



What is a Desert?

Activity Summary

In this activity, students are introduced to the program with the idea that they already know many things about the desert. Students listen to a story using guided imagery which is intended to elicit familiar feelings they have likely already experienced as "children of the desert". To further illustrate the concepts of heat and evaporation, students create sidewalk water graffiti and observe and compare evaporation in the sun and the shade.

Bringing it Together

Objectives

Students will:

- list and describe the key characteristics of a desert.
- associate familiar feelings of being out in the desert to the definition of a desert.
- explain and be able to demonstrate evaporation and evaporative cooling.

There are many things students already know about their desert home. Sometimes, a little reminder is all one needs to be aware of these things. During the guided imagery portion of this activity, students will be able to describe the main characteristics of a desert. The purpose is to focus their awareness on the way they feel in the desert and the reactions they have to those

Materials

- "Imagining the Desert" guided imagery story (provided).
- Globe or world map
- A bucket or bowl of water, pieces of sponges or other rags, a watch with a second hand or a stopwatch, a sidewalk (part sunny and part shady)

feelings. Students' descriptions of their feelings will help them identify the key characteristics of a desert. During their imagery experience, students will 'feel' hot and dry, desire shade, and want to drink. By reminding the class that these characteristics are central to what a desert is all about, and that they knew

Note:

If necessary, the guided imagery story may be read inside, but be sure to take the students outdoors for the rest of this activity. For students to feel the desert environment (to be out in it) is the best way to elicit their feelings of familiarity and existing knowledge of their desert home.

this all along -- this exercise aims to reinforce the sense of place the students have already developed about the desert and praise them for their awareness of it up to this point. The exercise further emphasizes that what they naturally feel in the desert is typical of what other animals and plants experience. Heat, scarceness of water, and high evaporation are the primary characteristics that make up a desert and just like the other creatures that live here, their bodies have been paying attention to this all along. They are children of the desert.

Imagining the Desert

You are outside, in the desert.

You are outside, in the desert. It is the month of June before the rains of summer. How do you feel?

You are outside, in the desert, it is the month of June before the rains of summer. It is the middle of the day. Where is the sun? Are there any clouds?

You are outside, in the desert, it is the month of June before the rains of summer. It is the middle of the day. There is moisture on your skin -- why is it there?

You are outside, in the desert, it is the month of June before the rains of summer. It is the middle of the day. You see a mesquite tree nearby, what do you want to do?

You are outside, in the desert, it is the month of June before the rains of summer. It is the middle of the day. You are now in the shade of a mesquite tree. Still, you are very thirsty. What do you want?

You are outside, in the desert, it is the month of June before the rains of summer. You sit under the shade of the mesquite tree for a long time -- hours pass by. What does the sun do? Do you have to move to stay in the shade? How do you feel? What else is under the shade of the mesquite with you? Are there other plants, animals, or people?

You are outside, in the desert, it is the month of June before the rains of summer. It is near the end of the day. Where is the sun? How are you feeling now?

Activity Procedure

1) About two weeks before your field trip, introduce your students to the environmental education program which they will be participating in. Explain that the program involves activities and projects to get everyone better acquainted with something already very close to them -- their home! Ask students what they think about when you say the word "home". Do they picture their house, town or village, country, or do other images come to mind? Have students share their thoughts.

2) The Sonoran Desert is the environment in which we all live. Through the programs available at Saguaro National Park, the class will be studying about the plants, animals, and people who live in the desert -- and that includes ourselves! Tell students that the program involves teachers and children from schools in and around Tucson, Arizona, children living on the Tohono O'odham Nation, and children in Sonora, Mexico. School children from each of these nations are participating in this same program, although only students in the Tucson area have the opportunity to visit Saguaro National Park. Other students outside Tucson can visit Organ Pipe Cactus National Monument near Ajo, Arizona. Remember, all of us live together (Juntos) in the Sonoran Desert.

3) Explain that this first day's activity is to remind everyone what they already know about the desert. Students who live in the desert are already aware of many things about deserts -- they may almost be desert experts! Tell the class that you are going to read a very short story and that they should use their imaginations to picture in their minds and "feel" the story. Through the story, some feelings and thoughts may arise which indicate some of the main characteristics of a desert (that is, what makes a desert, a desert). Have students close their eyes, relax, and listen very carefully. They will note that there are questions asked during the story; these are for them to consider quietly to themselves. After the story is finished, you will discuss it as a class.

