OLD MT 200 EROSION REPAIR ACTIVITY

SUMMARY

Students learn about erosion and erosion prevention methods through an experimental process involving small structures placed along a simulated riverbank to experience a variety of flooding and runoff conditions. They will learn how water flow and erosion affect the stability of the riverbank and the safety of structures. They will use sand or prefabricated objects to represent structures on the simulated riverbank and then observe how the structures are impacted by slow and fast water flow. In a second simulation, students will use a variety of provided materials to reduce the effects of the water flow on the structures and riverbank. Students will make predictions, observations and conclusions about the effect of the water flow with and without the presence of erosion prevention materials.

LEARNING OBJECTIVES

After completing this activity, students should be able to:

1. Explain the concept of water erosion.
2. Identify the main causes of erosion on riverbanks.
3. Compare the effects of fast and slow water flow.
4. Identify effective erosion prevention measures.

MATERIALS NEEDED

A rectangular container for each student or group of students. This could include a long shallow plastic tub, a disposable baking pan, or other similar items.

Fine sand. Enough to fill each container to half capacity.

Water and a container for pouring.

Objects to represent structures. This could include cups for forming structures out of sand, LEGO, or similar items.

Popsicle sticks, sponges, toothpicks, small rocks, plastic trees, or other similar materials that could be used for simulated erosion prevention structures.

A book or similar item to prop one end of the tray to create an incline.

Cloth or paper towels for spills.

A copy of the Erosion Project Prediction and Evaluation Worksheet for each student.

PROCEDURE

Provide a tray, sand and structure materials to each student or group of students. Students will create a winding canal in the sand to represent a river. Students will add structures to the simulated riverbank, placing structures on both straight sections as well as bends in the river.

Prior to introducing water to the tray, students should record their predictions on the Erosion Project Prediction and Evaluation Worksheet.

Once predictions have been made, slowly poor water from the elevated end of the tray into the simulated river. Allow students to observe the effects of slow-moving water. Students should record their observations.

Increase the flow of water into the river to simulate fast-moving water. Students should note the amount of sand displaced by the water, the effect of the erosion where the simulated river bends in comparison to straight sections, and the effect on the simulated structures. Students should then record their observations.

Remove excess water from the tray and make necessary repairs to the simulated river and structures. Using provided materials, students will simulate erosion prevention methods in the areas observed to be at greatest risk. Students should predict the effectiveness of these methods and record their predictions on the Erosion Prevention Prediction and Evaluation Worksheet.

Introduce water again at the elevated end of the tray, simulating both slow-moving and fast-moving water; allowing students to make observations in between. Students should observe the effectiveness of the simulated erosion prevention methods and record their observations.

POST-ACTIVITY DISCUSSION

After completing the activity, informally assess students through in-class questions to determine the impact of the activity on their learning.

Ask students to share their observations and describe how their erosion structures performed.

Ask students to relate the performance results to where their buildings were located with respect to the river shape and curvature.

Ask other questions to elicit whether students understand the concept of erosion in rivers and the need to design and build erosion prevention structures.