

Evaporation in the Desert

Grade: Kindergarten through 2nd grade

Aim:

To teach students about the concept of evaporation, and the role it plays in a desert environment.

Learning Objectives:

- Students will learn about the basic characteristics of a desert environment.
- Students will gain a greater understanding about the concept of evaporation.
- Students will make connections between evaporation and its role in the ecology of a desert.
- Students will practice measuring change in the rate of evaporation.
- Students will gain experience in conducting an experiment and collecting/comparing data.

Materials:

- One plate (styrofoam or plastic) for each group
- one purple, orange & black crayon for each group
- water
- measuring cup
- Rulers
- Photographs of desert environments (optional)

Background:

A *desert* is defined as arid land with less than 10 inches of rain per year. Some areas called deserts may receive a little more rain than this, but in these cases, evaporation is greater than precipitation. These areas usually have sparse vegetation and a limited population of people and animals. Approximately one-third of the Earth's land surface is covered with deserts – which may be dry, but not necessarily hot. Deserts can hot or cold; they may have vast regions of sand or large outcrops of rock and gravel peppered with occasional plants, but deserts are always dry.

Evaporation is the changing of liquid water to water vapor when it is heated. Because deserts have very little cloud cover, few bodies of water, and little vegetation, a great amount of the sun's energy reaches the ground without being reflected into the atmosphere. This causes a very high evaporation rate

Procedure:

- Briefly describe the basic characteristics of deserts (and if applicable, show share photographs of desert environments) to your class. *When it does rain in a desert, where do you think the water goes? What kinds of plants and animals live in the desert, and how do they survive in this dry environment?*
- Introduce the concept of evaporation, and challenge your students to think about whether (and why) evaporation would commonly occur in a desert. Explain that they are going to work in pairs to test whether evaporation happens in your classroom, and if so, where in the classroom it happens the most.

- Divide the class into pairs; giving each pair a plate and three different colored crayons. Have each pair choose different places in the room to place their plate (i.e. in the sun, in the shade, near a heater, etc.).
- Give each pair a small (and equal amount) of water, and direct them to pour it in a puddle on their plate. Have students make an initial outline of the puddle with a purple crayon.
- Let the plates sit for about an hour. During that time, have your class make some predictions about what will happen to their puddles of water. *If we leave our puddles of water in the spots we chose around the room, what do you think the puddles will look like in one hour? What will happen to the water? Will the puddle be the same size? Will it be larger or smaller? Why?*
- Wipe the chalkboard with a wet sponge, and have students observe and discuss what changes occur to the water on the board. *Where does the water go?*
- After the allotted time have students observe their puddles. *Did it get larger or smaller?* Instruct students to make a second outline of their puddle with the orange crayon.
- Have student measure and record the distance between the purple and orange lines. *How much did the puddle change?*
- If time allows, have the students let the puddles sit for an additional hour. During this time compare the predictions the children made about what they thought would have happened to what actually happened. Also discuss what the students think will happen to their puddles in the next hour. *What will your puddles look like in one hour? What will have happened to the water? Where does the water go? Do you think there will even be a puddle left? Why?*
- Have students outline the puddles again, this time with the black crayon. Direct them to measure and record the distance between the *purple* and black line. *How much did the puddle change this time? Was it more or less than after the first hour? Why?*
- Compare the measurements of puddle evaporation between the groups. Create a bar graph on the board showing the distance between the purple and orange line *and* the purple and black line of each group. Discuss why differences exist between groups (difference will be small, but sometimes noticeable). If no differences exist, discuss why the different location did not change the evaporation rate.