

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

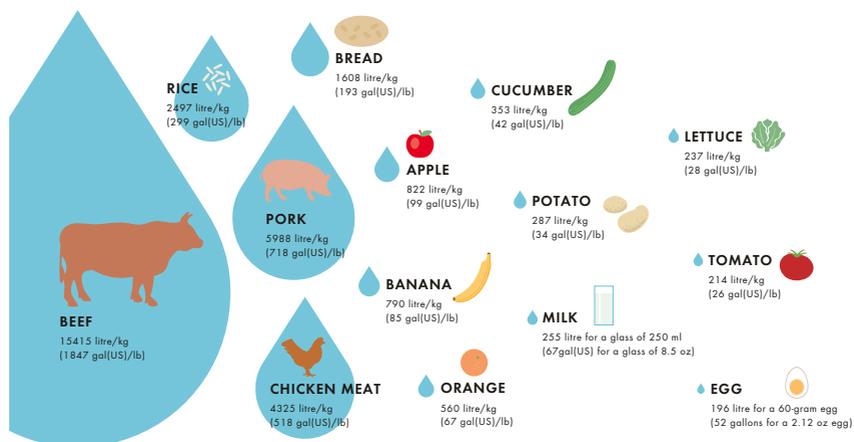
SWAROVSKI
WATERSCHOOL

ACTIVITY 4.2: WATER IS EVERYWHERE – THE HIDDEN MYSTERY OF WATER IN OUR HOMES (Adapted from the Swarovski Waterschool China)

Water and family life are very closely linked. We need to use water for all kinds of household activities—from preparing the meals we eat each day to washing, cleaning, growing flowers, or caring for pets. Where tap water is available, we see the water coming out of a pipe. We also see water in cups and bottles, washing machines and sinks, showers and bathtubs, and toilets. But is the water we see the only water that is used by households?

Water is also essential for making almost everything we use at home, even though we may not see any water in these products. The factories that produce food need water for steaming, boiling, marinating, and fermentation. Soy sauce, vinegar, soft drinks, and juices are all mostly made up of water. If we eat chicken or drink milk, we should be mindful that water was needed to raise the livestock that provided this food. Water was also used in making the dough for the bread we eat.

Then there is the electricity that was used to manufacture goods and process food, as well as the electricity that we use at home for lighting, heat, and power.



Source: <http://waterfootprint.org/en/resources/interactive-tools/product-gallery/>

ACTIVITY 4.2

The power plants that generate electricity use huge amounts of water for cooling. Electric power generation in the United States, for example, is responsible for more than 40% of all freshwater withdrawals in the country, or around 100 billion gallons a day.¹⁸

When we look closely, we see that water is an indispensable part of all our household items, including furniture, electrical appliances, cleaning products, and toiletries. So, water use is both visible and invisible!

In this activity, students will carry out a survey of household goods to learn about the “hidden” water used to make everyday items. This will enhance their awareness of the importance of water in our daily lives, particularly their awareness of the fact that water is everywhere.

They will also learn about the water footprint—the unseen water used in consumer products and services—a concept originated by Arjen Hoekstra in 2002 to enhance awareness of how water is being misused, not only for entire countries, but also at the personal level.¹⁹ The water footprint also applies to environmental impacts. As defined by the United Nations Environment Programme, for example, the water footprint “is based on the pure measure of water quantity used and the associated (direct and indirect) environmental impacts resulting from the use of it such as: damages on freshwater resources, ecosystems and human health.”²⁰

On a daily basis, knowing the water footprint of a consumable item can help us make choices that will conserve water. For example, an apple weighing 150 grams (5.3 ounces) has a water footprint of 125 liters (33 gallons), the average cup of coffee has a water footprint of 130 liters (34 gallons), and a hamburger can have a water footprint of 2,400 liters (634 gallons). A team of researchers from universities in the Netherlands, South Africa, China, and Spain has developed a calculator you can use to measure your own water footprint; see the Water Footprint Networks web page, “Personal Water Footprint,” at <http://waterfootprint.org/en/waterfootprint/personal-water-footprint>.

¹⁸ Union of Concerned Scientists, “How It Works: Water for Electricity,” <http://www.ucsusa.org/clean-energy/energy-water-use/water-energy-electricity-overview> ¹⁹ Siegle, Lucy, “Arjen Hoekstra’s Innovation: The Water Footprint,” *The Guardian*, October 2, 2010, www.theguardian.com/environment/2010/oct/03/innovator-arjen-hoekstra-water-footprint. ²⁰ United Nations Environment Programme, “Water Footprinting,” <http://www.unep.fr/scp/publications/details.asp?id=DTI/1411/PA>.

ACTIVITY 4.2

Time: 50 minutes / **Thematic Areas:** Science, Mathematics, Social Studies /

Goal for Learning: Students gain an understanding of the water used to produce everyday items, and learn how to apply the water footprint concept to their own lives.



Materials: □ Paper / □ Pens, pencils, rulers, etc. (that students will use to design their water footprint survey of household goods)

ACTIVITY STEPS:



- 1 Briefly introduce the concept of hidden water in our homes, and note that the processes used to manufacture all household goods result in wastewater. Then set out tasks for the students, who will be searching their homes for items that have hidden water and making a record of what they find.
- 2 This activity step can be adapted according to the students' ages and home-life situations. As needed, help the students design an investigation chart, explaining that they should independently choose the information or statistics to be recorded. First, they will list all the household goods that are relevant to them, and select the items that they are most interested in investigating. Second, they will count up other goods in the house that can be investigated.
- 3 At this stage, teachers should provide guidance on the water footprint concept and how it can be used. Students will then collect and record all the relevant data for the chart they have designed, including the number of items with hidden water, and learn about calculating the water footprint statistics for these items.
- 4 After calculating the water footprint of various items, students will carry out their investigation and complete their survey chart.
- 5 Organize a class conference as a platform for students to share their research process and results with their classmates, and for teachers to expand on the water footprint concept. Students can use this knowledge in daily life when considering the water footprint of the items they consume and use.

ACTIVITY 4.2



ADDITIONAL RESOURCES:

Grace Communications Foundation Water Program, “Water Footprint Calculator,” www.gracelinks.org/1408/water-footprint-calculator; “Water Saving Tips: Food Choices,” www.gracelinks.org/2975/water-saving-tips-the-water-in-your-food; and “The Hidden Water in Everyday Products,” <http://www.gracelinks.org/285/the-hidden-water-in-everyday-products>

Save Our Water, “How You Can Help!” Association of California Water Agencies and California Department of Water Resources, 2015, <http://saveourwater.com/what-you-can-do>