

Stream In A Box

Post-Visit Activity

Science: Standard 3, Objective 2

Time: 45-50 minutes

Objective

Students know that rivers and streams are often muddy, but they may not know that some of the clay, sand, and sediment that make the river muddy come from the stream bed itself and is a result of erosion cutting into the stream bed. This activity will help students understand the erosion process and its part in the formation of streams and rivers.

Materials:

- 1/2 gallon milk carton
- 2 liter bottle
- an outdoor source of soil (ideally sandy)
- ruler
- scissors
- water supply
- garden trowel

Procedure

1. Begin a class discussion about rivers and streams.
2. Give each team of students an empty half gallon milk carton. Use scissors to cut out the side panel of the carton under the spout. *(If there is not water near the outdoor sight for this activity you will need to provide jugs to carry water from the classroom sink)*
3. Proceed outdoors. Lay the milk carton on its side, with the cut out panel facing up, then dig enough soil to fill the container at least half full. Gently pat the soil to smooth the surface.
4. To simulate a flowing stream, set one end of the milk carton about 1 inch higher than the other end. (Use a small rock or stick) The lower end of the carton should be the end with the spout so that when the water is poured in at the top it will flow over the surface of the soil and out through the spout without pooling and forming a "lake".

5. Place the mouth of the 2 liter bottle at the edge of the raised end of the milk carton and slowly pour 2 liters of water on the soil. Be sure to maintain an even, constant flow of water. (*The idea is to provide a small stream of water - not a sudden rushing flood.*) Watch what happens to the water and the characteristics of the resulting river. Notice both the patch cut and the depth of the riverbed. If your soil is dry, much of the water will be absorbed, but do not use more than 2 liters of water. Runoff of the water in a surface stream will not begin until the soil is soaked with water.
6. Repeat steps 3 through 5 with a fresh soil sample but raise the end of the carton to 2 inches. Be sure to use the same amount of water as in the first trial. Observe the difference in the flow of water and the resulting river as compared with the previous trial.
7. Repeat the experiment for a third time raising the carton to a height of 3 inches. Compare the flow of water and the stream cut to the first 2 trials.

If You Are Feeling Ambitious...

Have your students use a variety of different soils. Dry sand will quickly absorb a large amount of water, while clay tends to allow the water to run off its surface rather quickly. If the soil is mixed, students can study what type of soil is most common in the runoff water by pouring this runoff water on sheets of paper towels. The soil will remain on the surface of the wet paper.

Reference: Activity by David Stronck
Water, Stones, & Fossil Bones, NSTA 1991

Questions to Think About:

- How does water move soil and sediment?
- How does water shape riverbeds?
- What does water carry downstream?
- Where does the sediment come from?
- As the slope of the carton in this experiment was increased, what happened to the depth of the river that was formed?