

DROPS OF KNOWLEDGE FOR RIVERS OF CHANGE



GLOBAL TEACHING
AND LEARNING MATERIAL

A hands-on guide to teaching
and learning about
water, sanitation, hygiene,
and the environment

SWAROVSKI
WATERSCHOOL

ACTIVITY 3.3: WATER IN OUR BODIES AND DEHYDRATION (Adapted from the Swarovski Waterschool programs in Austria, Brazil, and Uganda)

Without water, we would not exist and life on the Earth would not be possible. The water content of a child's body is about 60%. If she or he weighs 25 kilograms (55 pounds), the water content is about 15 kilograms, or 15 bottles of water. Children ages 8–12 have a daily need of water of about 1.5 liters (1.6 quarts)—so they need to drink about 1 liter (1 quart) of water a day, gaining the rest of the water content they need from the food they eat. An apple, for example, has a water content of 85%.

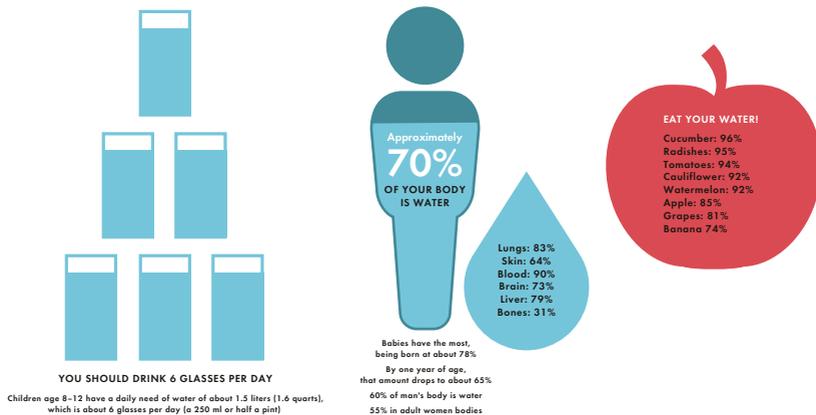
All people lose water through respiration, perspiration, and excretions. Usually, this is a healthy process that removes waste from our bodies. Small decreases in water do not cause problems and, in most cases, they go completely unnoticed. But not drinking enough to keep up with the loss of fluid can sometimes make a person feel quite sick.

DRINKING ENOUGH WATER
IS IMPORTANT



When someone gets dehydrated, it means the amount of water in her or his body has dropped below the level needed for normal bodily functions. One common cause of dehydration in children is gastrointestinal illness. This type of sickness causes our bodies to lose fluid through vomiting and diarrhea, which in many places is caused by contaminated water. You can also get dehydrated from playing sports or other extensive physical activities. If you do not replace fluids lost through heavy sweating, you can become dehydrated, especially on a hot day. Be sure to drink plenty of water to keep active!

ACTIVITY 3.3



Source: <http://water.usgs.gov/edu/propertyyou.html>

For a simple way to demonstrate dehydration over time, gather two flowers, the same kind and size. Place one in a glass of water on a sunny windowsill or ledge and set the other on the surface of the ledge. You and the students can observe and comment on what happens to the flowers as the days go by. After a few days, show and compare the fresh and withering flowers: one flower was able to “drink” the water through the capillaries in its stem, while the other was experiencing water stress and therefore withered.

Time: 50 minutes / **Thematic Areas:** Health, Science / **Goal for Learning:**

Encourage awareness that humans and all living creatures are alive through water: drinking enough water is essential for healthy living, and fruits and vegetables are also important sources of water.



Materials: □ 15 bottles of water (liters or quarts); ask students to bring in clean, recycled bottles and fill them with fresh water / □ Water drop fact sheet for each participant (a sample is provided in Annex B on page 156) / □ Pencils/pens and paper to write on / □ Scissors/ □ Cellophane tape



Optional Extension: □ Solar food drier / □ Scale / □ Fruit (an apple is good, if available) / □ Mushroom, potato, or other vegetables

ACTIVITY STEPS:

- 1** To demonstrate the water content of a human body one student stands up and is surrounded by 15 bottles of water (the other students could help place the bottles around their classmate). Explain that these bottles equal the content of water inside the student's body.
- 2** After clearing away the bottles, ask students to make a list of how they think water functions in their bodies. Then pass out a copy of the water drop fact sheet to each student. (You might want to make two versions: one with empty water drops that the students can fill in with their ideas and one with the text included.) Discuss the different ways water helps you stay healthy, comparing the students' ideas to the fact sheet.
- 3** Ask students to cut out the water drops from their fact-sheet page(s). Then have them tape the water drops to their body in a place that is appropriate for the function described. For example, the drop that reads "water is important to my body because it helps me cool down when I am hot" can be placed anywhere on the skin to indicate sweat. The water drop about removing wastes can be placed on the kidneys (lower back), and so forth. (As an alternative to taping the drops on themselves, students could make a large drawing of a person on plain wrapping paper, then tape the drops on the drawing.)
- 4** Once students have placed all the water drops, discuss each function and have students check how water works inside their bodies. This could include talking about perspiration, saliva, or excrement (urine and feces removing waste from the body). Questions could include: When do we sweat, and where does that water come from? Do you notice that your mouth feels dry when you are really thirsty after running? What are the ways that we can keep our bodies hydrated?

Optional Extension:

- 5** Obtain a food drier or build a solar food drier. Have students weigh a few food items such as an apple, a mushroom, and a potato, and write down the weight of each item.

- 6 Let students add these food items to the drier, then predict what the foods will look like when they are dry.
- 7 After drying is complete, weigh the dehydrated food and then compare that weight to the “before” weight. The difference equals the amount of water that has evaporated from the food into the air. How much water did the food contain?

OBSERVATION AND DISCUSSION:

Discuss the similarities and differences between the way water leaves our bodies—and how that can cause dehydration and the way water leaves the fruits and vegetables.

Talk about what happens to our bodies when we lose water through perspiration, and how the water can be replenished, for example, by drinking water and eating fruits and vegetables.

ADDITIONAL RESOURCES:

Science Buddies, “Staining Science: Capillary Action of Dyed Water in Plants,” *Scientific American*, August 16, 2012, www.scientificamerican.com/article/bring-science-home-capillary-action-plant

UNICEF and Alliance of Youth CEOs, “Sample Activity: How to Make a Solar Cooker,” *Climate Change: Take Action Now!*, pp. 70–72. Open PDF from: www.climatecentre.org/downloads/files/Youth%20docs/AYCEOs_climate-change_take-action-now_EN.pdf

USGS Water Science School, “The Water in You,” U.S. Geological Survey, March 19, 2014, <http://water.usgs.gov/edu/propertyyou.html>

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