4) After reading the story, have students slowly open their eyes. Conduct a class discussion in which students share their thoughts *and* feelings generated by the story. How many have had these feelings in real life? What did just about everyone feel and why? As a class, try to identify the main characteristics of the desert -- heat, dryness, and lack of water (which correspond to students' feelings of being hot, dry, and thirsty). Help students realize that, based on their personal experience and feelings, they already knew, perhaps as well as any scientist in the world, what makes a desert a desert. In general, deserts are hot and dry; the desert sun is intense, evaporation is high and (except during the rainy season) there are generally few clouds and very little rain.

Taking it Home and Other Extensions

After this activity, remind students to tell their families that today the class talked about our Sonoran Desert home and that they already knew a lot about it. Encourage students to bring stories back to class about things they or their families observe which demonstrate plants and animals keeping cool and conserving water in the desert.

Create a class bulletin board about things keeping cool in the desert. Cut out pictures from magazines or have students draw pictures of things they observe. How many different examples can students come up with?

5) Ask students how they think the animals and plants 'feel' in the desert. Do they experience heat and dryness? Explain that everything and everyone living in the desert is coping with the same conditions of heat, low rainfall (and thus dryness), and high evaporation. Additionally, there are deserts all around the world and they all exhibit these primary characteristics. Using a world map or globe, point out various deserts around the world.

6) Ask students if they can remember the name of the desert in which we live. Point out or have a student locate the Sonoran Desert on a map. Of all the deserts in the world, the Sonoran Desert is considered to be one of the most beautiful and has the greatest variety of plants and animals. While some deserts get less than an inch of rain each year, the Sonoran Desert receives an average of around 12 inches. However, even within the Sonoran Desert there is variation in rainfall. Some places (in the western Sonoran Desert near the coast) receive less than 4 inches per year while other areas (near Tucson) may get up to 13 inches. It is this variation in rainfall as well as a variety of other factors that contribute to the high diversity of plants and animals in our desert. Do students know how much rainfall their community receives each year?

7) If you are not already outdoors, go outside with the class to further examine the characteristics of a desert. You may conduct all or several of the following exercises to help students understand the key characteristics of a desert.

What is a Desert? Activities to conduct outside:

This activity is best conducted on a sunny day. Have students stand in the sun for several minutes and "soak in the rays." After standing in the sun, have them move to a shaded area. Which do students prefer? Which feels hotter?

This activity illustrates just how dry desert air is as well as the principal of evaporation. You will need:

A bucket or bowl of water, pieces of sponges or other rags, a watch with a second hand or a stopwatch, a sidewalk (part sunny and part shady)

Go to the sunny area. Hand out the sponges and have students dip them in the water. Have students write their initials on the pavement and time how long it takes for their letters to completely evaporate. Do the same thing in the shade. In which place did the letters evaporate faster? Why? Where did the water go? Explain that the water **evaporated** -- it changed from a liquid to a vapor, which is an unseen gas. Evaporation occurs faster in the heat. Can students think of other examples of evaporation? (*clothes drying on a line, a puddle drying up, etc.*) What would happen if this was done on a cloudy day? Students have now seen first hand a primary characteristic that makes a desert a desert: evaporation in the desert is very high. Have students look around to find things in nature that are conserving water by taking advantage of shade and therefore reducing evaporation.

The fact that water evaporates can be useful to animals (including humans) in the desert. This next activity demonstrates the effects of evaporative cooling.

Have students use their sponges to moisten one of their arms. Make sure the other arm is dry. They should then wave their arms all around. Which arm is cooler? Why? Explain that as the water evaporates from their skin, it has a cooling effect. This is why we sweat, it is our way to naturally cool off! Many animals in the desert also use evaporative cooling to maintain their body temperatures. How? (*sweating and panting*)

This activity also demonstrates how heat affects evaporation. Fill two shallow dishes (of the same size) with 2 inches (5 cm) of water. Place one dish in full sun and the other in a shaded area. Let the dishes sit all day. Visit them periodically to observe and measure the water level. Note: You may further involve students by having them first locate the hottest and coolest spots on the schoolyard and place the dishes there. You might also have several teams conducting this experiment. Discuss the advantages of staying in the shade when it's hot. Point out that it is cooler in the shade and this is one way to conserve water.