

GROW YOUR PALS PROGRAM GUIDE



THE NATIONAL FFA MENTORING PROGRAM

Sponsored by



LESSON 35

How Do Water and Soil Move?

Unit:
ENVIRONMENTAL SCIENCE

PRECEPTS

- F. Continuous Improvement
- F3. Use innovative problem-solving strategies

NATIONAL STANDARDS

None



Lesson Type:
Small Group

STUDENT LEARNING OBJECTIVES

As a result of this lesson, the student will ...

1. Build a model watershed, observing movement of water and sentiments.
2. Discuss erosion and how to prevent it.





TIME

Instruction time for this lesson: **25 minutes.**



RESOURCES

None



TOOLS, EQUIPMENT AND SUPPLIES

- ✓ large rectangular aluminum pan
- ✓ 5-6 paper cups
- ✓ scissors
- ✓ extra-wide, heavy aluminum foil
- ✓ plastic water jug or milk carton
- ✓ knife or hole punch
- ✓ powdered drink mix (grape or cherry show up best)

KEY TERMS



The following term is presented in this lesson and appears in ***bold italics***:

watershed
erosion

INTEREST APPROACH

Before you start, have a garden hose hooked up to the faucet outside in an area where soil is available, covered and uncovered with plants. Take the students outside and ask for three volunteers. The first student should pick a spot in the soil and allow the water to slowly fall onto the soil. The rest of the class should share their observations. Have a second volunteer do the same, except this time increase the water pressure. Again, afterward students should share their comments. Lastly, the final volunteer should attach a nozzle to the hose and then do the same exercise the previous volunteers did, but with full water pressure.



- What was the water doing to the soil?
- Which student caused the most damage to the soil?
- What was happening to the soil as the water hit it?
- What could be done to the soil to prevent damage from the water?

Take the students back into the classroom.



Why is soil important to our lives? (*Allow students to respond and write those responses on the board.*)

Exactly. Soil provides us with food, shelter and storage of valuable nutrients. That is why it is so critical that we conserve this natural resource. In order to protect the soil, we must first understand how it can be destroyed.

SUMMARY OF CONTENT AND TEACHING STRATEGIES

OBJECTIVE 1. | Build a model *watershed*.



*The students were just able to see what **erosion** does to soil by simply using a water hose. Now it is time for them to see what water does in a **watershed** they build. This will help them to understand how **erosion** occurs in nature each time it rains.*



It is amazing how **erosion** is able to happen in such a variety of ways even without even a lot of water pressure. We are going to build our own **watersheds** so you are able to see how **erosion** happens in nature.

*Help your PALS cut the paper cups to different heights, and then turn them upside down in the aluminum pan. These cups represent the mountains in the **watershed**. Next, work with your PALS to stretch aluminum foil over the cups. Press the foil down so it fits snugly, high and low, over all the cups. Tightly wrap the foil at the edges of the pan. Punch three or four holes in the upper corner of the plastic jug. Help your PALS fill the jug with water. Hold the container over the model **watershed** so it sprinkles rain on the mountains and valleys. Have your PAL observe where the water goes. Sprinkle the colorful powdered drink mix in some areas of the **watershed** model. Make it rain again. Have your PALS observe where the drink mix goes.*



What happened when we first put the water into our **watershed**?
What were we able to see once we added the color?

I. *Watershed*

- A. The area drained by a river or a stream in a region.
- B. The area slopes toward a common, lower point in the earth's surface.



It is important to protect **watersheds** from pollutants, and one of the best ways to do that is to understand the way the water flows and how the soil is going to erode.

OBJECTIVE 2. | Discuss *erosion* and how to prevent it.



We have mentioned the word ***erosion*** but what does it really mean for something to erode?

II. *Soil Erosion*

- A. ***Erosion*** is simply the mechanical process of wearing or grinding something down.
- B. What causes soil ***erosion***?
 - 1. Water and wind
- C. The three phases of soil ***erosion*** are:
 - 1. Detachment – soil particles are dislodged or broken free from the bulk soil
 - 2. Transport – movement of soil particles from one place to another
 - 3. Deposition – transported particles are deposited in a new location

It is important to remember that soil ***erosion*** can be a very serious problem when there are no trees or plants to help protect the soil. People involved in agriculture have a big responsibility to help protect the soil and they do so in a variety of ways. What are some of the ways you have either seen or you know can prevent ***erosion***? The more creative we are with our solutions, the better the results. It is never enough to just have one solution to a problem that is always happening in different ways all over the globe. Having a variety of solutions allows for a lot of different areas to deal with the problem of ***erosion***.



REVIEW / SUMMARY / EVALUATION

Use the *Eyewitness News e-Moment* to help the students review **watersheds** and ***erosion***. Have two volunteers share the role of interviewer and interviewee.

APPLICATION

Continued Discussion/Activity: Find maps of local **watersheds** and discuss them with your PAL.



One-on-One Suggestion: Review with your mentee ***erosion*** and **watersheds** and see if you can find local areas of ***erosion*** and discuss ways to fix the problem.