

LESSON 4:

SOIL LAYERS

Students will recognize the different layers of soil and the characteristics of each.

OBJECTIVES

- Can you describe the main layers of soil – bedrock, subsoil, topsoil?

SUPPLIES

TEACHER PURCHASES

- 1 bag chocolate chips (nut free)
- Chocolate Pudding Cups (1 for each student)
- 1 package of Oreos
- 1-2 bags of gummy worms



LESSON KIT #4

- Clear Parfait Cups (1 for each student)
- Paper Plates (1 for each student)
- Sandwich Bags (1 for each student)
- Spoons (1 for each student)
- Green Sprinkles (1 jar)

Remember: Check the class allergy list before purchasing supplies, and never purchase ingredients that were processed in a facility that also processes peanuts.

OTHER SUPPLIES

The remaining supplies for this experiment can be found in the following locations in your bin

PENCIL BOX

- Pencils/Markers (for extension activity)

FOLDER

- Printer paper (for extension activity)

LESSON 4:

SOIL LAYERS

Students will recognize the different layers of soil and the characteristics of each.



HOOK

🕒 2-3 min

Have you ever thought about what is under your feet as you walk in nature? There is an entire environment under your feet! Have you ever dug into the ground to bury something or perhaps start a garden? What have you noticed or seen the further down you dig?

Let students discuss in groups times they have dug into soil and anything they have noticed. They may want to start a list of things they have observed. Then share as a class.

DISCUSSION

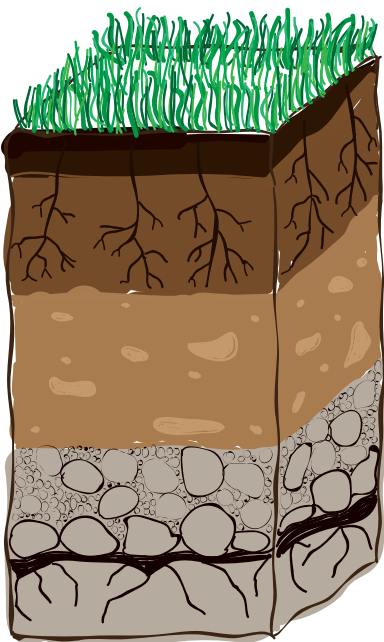
🕒 3-5 min

The upper layer of Earth closest to our feet is called soil. Soil can be broken down into three main layers. Each of these layers has different characteristics - that means it is made up of different materials.

Bedrock - This is the layer farthest below our feet and it is a big layer! This layer is made of solid rock - it can be sedimentary rock, igneous rock, or metamorphic rock. If an earthquake occurs, sometimes bedrock can get pushed up through the surface!

Subsoil - Subsoil is above bedrock. It is a mixture of sand, silt, clay and small rocks. Clay means there is a good amount of moisture in this layer.

Topsoil - Topsoil is the closest layer to our feet. Sometimes it is called the organic layer. It is the place where plants grow and insects live in. Topsoil can also have sand, silt and clay but it also contains something called humus. Humus is organic matter that consists of dead plants and insects, and also crushed up leaves and twigs. Humus is a very important material in helping plants to grow and stay healthy. When the roots grow under the grass and are nourished by the topsoil it helps them to grow!



TOPSOIL
cookie
crumbs +
sprinkles for
grass

SUBSOIL
pudding
mixed with
cookie
crumbles

BEDROCK
Chocolate
chips

EXTENSION

Show what you now know about soil layers. An illustration can add much more detail than food!

In your illustration include the three layers and label their names.

Draw details showing characteristics:

- Sand
- Clay
- Crushed leaves
- Twigs
- Insects
- A growing plant
- Plant roots

Discuss as a group:

Can you think of any examples of formations above the ground that might have been formed by an earthquake pushing bedrock through the surface of the ground?

HYPOTHESIS



3-5 min

We are going to create some edible soil. Make sure all the food supplies are on each table. Now, looking at the foods in front of you, be creative and think of the characteristics of bedrock, subsoil and topsoil. If we place these foods into our cups in layers, which foods do you think will represent each layer? Where would we place the "live worms?"

Have students discuss in groups and write in their charts which foods they believe are a good representations of each layer.

We have one step in creating one more layer. Take your cookies and place them into the baggies. Using your spoon, crush the cookies in the baggie until the pieces are small/fine.

EXPERIMENTATION



15-20 min

After discussing their hypothesis you may let students go to create the layers they believe are representative of the food, or discuss this together to ensure they create what is expected.

OBSERVATION & EXPLANATION



10-15 min

- **Bedrock:** The chocolate chips.
- **Subsoil:** The pudding.
- **Topsoil:** The cookie crumbs
 - Topped with sprinkles to represent grass.
- **The Worms:** would be dug into the topsoil.

Ask them what other things could represent top soil?

- Give them examples here like Fruity pebbles for pebbles or tootsie rolls for trees!

When finished discussing and understanding the characteristics each food represents let students eat their creations.

CONCLUSION

🕒 5-7 min

Fill out Hypothesis/Observation/Conclusion charts on the white board together as a group.

Instruct students to clean their stations. Make sure to leave the classroom the way you found it.

ASSESSMENT

🕒 3 min

As each student is leaving, ask them to name the three main layers of soil and a characteristic of each.

SCIENTIST'S WORKSHEET

Tip: Can draw or write the following down on whiteboard!

Hypothesis	Observation	Conclusion
Looking at the foods in front of you, be creative and think of the characteristics of bedrock, subsoil and topsoil. If we play these foods into our cups in layers, which foods do you think will represent each layer and why?	What soil layer does each food represent and how does the food show the characteristics of that layer?	Was your hypothesis correct?