

Soil Lessons



Grade band

K-2 (best suited for 2nd grade, but could be used in upper grades as an introduction to the importance of soil resources)

Type of Lesson

- A. demonstration (teacher demo)
- B. Activity (at student desks)

Amount of Time

Teacher prep: 10 minutes to cut out photographs and gather materials 30-40 minutes for student lesson

Materials

Worksheets with 18 common object images (can cut individual photos and laminate if needed), answer sheet or sorting chart. Cereal bowl, glass of juice, banana, soil sample, sand sample, clay sample.

Student Learning Objectives

The learner will be able to identify various everyday products that came from the ground and whether they came from sand, clay, or soil. The student will be able to explain that soil is an important natural resource for many everyday products.

Next Generation Science standards—K-12 Disciplinary Core Ideas:

PS1.A: Different properties are suited for different purposes

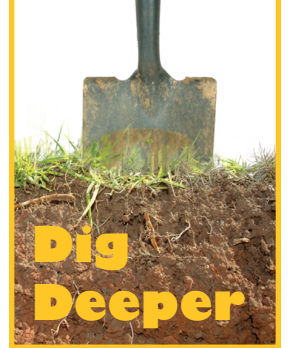
PS1.A: A great variety of objects can be built up from a small set of pieces

ESS3.A: Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.

Soil Science Society of America
www.soils.org

Dirt Made My Breakfast?

How Soil IS Connected To The Products We Use Everyday



Summary

The students will learn that soil (not dirt) is needed to create many of the products that we use in everyday life. Without soil we would not have any food to eat, clothing to wear, or materials to build homes and make things that we use. Give an example of how a chair is made from wood, and wood comes from a tree which had to grow in soil. Another example is how glass is made from sand (the largest type of soil particle) that has been melted. Lastly, anything made from ceramics or porcelain started as clay (the smallest type of soil particle) in the ground.

Why is this subject/activity important: Without protection of our soils, we would not be able to have healthy and delicious food. Some growers and restaurants have started a movement, called Farm to Table, to help educate the public about the importance of soils—and farms—to our nutrition. This helps reconnect society to the source of their food.

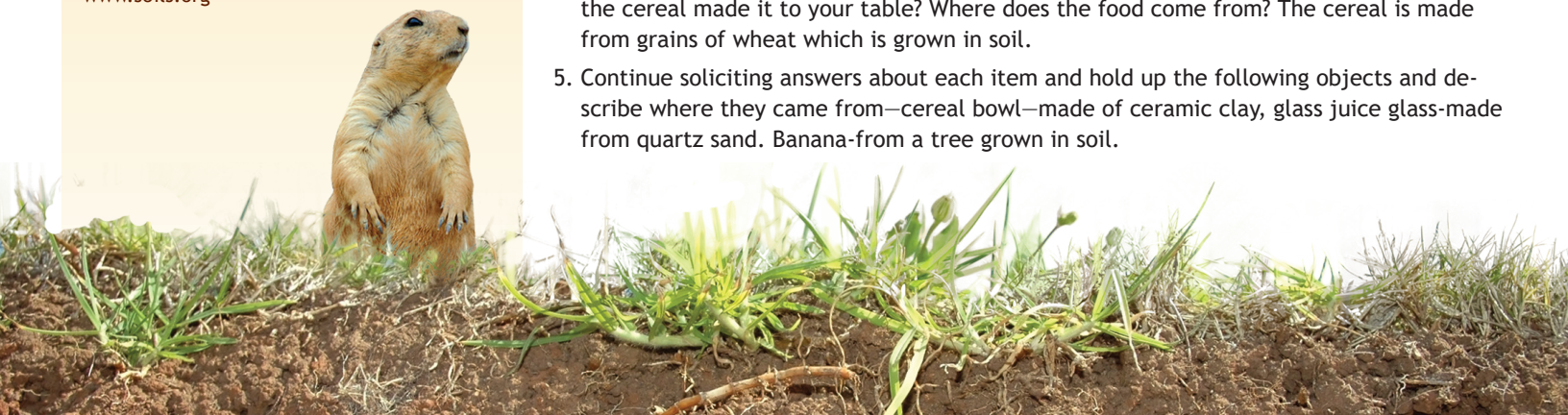
Teacher Background Information:

Soil is composed of different-sized particles of sand, silt, and clay. These soil particles and a mix of ingredients including minerals, air, water, and organic matter (decaying remains of once living things like leaves and bugs) make up soil. Some soils might be mostly sand particles, or clay particles, or a good mix of ingredients.

