

Erosion by the Wind

Summary

Small pieces of paper are used to model the effects of the wind on soil erosion.

Time Frame

1 class periods of 30 minutes each

Group Size

Large Groups

Materials

For the Teacher:

About a cup of holes from a paper punch or paper confetti

A box lid or shallow cake pan

2 or 3 heavy objects, such as rocks or wooden blocks

Background for Teachers

Wind is an element that speeds the erosion process. Wind can erode non-vegetated areas and was responsible for the "Great Dust Bowl" in the early 1900s.

One of America's worst environmental disasters happened on the prairies of the southern Great Plains. The plains area is covered with grasses. These grasses have deep, stringy, finger-like root systems. During some years, much rain falls, and in others very little rain falls. There are strong winds on the prairie. When farmers began to farm this area they burned off the prairie grasses and plowed their fields. The farmers planted short root crops such as corn. Some years, they didn't plant anything and left the fields bare. In 1930, a drought began on the prairie. Hot winds blew across the plowed areas. The shallow crops couldn't hold the soil. Some of the area had no plants on it at all. This wind collected the soil and created a cloud of millions and millions of tons of topsoil. This cloud was so large and dense that it blocked out the sun for miles around. The topsoil was eventually dispersed and some blew as far as 1,500 miles from its original location. The topsoil dusted the entire East Coast of the United States. After the drought, many farmers lost their farms. An area about the size of Maryland and Connecticut put together was destroyed. The congress enacted the Soil Conservation Act in 1935, giving advice on wise land use.

Intended Learning Outcomes

Observe simple events and report observations.

Compare events.

Cite examples of how science affects life.

Instructional Procedures

Step 1: Ask the students to think about the wind. How does the wind affect us? What things are carried by the wind? Which of the things carried by the wind are helpful? Which things are harmful?

Step 2: This activity is a simulation of soil erosion produced by wind. Because of the possible health hazard of dust entering the eyes, small paper holes from a hole punch will be used instead of soil.

However, the effects of the experiment are similar to those that would be found using soil.

Step 3: Place the paper holes in the pan to form a layer several holes deep. This does not need to be an even layer or completely cover the pan. Explain to students that there is a natural force that affects erosion and the displacement of soil.

Step 4: The students are to pretend that the paper holes are a layer of soil. Have one student come to the front of the room and gently blow into the pan from the side. This is similar to a breeze blowing. Have the students observe and record the reaction of the paper holes/soil. What happened? Where did the holes end up? Did they move evenly in the pan?

Step 5: Have students predict what would happen if the breeze became stronger. Choose another student to be a stronger breeze and repeat the experiment. Discuss how wind affects erosion. If there is little or no plant cover on an area and soil is exposed, it is vulnerable to erosion by wind and even soil displacement by breezes.

Step 6: Place several heavy objects, such as rocks or wooden blocks, in the pan and repeat the experiment with the light and strong breezes. Have students record and discuss their observations.

Step 7: Assign students to find examples of erosion in their community. Ask each student to find three examples and return and report the next day.

Assessment Plan

Use the Science Writing Rubric to assess students' journal entries.

Take the students on a walking field trip around the school. Have each student identify three sites where erosion has occurred in the community.

Rubrics

[Science Writing Rubric](#)

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