

# Soil Discovery

## Lesson Description




In this lesson, students learn about the components of soil. They learn why soil is important for plants. They plant a seed and take home the plant to watch it grow. They make “mudshakes” to observe the different particles in soil.

- Time required: 60 minutes
- Location of lesson: Classroom and garden

## Learning Objectives



- Identify the three components of soil: sand, clay and silt.
- Describe how each component of soil looks and feels.
- Appreciate the necessity of soil for plants to grow.

## Materials and Preparation


- Soil – 1 large bag
- Different types of seeds (flowers and/or vegetables) – at least 1 per student
- Samples of sand, silt and clay (if available)
- Planter containers or paper cups – 1 per student
- Clear jars with lids (e.g. Mason jars) – 1 per every 3 students
- Trowels – 1 per every 3 students
- Water – 1 gallon
- Masking tape
- Markers – 1 per every 3 students
- Before class, prepare the jars by filling them 2/3 full with water and put a piece of masking tape on each jar so that the students can label it during the activity.
-  **Soil Discoveries**
-  **Making Mudshakes**
-  **Soil Images** – print this and bring to class
- Prepared vegetable snack of the week – 1 for each student
- Water to drink during the Class Warm-up – water dispenser in the classroom and 1 cup or a water bottle for each student

## Class Warm-up: Champion Cheer and Veggie Taste Test (5-10 minutes)

- Give each student a cup of water or ensure that they have a filled water bottle in front of them.
- Give each student the prepared veggie snack of the day.

- Lead the students in enthusiastically reciting the  **Champion Cheer**.
- At the end of the cheer, drink water and eat the veggie snack together.
- Have students complete their  **Taste Test Observations** about the vegetable snack of the week.

### Review of Last Lesson (2-3 minutes)

- Review the evaluation questions from last week's lesson. Evaluation questions from all lessons are listed at the end of the workbook .

### Class Discussion (5 minutes)

*Today we are going to be learning about soil. What is soil? Where do we find soil?*

*Why do we call soil "the foundation of life"? (Answer: it is the starting point for so many things that we see in our world and use in our daily life)*

*Soil is one of the Earth's most important natural resources. Everything that we eat can be traced back to soil. What foods have you eaten today? How are they traced back to soil? (some examples: eggs come from a chicken that eats seeds that grow in soil; bread comes from wheat that grows in soil; fruit comes from a plant or tree that grows in soil)*

*Animals use soil for shelter. What kinds of animals do we see living in soil? (examples - worms, ants)*

*Plants use soil for food. What kinds of plants in our garden are in soil? (all of them!)*

*Soil is better than dirt for plants to grow. Soil has living things in it; dirt does not have living things in it. Soil is more nutritious than dirt, just like how healthy foods are more nutritious for us. We can add things to soil to make it even better for the plants. Have you seen the compost in our garden? Compost is made from old plants. Compost is used to make the soil more nutritious for the plants.*








*Soil is made up of three parts. Who knows what those three parts are? (Answer: sand, clay, silt)*


*Sand is the largest particle found in soil. It feels rough and gritty.*

*Clay is the smallest particle found in soil. It feels smooth when it is dry. It feels thick and sticky when wet.*

*Silt falls between sand and clay. It feels smooth, silky, and powdery when dry. It feels silky and smooth when wet.*

**Activities (35 minutes)**

-   **“Soil Discovery” (5 minutes):** Students will learn the components of soil and why soil is important for plants.
  1. Refer students to their workbook page  **Soil Discoveries**.
  2. Ask students to answer question # 1 in their workbooks. (What 3 particles make up soil?)
  3. Pass around the samples (if available) of sand, silt, clay for the students to touch and feel.
  4. Show the  **Soil Images** of the three components of soil (sand, silt, clay) and the image of the size of the particles in each component.
  5. *Sand is the largest particle found in soil. It feels rough and gritty.*
  6. *Clay is the smallest particle found in soil. It feels smooth when it is dry. It feels thick and sticky when wet.*
  7. *Silt falls between sand and clay. It feels smooth, silky, and powdery when dry. It feels silky and smooth when wet.*
  8. Ask students to answer questions # 2, # 3 and # 4 in their workbooks. (Describe how sand feels. Describe how silt feels. Describe how clay feels)
  
