

Activity: Hold That Soil

Grade Level: Grade 2

Major Emphasis: Soil Erosion

Major Curriculum Area: Science

Related Curriculum Areas:

Refer to Outdoor Education Curriculum Matrix K-2

Career Education

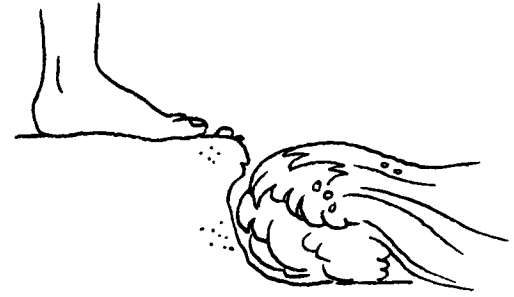
Human Relations

Language Arts

Mathematics

Physical Education

Social Studies



Program Indicator:

The student will be able to show that the Earth's surface undergoes change.

Student Outcomes: The student will:

1. observe the effect of slope on water flow.
2. observe the absorption of water into a forest floor.
3. demonstrate the effect of moving water down a slope.
4. compare eroded and non-eroded areas.
5. identify erosion controls.

Readiness:

1. Complete activities on soil formation from the second grade Unified Science Curriculum.
2. Complete activities on the water cycle from the second grade Unified Science Curriculum.
3. Complete activities on gravity from the second grade Unified Science Curriculum.
4. Introduce vocabulary:

absorption

bulkhead

delta

erosion

gravity

humus

precipitation

predict

runoff

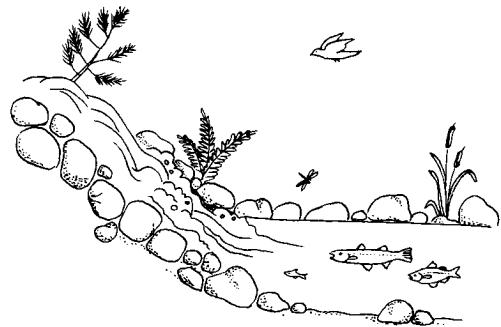
sediment

slope clarity

water cycle

Materials:

buckets	camera	soil boxes
trowels	sponge	water supply
watering can	film	quart measure
hand lens	markers	Supplement A
soil corer	tote tray	#10 percolation can



Procedures: (DL3&4)

Note: Divide group into two activity groups.

Activity A: Erosion Exploration

Slope and Water Flow

1. Discuss where water comes from (refer to precipitation and water cycle activities). Include man-made influences such as storm drains, run-off from roads and parking lots, construction, etc.
2. Discuss why water flows to low areas (gravity).
3. Observe an area where water has moved down a slope.
4. Demonstrate water moving down a slope (pour bucket of water) and discuss results.

Forest Floor Investigation

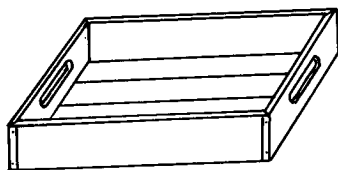
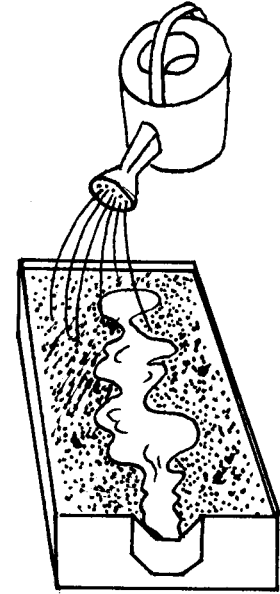
1. Use soil corer to obtain a soil profile. Identify and discuss layers (leaf litter, humus, soil of the forest floor). Record on Supplement A.
2. Discuss contents of each layer using hand lens and trowel.
3. Demonstrate absorption ability of the forest floor material by pouring a measured amount of water into a percolation can. Note time required. What reasons are there for the water taking this length of time?
4. Demonstrate the sponge-like qualities of the forest floor by using a sponge in a tote tray. Pour in the same amount of water as in #3. Predict which will absorb more. Compare and discuss the results of both demonstrations.

