

'All Washed Up'

Grade Level: Fourth Grade

Lesson Time: 30

Minutes

Objective: Students will understand that groundwater is one of the locations that hold water as it passes through the water cycle by creating a model that filters water as it passes through the ground water system. This lesson should be done after students have a solid understanding of the water cycle.

Materials:

Medium size flower pot or a cut-down waxed carton with holes punched in the bottom

1 Coffee filter

Water (stored in a two-liter pop bottle with a lid)

2 shallow trays or pie tins

1 cup dirt

1 cup sand

1 cup gravel

Observation sheet for each student (attached)

Procedures/ Steps:

Explain to the class that water that has fallen into the ground and is not evaporated is called ground water. It filters through the spaces or pores in the rock and soil of the Earth's crust. Water moves downward until it reaches rocks that it cannot permeate. When this happens, the water begins to fill up the pores and spaces in the rocks. This water is stored or passes through the ground until it can find a way to the surface. Often this water is filled with things that are not safe for humans. Nature has designed ways to purify, or clean the water as it travels. Explain to the class that they will be making a model to clean water so that they can see how nature does it. Remind students that no matter how great a job they think they have done cleaning the water, it should NOT be tasted. Tell students that they will be investigating to see what happens to water that must pass through materials similar to the path that ground water would travel through the earth.

Divide the class into groups of 3- 4 students. Have each group place the coffee filter in the bottom of the flower pot or carton. Then fill the bottom of the pot with gravel or small stones about 2 inches (5cm) deep. Pour sand into the container until it is about three-quarters full.

Pour 1 cup of dirt into the soda bottle and fill it most of the way with water. Screw the lid on and shake up to make some really dirty water.

Pour some of the muddy water from the bottle into one of their shallow containers and observe what the water looks like without any kind of change being done to it. This will be their "control" or test container to compare to the filtered water. Then have them place their filter system (the pot or wax carton) into the other shallow container and pour some muddy water into the top of it.

As the water trickles through all the layers, have the groups discuss what is happening. Have them watch as the water filters through.

Have them repeat this procedure several times until the water comes through fairly clear. Continue to compare the two pans after each run through. Do they think that the water is "clean" enough?
Gather the class back together. Discuss the investigation and answer any questions.

Assessment:

Each student will fill out an observation sheet and answer questions related to the investigation and then hand it in.

Reflection:

Lab- Write Up

State two observations you have made from the investigation.

Is there a difference between the two containers?

If you repeat the process more than once, what are your predictions about the water?
Will it be cleaner? Why?

By making a simple water filtration system you were able to see how water is filtered or cleaned. Name one thing you learned about the process water goes through to be filtered as it travels through the ground.