-  **“Planting” (10 minutes):** Students will plant a seed and learn what seeds need in order to grow.
  1. *Plants grow best when all three components of soil are mixed. This creates very healthy soil for the plants. We are now going to plant a seed in soil. You will get to bring this home with you and watch it grow.*
  2. Give each student a planter container or paper cup.
  3. Have each student pick out a seed that they want to plant.
  4. Have students fill their cup with soil and then plant their seed.
  5. *What do plants need to grow? (Answer: light, warmth, water) Remember to give your plant light, warmth and water when you bring it home.*
  6. Refer back to the workbook page  **Soil Discoveries**. Ask students to answer questions # 5 and # 6 in their workbooks. (What type of seed did you plant in your cup of soil? What does your seed need in order to grow?)
  
-  **“Making Mudshakes” (20 minutes):** Students make mudshakes to observe the different particles in soil.
  1. *Now we are going to take soil samples from different parts of our garden. We are going to make “mudshakes” to see the different components that make up the soil in our garden.*
  2. Divide the class into groups of 3 students.
  3. Give each group a jar that is 2/3 filled with water and has a piece of tape on it.

4. Give each group a trowel.
5. Instruct each group to go to a different part of the garden and dig about 1 inch below the surface, then carefully scoop soil in their jar that is filled with water. Add soil until the jar is almost full, then put the lid on tightly.
6. Give each group a marker. Instruct them to label their jars with their names and the garden location where they got the soil.
7. Have students take turns shaking their jars for 3 minutes.
8. Set all of the labeled jars in a place where they will not be disturbed for 24 hours.
9. *What do you predict will happen when the soil settles in these mudshakes?* (after sitting for a day you should be able to see the 3 different components of the soil – sand, silt and clay)
10. Refer students to their workbook page  **Making Mudshakes**. Ask students to answer questions # 1 and # 2. (What did you put in your mudshakes? What do you predict will happen after it sits?)

Bring the groups back together and ask some wrap-up questions:

*Did you have fun learning about soil today?*

*Do you think plants need all three parts of the soil to grow well? (yes)*

*If you have soil particles that feel rough and gritty, what part of soil is it? (sand)*

*If you have soil particles that feel thick and sticky when wet, what part of soil is it? (clay)*

*If you have soil particles that feel silky and smooth when wet, what part of soil is it? (silt)*

*Remember that we talked about how these particles are different sizes. Clay is the smallest, sand is the biggest, and silt is in between. If a particle of clay was the size of a pinhead, a particle of silt would be as big as an orange, and sand would be the size of a 30'x30' classroom!*

### **Evaluation Questions (5 minutes)**

1. *What are the three basic parts of soil? (Answer: sand, clay, and silt)*
2. *What part of the soil is thick and sticky when wet? (Answer: clay)*
3. *What part of the soil is rough and gritty? (Answer: sand)*
4. *What part of the soil is silky and smooth? (Answer: silt)*
5. *What are the largest particles within soil? (Answer: sand)*
6. *What are the smallest particles within soil? (Answer: clay)*
7. *How much water should you drink every day? (Answer: at least 6 cups of water a day)*
8. *How many fruits and vegetables should you eat every day? (Answer: at least 5 fruits and vegetables a day)*
9. *Does gardening connect you to your culture and help you learn new words in your language? (Answer: yes)*

**Preparation for Future Lessons – Reminder for the Instructor**

- Review the materials and preparation needed for the next lesson.
- Remember that an Elder guest instructor is needed for these Spring lessons: lesson 1 (Eating A Rainbow), lesson 4 (The Water Cycle), and lesson 9 (Plant Parts: Pollination).

**Notes**

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