

# Wind Erosion and how we can prevent it

## 4<sup>th</sup> Grade

Kelly Denney, Justin Shearer, Mrs. Berridge, Mrs. Nolan, and Mrs. Skopin

### References:

- CPS curriculum guide
- United Streaming Videos: [www.unitedstreaming.com](http://www.unitedstreaming.com)

### Benchmarks:

SLC/GLI #: ES-8

### Objectives:

Students will learn about wind erosion and observe the landform-changing effects of the wind with interactive dioramas. They will use them to explain and understand how wind causes erosion and deposition of sand and soil and this way can cause the formation of sand dunes. They will also learn what we can do to prevent unwanted erosion. At the end of the lesson students should be able to explain wind erosion and write about it by answering the Type 2 writing question: *“How does the wind erode the soil, and what can we do to prevent this?”*

### Materials:

- Shoeboxes with lids
- Clay and popsicle sticks
- sand
- dry soil
- rocks
- tape
- straws – enough for each student

### Initial Demonstration:

Make a brief introduction to erosion by seeing what students already know and building a vocabulary list: erosion, deposition, and sand dunes, and wind as a “force of nature:”

Erosion: the movement of rocks and soil. Erosion can be caused by natural means such as wind, water, ice, and gravity, or by human interactions with the earth’s surface.

Deposition: the dropping off or depositing of eroded rock.

Sand Dunes: a pile or mound of sand created by the wind and the deposition of sand that was eroded from another location.

Tell the students you are going to be doing a scientific investigation into the effects of wind erosion by creating a miniature environment in which wind (provided by the students) has the ability to erode sand and soil.

### **Target Observations:**

- Students should be able to define erosion, deposition, and sand dune, and should understand that erosion can be caused by wind, water, ice, gravity, or humans.

### **Procedure:**

Hand out materials and the lab sheets to the students. Their instructions for making and experimenting with the shoebox erosion environments are as follows (directly out of the curriculum guide, with only slight changes):

- 1.) Use a pencil to poke a hole in one short end of the shoebox. The lid can be set aside for now.
- 2.) Push each craft stick into a small ball of clay. Stand the craft sticks up as trees on the bottom of the box. Cut the sticks in half if necessary for the top of the shoebox to fit on.
- 3.) Place thin, even layers of soil and sand on the bottom of the box. Scatter rocks on top of the soil.
- 4.) Make a mark on each craft stick as to the level of the sand or soil.
- 5.) Draw a picture of what the materials look like in the box.
- 6.) Place the lid on top of the box and tape it closed.
- 7.) One student should take their straw and place it in the end of the box and blow once. Each member of the group should repeat this step with their own straw.
- 8.) Without shaking the box around, remove the lid and observe the soil's surface. Record your observations.
- 9.) Make new marks on the craft sticks with a different color marker as to the level of the soil in the box. Be sure to compare this mark to the initial mark in your observations.

Some questions you may want to ask the students are provided in the curriculum guide lesson too, but are as follows:

- 1.) What were the effects of the air movement from the straws? (*Wind can erode the soil and the sand. This creates new landforms, such as sand dunes.*)
- 2.) What effect did the "trees" and rocks have on this process? (*The trees and rocks got in the way of the wind and slowed it down or blocked the sand and soil from traveling any farther.*)
- 3.) If you wanted to prevent erosion around your house or in a certain area, what could you do?

Then have students do Type 2 writing, or they can share what happened in their shoebox. You can also get math involved by having them measure the differences in the lines drawn on the craft sticks in their boxes and see just how much erosion and deposition they experienced. Finally, if you choose, or have time, there are a couple of video clips from United Streaming described below.

### **Target Observations:**

- Students should observe that the wind they created eroded the soil and sand in their shoebox and deposited it somewhere else.
- Students should also notice that soil/sand piled up around the rocks and trees or was prevented from being blown completely away from these obstructions.

### **Target Revised Model:**

- Students should conclude that wind is an important element of soil erosion. It caused sand/soil to be eroded from one area and deposited in another.
- Students should also understand that humans play a role in erosion and can help prevent it by planting trees and grass and not clearing land, which is then bare and susceptible to wind erosion.

### **Additional Procedure:**

To show them more examples of real erosion, if time allows, show them United Streaming footage:

**Erosion (5:54):** defines erosion and talks about different types. If you only want them to see the wind part, you can go directly to that portion. Listen to first 30 sec., then go to 3:30 with bar at bottom of Windows Media Player. You can then stop it at 4:50 when it starts to talk about water.

**Deposition (1:18):** defines deposition and shows examples (although a lot of it talks about deposition caused by water erosion, but you can stop it before this starts).

**People (1:05):** How and where people cause or prevent erosion.

**Farmers-Erosive Forces at Work (3:57):** talks about how farmers effect erosion, both increasing erosion but also new farming practices that help reduce erosion.

### **Summary:**

In this lesson, students learned about wind erosion by making environments out of shoeboxes that were filled with sand, dry soil, “trees,” and rocks, and were able to cause erosion and deposition by creating wind. Several United Streaming videos were also provided as optional enrichment. In addition, there was a discussion on erosion prevention and what we can do to prevent erosion.