Investigation Two – Where Oh Where Has My Mountain Gone?

Standard II Students will understand that volcanoes, earthquakes, uplift, weathering, and erosion reshape Earth's surface.
Objective 1 Describe how weathering and erosion change Earth's surface.
Intended Learning Outcomes 1. Use science process and thinking skills 2. Manifest scientific attitudes and interests. 3. Understand science concepts and principles.

Standard II

Objective 1

Background Information

Moving water is a powerful force changing Earth's surface. In this activity, students will observe a simulation of how moving water can erode a mountain. They will also observe that vegetation can slow down the effects of erosion.

Pre-Assessment/Invitation to Learn

Review on the board about erosion. Ask the following questions:

- Where does erosion take place?
- What are the outcomes of erosion?
- What prevents erosion?

Instructional Procedures

Mountain without vegetation:

1. Fill the pan with moist sand and shape it into a "mountain."
2. A student holds the cup with the holes above the center of the "mountain".
3. A second student gently pours the water from the second cup into the cup with holes.
4. Observe what happens to the "mountain" and record the observations in your science journal.

Mountain with vegetation:

1. Fill the pan with moist sand and shape it into a "mountain".
2. Simulate vegetation growing on the mountain by placing a square of fabric netting over the mountain and press it down lightly onto the "mountain".
3. Make holes in the bottom of one of the cups with a toothpick. A student holds the cup with holes above the center of the "mountains".
4. A second student gently pours the water from the second cup into the cup with the holes.
5. Observe what happens to the mountain and record the observations in Your science journal.

Materials

- Newspapers on table surfaces and floor
- Rectangular pan
- 2 small paper cups
- Toothpicks
- Moist sand
- Water
- Fabric netting cut into a square, about 8" X 8". (If you don't have netting, a tissue or paper towel can be used.)

Discussion:

1. In this activity, you saw how the force of water moved sand. What other forces could cause changes to the landforms on earth? (wind, waves, ice from glaciers).
2. How can vegetation help stop the effects of erosion? (The roots help hold the soil in place.)
3. What changes in an environment can cause an increase in erosion? (fire, clear-cut logging)

Curriculum Extensions

Science –
Stream Table Demonstration (ILO 1)

1. A tote tray or shallow pan could be used to show the flow of a stream.
2. Put moistened sand into the container. (The sand needs to be moistened so that the water will begin flowing down the stream instead of just being absorbed.)
3. Many streams follow a meandering path through the sand. Prop one end of the tote tray up on a book.
4. Hold a small container of water above the beginning of the stream pathway. Slowly pour water into the stream.
5. As the water flows down the pathway of the stream, point out the things that are occurring on both sides of the stream.
6. On the outside or longer edge of a curve, the water flows faster. More force means that it can lift and carry material from the outside of a curve. It begins to wear away the outside edges. On the inside or shorter edge of a curve, the water flows slower and you can observe the deposition of sand in this area.
7. Water can be removed from the bottom of the tote tray with a turkey baster so that it can be used again and not spill out onto the floor.
8. Record your observations in a science journal.

Assessment Suggestions

- Check for Comprehension:
    1. How does water cause erosion?
    2. How can vegetation stop the effects of erosion?
- In their science journal, check for accuracy in their observations about weathering and erosion.

Reference for Assessment Section

Unit Test	Multiple Choice	Constructed Response	Performance Test
1	6, 8	1, 2	Shaping the Land
2	1, 2, 3		

Resources

See Investigation One Resources