

We're Sponging Off the Everglades

Subject: Science

Duration: Day 1) 15 minutes; Day 2) 30 minutes

Location: Classroom / Outdoors

Key Vocabulary: Aquifer, limestone

Related Activities: Lake Okeechobee, the Rainy Season, and the Everglades in Three Cups; Water Poetry; The Water Watch

Florida Sunshine State Standards: SC.4.L.17, SC.5.L.15, SC.6.L.14



Objectives: The student will recognize a) that freshwater in the Everglades/South Florida is not unlimited, b) that the water South Floridians use in all aspects of their lives comes right from the Everglades, and c) problems that humans are creating due to the misuse of water.

Method: Using a wet sponge to represent the water-bearing limestone underlying the Everglades/South Florida, the students will squeeze the sponge to display water use for human purposes.

Background: The Everglades depends on water from rainfall and drainage from the Kissimmee River Basin and Lake Okeechobee. Before people settled in South Florida, the water that spilled over the lake's southern edge flowed southward through the Everglades. In the late 1800s, people began to build canals and levees to control this water flow for human needs. Now the Everglades competes with humans for water. In times of drought it does not receive enough water through the flood gates. In times of extreme moisture, it receives the excess. Also, the water Everglades does receive has been altered (polluted) before it gets here. For more information about water issues, refer to the "Natural History" section.

Materials

- One piece of limestone
- Two large identical sponges (preferably 8-10" long and 2" thick)
- Two pans to hold water
- Two ID cards labelled "Historic Everglades" and "Everglades Today"
- Four ID cards labelled: "farmer," "developer," "population of South Florida," and "Everglades."
- Masking tape
- Map of South Florida

Suggested Procedure

1. About a day or so before the activity, explain to your students how the Everglades is supplied with water. Display the piece of limestone for student observation, while explaining its water-bearing capabilities.
2. Use the map of South Florida to review the concept of the original water flow from the Kissimmee River Basin, to Lake Okeechobee, through the Everglades, into the Gulf of Mexico, and on to the coral reefs or the Dry Tortugas. Compare this to the altered water flow due to humans.

3. Appoint four volunteers to represent “the Everglades,” “farming interests,” “developers,” and “the human population of South Florida.” Identify each volunteer with a label.
4. Completely saturate one sponge with water and place it into the pan you have labelled “Historic Everglades.” This sponge represents the original, unaltered Everglades during the summer wet season. It has received an uninterrupted flow of water. Ask the students where the water originates.
5. Ask the “Everglades” volunteer to squeeze the sponge over the pan to show how much water the Everglades can hold. Put the sponge back in the water.
6. Immerse the second sponge in the second pan of water until it is saturated.
7. Ask the students how the water flow has been changed by people and for what purposes water is diverted away from the Everglades. Tell students that they are going to take water from the Everglades, just as people do.
8. Let the farmer give one squeeze to the sponge from pan 2 (“Everglades Today”), allowing some of the water to squeeze out into a sink. Pass the sponge to the developer to let him/her squeeze. What do they do with the water? They divert it, or drain it into the ocean to make the land dry enough for planting and building.
9. Pass the sponge to the “population of South Florida” for a squeeze into the sink. What do people use the water for?
10. Explain that some of the water that these groups use is only “borrowed.” However, when they return it to the hydrologic system it is not always in the same condition that it was when they removed it. It may also be put back in a different place than where it was removed from. Ask the students if they can think of some specific examples of how the water is affected and/or diverted (nutrients or fertilizers added by farmers, diverted from residential areas and flushed into the ocean to prevent flooding, runoff from roads, and treated lawns).
11. Let the “Everglades” get the last squeeze from the sponge from pan 2 (“Everglades Today”). This remaining water squeezed from the sponge into the second empty pan represents the water left for the Everglades after humans have diverted much of the water for their own use.
12. Go back to the first pan labelled “Historic Everglades” and squeeze the sponge again in its own pan. Now squeeze the sponge in the pan labelled “Everglades Today.” Compare the two. What is left for the Everglades?

Evaluation

Can water be saved? Is there enough for everyone? What effect does reduced water have on the Everglades’ plants and animals? Ask the students to list where the Everglades gets its water, name three other competitors for that water, list three ways to conserve water, and explain how water coming into the Everglades has been changed.