Soils are one of our most important natural resources. Without them, many things that we use every day wouldn't exist. Even the creation of some plastics involves soil, because plastics are made from oil found deep under the Earth's surface. Millions of years ago plants grew and died and mixed with animal remains and over time were buried and compressed, becoming oil. All fossil fuels (coal, oil, and natural gas) formed in the same manner. For more information, the following website provides information regarding common products and what they are made from: www.soils.org/files/sssaiys/soil-connects-to-products-we-use.pdf

Engagement:

1. To begin the lesson and get children engaged, have a typical breakfast (bowl of cereal, banana, and glass of juice) sitting on your desk or at the front of the room. Students will be curious why the food is sitting on the table.
2. Ask the children—is there one thing that is required for ALL of these items that are sitting in front of the room? Ask for answers. Possible responses are food, farmers, plants, fruit, etc.
3. Once student responses have been recorded, discuss the fact that all of these things you had for breakfast came from something in the ground which required soil. Show an example of soil to the children and pass around to let them touch it.
4. Describe each item and what it came from. Ask the students if they have any idea how the cereal made it to your table? Where does the food come from? The cereal is made from grains of wheat which is grown in soil.
5. Continue soliciting answers about each item and hold up the following objects and describe where they came from—cereal bowl—made of ceramic clay, glass juice glass—made from quartz sand. Banana—from a tree grown in soil.





6. Soil is the basis for many of the natural resources used in the products we use in our everyday life. Some are more obvious (i.e., plants that produce food grows in soil) and some are less so (i.e., how plastics connect to the soil).
7. Now introduce the idea that rocks break down into smaller particles known as sand, silt and clay. These particles make up all soils. Individually, sand is used to create glass products and clay is used to create ceramics and bricks. Allow children an opportunity to touch and feel these different materials. Without soil and its particles of sand, silt and clay, we would not be able to live the life we do with all of these different products.

Methods/Procedure/Exploration

1. Now the children are going to have an opportunity to explore more products and try to figure out what earth material they came from: Soil, Sand or Clay.
2. You can do this activity several ways:
 - a. **SET UP A SCAVENGER THROUGHOUT THE CLASSROOM:** In the classroom, cut out individual photos (18) and set out throughout the room, or have real examples of these everyday items. Students will engage in a “scavenger hunt” around the classroom to find things that came from either Soil, Sand, or Clay. Allow learners an opportunity to circle the correct earth material for each of the 18 pictures on their own answer sheets.
 - b. **GROUP ACTIVITY AT DESK:** Alternatively, student groups could be given the 18 pre-cut individual cards and asked to sort them on a chart.
 - c. **ONLINE ACTIVITY:** Pictures could be put in a Google Slides presentation and children can manipulate online.

Discussion/Explanation—Bring the group together to discuss the findings using the provided answer key.

1. Which products were the easiest to identify? Possible likely responses are the food items are the easiest and the discussion should focus on the importance of having healthy soil for food to grow.
2. Which products were the most difficult to identify? Why were these items more difficult to identify? Anything made of plastic comes from oil (fossil fuels) which are remains of once living plants that have been buried and compressed over millions of years. This may be a very difficult concept for younger children to understand.
3. If you are working with older students some of the items could be multiple resources. For example, the computer is made of plastic and silicon computer chips. Pencils are made of wood and graphite and clay.
4. Why is it important to take care of our soil? Without healthy soil we wouldn't have food to eat. We need soil to make things we use.

Elaboration—For an extension or homework, ask learners to pick one small thing in the classroom or at home that came from soil, sand or clay. Students could bring the item into class as part of a show and tell. Set up three corners of the room with the tags—soil, sand, clay. Ask students to go to the appropriate corner of the room with their item. Go over responses and see if children agree with the selections-using thumbs up/thumbs down.

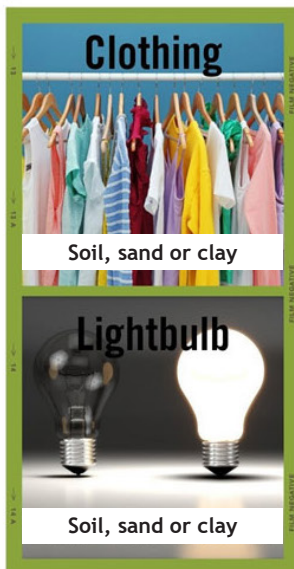
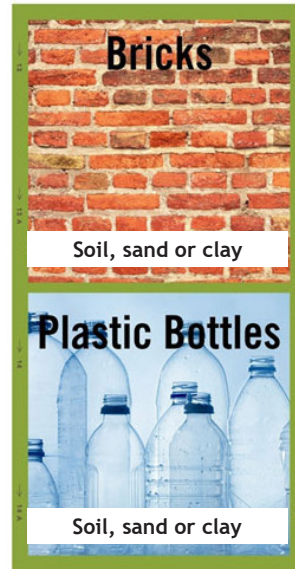
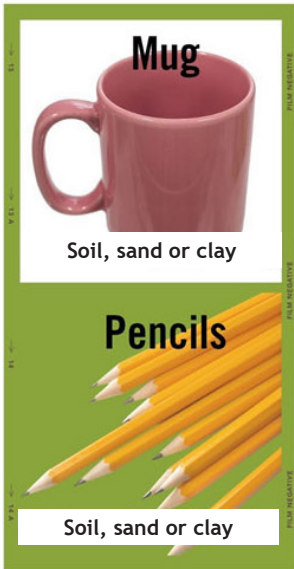
Evaluation—Based on activity results or homework assignment, assess students' understanding of whether a product comes from sand, clay or soil.

