

Target Grade Level: 5th Grade

Title of Lesson: Water Erosion Experiment

Unit Title: Physical Landforms: Erosion

Performance Standard(s) Covered:

S5E1. Students will identify surface features of the Earth caused by constructive and destructive processes.

b. Identify and find examples of surface features caused by destructive processes.

- Erosion (water—rivers and oceans, wind)

Essential Question(s):

How does water erosion impact a variety of environments based on the level of vegetation present?

Objective:

To give the students a better understanding about how the impact of water to change the surface of the land and how varying levels of vegetation can affect the extent that the surface is changed.

Key Words and Terms:

Erosion, vegetation, soil, dirt, water, runoff, scientific constants

Learning Activity

Abstract (limit 100 characters): Utilize three different mediums of vegetation to demonstrate how runoff impacts each setting differently.

Materials Needed:

Six large water bottles or 2L

Scissors

Soil

Ziploc bag with dirt and assorted twigs and leaves

Patch of green grass rooted in soil

String

Water

Safety Concerns: Very few, if any, safety concerns are involved. Student volunteers are very important, so they just need to understand to wash their hands after handling soil or dirt to avoid subsequent contact with their eyes.

Procedure:

1. Prior to arriving, prepare three of the water bottles to be filled with the different mediums of vegetation by making a rectangular opening on the top of each water bottle.
2. Cut the top off of the remaining three water bottles to have them serve as the collecting pools for the runoff from each of the vegetation-filled water bottles. Make sure to make the collecting pools large enough to avoid overflow once water is added later in the experiment.
3. Attach the collecting pools to the vegetation-filled water bottles with string (See picture below).
4. To begin the lesson, ask the students what they have learned so far about erosion. Push them to think about both wind and water erosion and how their differing velocities and environments can affect the way it impacts the land. Highlight specific examples, such as rivers, deltas, and mountainsides, where we see the removal of sediment due to erosion.
5. After having the group form a hypothesis about the soil medium, ask a student to come help fill the first water bottle with soil until the water bottle is completely full.
6. Have another student steadily pour water over the soil for about four seconds.
7. Observe the runoff into the collecting pool, and discuss what happened with the class.
8. Repeat steps 5-7 for the water bottle containing assorted ground materials and the bottle containing grass rooted into soil, making sure to give the students opportunities to fill the bottles, ask questions, and form hypotheses. Keep the water poured constant.
9. Be certain to comment on the speed of the runoff as well as the concentration of sediment picked up in the runoff that ends in the collecting pools.
10. Conclude the lesson by having the students dig into their textbooks and read about the concept of erosion and putting down their favorite lesson learned in their journals.

Notes/Tips: Be sure to have all of the water bottles fully prepared before arriving to class. Make sure to have sufficient soil, ground debris, and grass to fill the water bottles. Finally, make it a top priority to get the students involved and to give them an opportunity to ask questions and elaborate on their ideas.

References: I was recommended this experiment by my teacher who found this experiment off of Pinterest.