Shoreline Observation

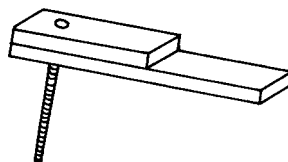
1. Observe two slope areas, one eroded and one not eroded. Take pictures if possible. Record information about these areas on Supplement A.
2. Discuss the amount of slope observed.
3. Discuss the type of cover: grass, trees, rocky, combinations or no cover.
4. Look for signs of soil erosion. Discuss possible causes.
5. Look for erosion controls: hay bales, terraces, bulkheads, check dams, etc.
6. Discuss other causes of erosion such as wave action from boat wakes. How can this be controlled?

Activity B: Erosion Demonstration

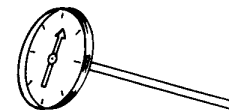
1. Pack soil boxes with soil.
2. Angle the box to simulate a slope; support with a trowel.
3. Predict what will happen when water is poured down the face of the slope.
4. Use a watering can to simulate rain moving down the face of the slope. Discuss results. What happens when there is a drizzle? A shower? A downpour?
5. Predict what will happen to this slope in terms of plant growth and where eroded soil will eventually go.
6. If done at water's edge, delta-formation and sedimentation can be simulated and discussed.
7. Repeat the erosion demonstration and add leaves, twigs, rocks and sod strips to act as erosion controls. Discuss results and the need for such controls. Rocks, popsicle sticks and wire mesh can be used to simulate a bulkhead.
8. Fill a jar with water and a heaping tablespoon of sediment. Shake the jar and have students describe the water. Place the jar on a surface and allow sediment to settle. Have the students explain how the appearance of the water changes. Ask students how sediment could affect living things in the water.
9. Discuss the purpose of the Secchi disc which is to determine clarity of water. Explain how water clarity relates to water quality.
10. Give a Secchi disc to each student or group to use at the dock.
11. Lower the disc over the side of the dock. Let out the rope until the disc cannot be seen.
12. Slowly raise the disc until it just comes into view. Note the depth of the water.
13. Walk to the sandbar or marsh area. Repeat the same procedure and note the depth. Compare depth to that noted at the dock.
14. Which location had the clearer water? Why is it clearer in one area than the other?



Soil Erosion Box



Soil Compaction Board



CE or FE Soil Thermometer

Examples of Soil Equipment

Summary: (DL2)

Use a graphic organizer to brainstorm and record possible solutions to soil erosion.

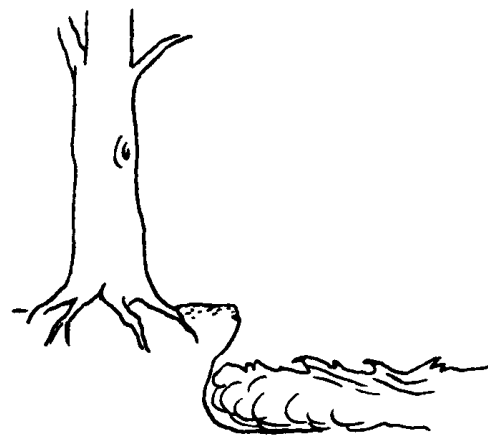
Follow-Up: (DL3,4&5)

1. Identify erosion problems at your school.
2. Write a letter to the principal about how you would improve these conditions.

Extension Activities:

Project Learning Tree activities:

1. Rainfall and Forest, p. 122
2. Sand, Silt and Clay, p. 135
3. Holding Power, p. 47
4. Improve Your School Site, p. 127



Teacher Resources:

Books:

- < *Erosion, Bishop.
- < *NatureScope-Geology: The Active Earth, National Wildlife Federation.
- < *Project Learning Tree, The American Forest Institute, Inc.
- < *Baybook, A Guide to Reducing Water Pollution at Home, U.S. Department of Agriculture.

Filmstrip:

- < *"The Muddy Raindrop," SVE. 591.

Supplementary Materials:

- < "Soil Erosion, The Work of Uncontrolled Water," Agriculture Information Bulletin #260, Soil Conservation Service, U.S. Department of Agriculture.
- < "Teaching Soil and Water Conservation," Program Aid #341, Soil Conservation Service, U.S. Department of Agriculture.



Shoreline Observation

Area	Degree of Slope	Erosion Present (None, Some, Much)	Control or Cover	Possible Solution

Conclusions: _____

