of water flow and retention.
4. Discuss organic and inorganic material, use a T-chart to compare the two.

ORGANIC	INORGANIC

5. Classroom demonstration:
   a. Place 1 cup of soil from each bag into a jar (soil should take up no more than ½ the space in the jar, adjust as needed keeping samples the same amount). All Jars should be the same size. Be sure to label each jar with the same label on the plastic bag.
   b. Add water to 1 inch below the top of the jar and cap.
   c. Ask students to make a hypothesis (prediction) about what they think will happen when you shake the jars. Record predictions.
   d. Shake each jar for 15 seconds and let sit overnight.
   e. Have students observe and record results, identifying the layers of clay and sand in the jars and noting their relative thickness and position. You may use the visual of a basketball, a baseball, and a marble to help students visualize the size difference between sand, silt and clay.
6. Discuss which soil sample would be best for growing crops.
7. Using resources in the room, have class find the definition of **loam,** giving the proportions of sand, silt and clay.
8. Students will make their own loam soil trail mix using Chex cereal (4 Tbs.), dried cranberries (4 Tbs.), and sunflower seeds (2 Tbs.), respectively.
9. Eat & Extend – As students enjoy their snack, discuss how soil composition varies with location, both locally and nationally (much like different trail mixes with different amounts of each ingredient). Discuss other healthy homemade snacks and how they relate to a healthy soil.
10. Have class brainstorm ways that soil supports animals and plants that we use for medicine, shelter and other products, rather than just food.
11. Students will write a paragraph about the importance of soil to people.

Variations

This lesson can be a modified for students of all ages, by altering the level of information provided and the level of extension activities. Alter ingredients as you see fit, maintaining relative differences in "particle" size. Keep in mind the level of cognitive demand and what students are required to know and be able to do to further alignment at other levels.