Developed By: Tina Miller, Farm Educator, Grow It Green Morristown

PPT with images available at: www.soils4teachers.org/files/s4t/lessons/products-that-come-from-soil-online-activity.pptx



Did the product come from Soil, made from Sand or made from Clay?



Circle the correct answer for each product.

★★Remember plants and trees grow in Soil, sand makes glass, clay makes pottery★★

Chart to Sort Items

Soil



Sand



Clay



| | | |
|--|--|--|
| | | |
|--|--|--|

STUDENT ANSWER SHEET FOR SOILS SCAVENGER HUNT.

CIRCLE THE CORRECT ANSWER FOR EACH ITEM.

- | | | | | |
|-----|-----------------|------|------|------|
| 1. | MUG | SOIL | SAND | CLAY |
| 2. | GLASSES | SOIL | SAND | CLAY |
| 3. | BRICKS | SOIL | SAND | CLAY |
| 4. | PENCIL | SOIL | SAND | CLAY |
| 5. | FRUIT | SOIL | SAND | CLAY |
| 6. | PLASTIC BOTTLES | SOIL | SAND | CLAY |
| 7. | GLASS BOTTLES | SOIL | SAND | CLAY |
| 8. | CLOTHING | SOIL | SAND | CLAY |
| 9. | VEGETABLES | SOIL | SAND | CLAY |
| 10. | WOOD CHAIR | SOIL | SAND | CLAY |
| 11. | LIGHTBULB | SOIL | SAND | CLAY |
| 12. | PLATE | SOIL | SAND | CLAY |
| 13. | PAPER BAG | SOIL | SAND | CLAY |
| 14. | BREAD | SOIL | SAND | CLAY |
| 15. | APPLE | SOIL | SAND | CLAY |
| 16. | COMPUTER | SOIL | SAND | CLAY |
| 17. | PAPER TOWELS | SOIL | SAND | CLAY |
| 18. | GLASS WINDOWS | SOIL | SAND | CLAY |

Teacher answer key for Soils Scavenger Hunt.

| | | | | | |
|-----|-----------------|------|------|------|---|
| 1. | MUG | SOIL | SAND | CLAY | ceramics and porcelain are clay |
| 2. | GLASSES | SOIL | SAND | CLAY | glass is melted quartz sand |
| 3. | BRICKS | SOIL | SAND | CLAY | bricks are made from clay |
| 4. | PENCIL | SOIL | SAND | CLAY | pencils contain wood from trees |
| 5. | FRUIT | SOIL | SAND | CLAY | plants grow in the ground |
| 6. | PLASTIC BOTTLES | SOIL | SAND | CLAY | plastic comes from oil (fossilized plant) |
| 7. | GLASS BOTTLES | SOIL | SAND | CLAY | glass is melted quartz sand |
| 8. | CLOTHING | SOIL | SAND | CLAY | cotton comes from plants |
| 9. | VEGETABLES | SOIL | SAND | CLAY | plants grow in the ground |
| 10. | WOOD CHAIR | SOIL | SAND | CLAY | wood comes from trees |
| 11. | LIGHTBULB | SOIL | SAND | CLAY | glass is made from melted sand |
| 12. | PLATE | SOIL | SAND | CLAY | ceramics and porcelain are clay |
| 13. | PAPER BAG | SOIL | SAND | CLAY | trees make paper |
| 14. | BREAD | SOIL | SAND | CLAY | plants grow in the SOIL |
| 15. | APPLE | SOIL | SAND | CLAY | plants grow in the SOIL |
| 16. | COMPUTER | SOIL | SAND | CLAY | silicon chips are made from sand |
| 17. | PAPER TOWELS | SOIL | SAND | CLAY | paper is made from trees |
| 18. | GLASS WINDOWS | SOIL | SAND | CLAY | glass is made from melted sand |