Erosion

An Educator's Reference Desk Lesson Plan

Author: Dorothy Stetsko, West Park Elementary, Fresno, CA

Date: May 1994

These lesson plans are the result of the work of the teachers who have attended the Columbia Education Center's Summer Workshop. CEC is a consortium of teacher from 14 western states dedicated to improving the quality of education in the rural, western, United States, and particularly the quality of math and science Education. CEC uses Big Sky Telegraph as the hub of their telecommunications network that allows the participating teachers to stay in contact with their trainers and peers that they have met at the Workshops.

Grade Level(s): Kindergarten, 1, 2, 3, 4

Subject(s):

- Science/Geology

OVERVIEW: No matter where you look, the land you see is a battleground. On one side of the battle are the forces beneath the surface. These forces cause the crust to be faulted, folded, tilted, and lifted. On the other side of the battle are the natural processes of weathering and erosion. Once rock has been broken up by weathering the small pieces can be moved by water, ice, wind, or gravity. Everything that happens to cause rocks to be carried away is called erosion.

PURPOSE: The following activities will demonstrate to students various types of erosion. The purpose of these activities is to increase students awareness to the point where they can make intelligent decisions on proper land use.

OBJECTIVES: Students will be able to:

1. Identify the different types of erosion.
2. Identify the effect of ice on land.
3. Identify the effect of wind on land.
4. Identify the effect if water on landforms.

ACTIVITIES:

1. Sand Dunes: How do sand dunes form? Place sand in a pile and blow gently from one side. Observe what happens. What happens when you blow on the sand? Could you make the whole pile move if you blew long enough?
2. Windblown Deposits: Collect the following: newspaper, dry sand in jar with lid, box lid, spoon, water, paper, and pencil. Place the box lid on the center of the paper. Remove the lid from the sand and place it inside the box lid near the center. Blow gently on the sand, increase the strength of your breath until sand is being thrown from the lid. Continue blowing for 5 to 10 seconds at this rate. Examine the material in the paper by rubbing your finger over it. Do the same to the material trapped in the box lid. Which is finer? Why?
3. Water Weight Erosion: How does the weight of water affect the earth? Find a spot of bare dry earth. Pour a cupful of water on it. Repeat on the same spot, but this time hold the cup from as high a distance as possible. Observe, how did the earth change when you poured your first cupful of water? How did it change

when you poured the second cupful from a greater height? Can you relate this to changes caused by the weight of water in various places around the earth?

4. Glaciers and Erosion: How does the movement of glaciers cause erosion? Take a 12 inch square piece of aluminum foil and form it into a box shape with edges about 2 inches high. Put it in a freezer overnight. Remove the block. Rub over some clay. What did the block of ice feel like? What happened when you rubbed it over clay? How can you relate this to glaciers?
5. Glacial Erosion: Collect the following materials: ice cube, sand (about 1 spoonful), modeling clay, paper towel, pencil, and paper. Press the ice cube lightly on the flat surface of the modeling clay. Move it back and forth several times. Does anything happen to the clay? To the ice? Place a small pile on the surface of the clay. Place the ice cube over the sand on the clay. Let it sit for about one minute. Pick up the ice cube and look at the surface that had been on the sand. Describe what you see. Place the ice cube back in the same position and move the ice back and forth on the sandy surface of the clay a few times. Remove the ice cube and gently wipe the excess sand off the surface of the clay. Describe the surface of the clay when it was rubbed by the sand and ice. How would this compare with the surface of the land when rock and other materials are dragged over it by a glacier?
6. Landslides: Why do hills and mountains that seem very solid in dry weather develop major landslides after prolonged rains? Build a sand castle. After you have it shaped firmly, pour some water on it. Pour the water slowly and gently. Keep pouring until the sand can absorb no more water. What happened at first? What happened finally? How can you compare this to rainfall and mountains?

RESOURCES/MATERIALS NEEDED:

All listed above.

TYING IT ALL TOGETHER:

The natural process of erosion works slowly but surely. In hundreds of thousands of years, erosion can wear away a mountain until it is level with the plain. The more that students know about the causes and preventions of erosion, the more they can do to wisely use the land and not destroy and/or misuse it.