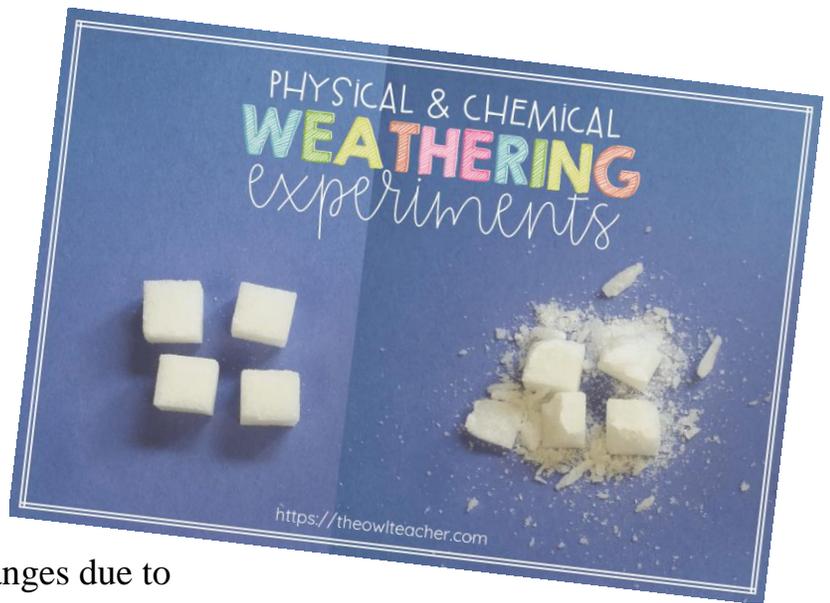


# OH WOW!

## Shake it Up!



### Standards :

- 4 . **ESS .3** : The surface of Earth changes due to erosion and deposition.
- 4 . **ESS .2** : The surface of Earth changes due to weathering.

### Objectives :

The student will be able to describe how rocks slowly erode from natural processes and forces (bodies of water, wind, collision of rocks).

### Background :

The student will be given a plastic water bottle that will act as their environment. They will be asked to observe and describe how sugar cubes (boulders, rocks) change over time when exposed to and collide with natural elements such as wind, vegetation, landforms, and water.

### Academic Language :

**Weathering:** The process where rocks are dissolved, worn away or broken down into smaller pieces (sediment).

**Erosion:** The process of being worn away by wind, water, or other natural forces.

**Sediment:** Small pieces of rocks that moves through the erosion process.

### Materials :

- Water bottle and cap
- Sugar cubes
- Pebbles, gravel
- Water

### Procedure :

1. Observe sugar cubes. Take note of what they look like in terms of shape, size, and color
2. Place a handful of pebbles or gravel into the water bottle
3. Add 4-5 sugar cubes into the bottle
4. Tightly cap the bottle

5. SHAKE the bottle for 30-45 seconds
6. Open the container and observe what the sugar cubes look like
  - a. Take note of their size, shape, and color
7. Add water to the water bottle
8. Tightly cap the bottle
9. SHAKE the bottle for 45 seconds- 1 minute
10. Observe and take note of the sugar cube

**Extension Activities :**

1. Add different amounts of water to the bottle. See how the amount of water impacts the process. Relate this to brooks, oceans, puddles, and lakes.
2. Vary levels and speed of wind. Shake the bottle gently, shake it vigorously, swirl the bottle to circulate the water. Relate this to the speed of ocean waves, babbling brooks, etc.

**Talking Points :**

- This activity demonstrates one of the many ways that natural forces and processes can change the environment.
- Elements found in nature (water, vegetation, landforms, wind) cause collision, friction, and moving of rocks and sediments.
- The pebbles and gravel in the bottle represented vegetation and the landform of our environment.
- The sugar cubes represented boulders or larger rocks found in the environment.
- When shaking the bottle, the air began to move. Wind is air in motion.
- The sugar cubes began to slowly break down and erode before adding water. The edges became rounded; some may have broken into smaller pieces.
- Water acted as a catalyst and sped up the process.
- After adding water to the bottle, the sugar cubes eroded faster. They dissolved, completely broke down, and became sediment.
- The sediment from the sugar cubes moved around the bottle in both the water and with the wind.

**Discussion Questions :**

1. How did the sugar cubes change when shaking the bottle with other pebbles or gravel?
2. How did the sugar cubes change when you added water? Did water speed up the erosion process? Why? How?
3. What are some other ways that natural elements can change the environment around us?

4. What do you think the sugar cubes represented in the bottle?

**Additional Resources :**

<https://www.teacherspayteachers.com/Product/Weathering-and-Erosion-Inquiry-Based-Unit-2443044>

<https://www.teacherspayteachers.com/Product/Shake-It-Up-Mechanical-Weathering-Lab-4532107>

<https://theowlteacher.com/physical-and-chemical-weathering/>