



# Lessons for Understanding Our Water Footprint

## High School Lessons



Welcome and Content Overview



## Welcome!

Water conservation encourages students to become more mindful of their daily direct water use, encouraging them not to waste water when brushing their teeth, washing dishes, showering, etc. Lessons for Understanding Our Water Footprint is designed to go beyond typical water conservation lessons to encourage a greater global perspective and to cultivate students' awareness and understanding of indirect (virtual) water use. The lessons promote conversation about how students' food choices and shopping habits have a larger impact on water consumption than they may realize. They do this by introducing the concept of water footprints and helping students understand how they use water beyond the tap. This program consists of three lessons for high school students and three for middle school students.

The goal of Lesson 1 is to provide students with an in-depth understanding of key water issues. Students learn key facts about water resources and water footprints and then use the water calculator from [watercalculator.org](http://watercalculator.org) to identify and analyze their personal direct and virtual water consumption. The lesson gives students a foundation of knowledge and helps them understand why they should care about protecting water resources. Once students understand why water is important, it is easier for them to make a fundamental shift in attitude about their water use.

In Lesson 2, students learn how to articulate and share the concept of a water footprint. Then they investigate in greater detail the impact of their food consumption habits on their virtual water use and begin thinking about how their diet is influenced by systems outside of themselves, such as social groups, advertising, and the structures in place at home and at school.

Lesson 3 empowers students to take action. First, they investigate how the consumer goods they buy impact their virtual water use, then they devise a plan to reduce their personal water footprint. Next, they work together to evaluate the water footprint of their school campus. Finally, they create a Strategic Action Plan to reduce the school's water footprint and work in groups to get the necessary permissions to enact a water-saving plan for the campus.

### This program includes:

- ✓ **3 engaging lessons** that are designed specifically to provide high school students with an in-depth understanding of key water issues.
- ✓ **A range of teaching strategies**, including presentations, videos, activities, assessments, portfolio assignments, technology integration and community extensions.
- ✓ **Student worksheets** that engage students in real-world learning exercises.
- ✓ **Standards alignment** with the Texas Essential Knowledge and Skills (TEKS); Common Core State Standards (CCSS) for ELA/Literacy and Mathematics; Next Generation Science Standards (NGSS); and the Cloud Education for Sustainability (EFS) Standards & Performance Indicators.



## Contents in Brief

The following is an overview of the topics for both the High School and Middle School lessons. The topics are the same, but modifications have been made to each set of lessons to suit the grade level.

### LESSON 1: Water Resources and Water Footprints

*Estimated time needed: Two 55-minute sessions*



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### Lesson Summary

This lesson helps students understand why Earth is considered the “water planet.” Students analyze how much of Earth’s water is available for humans to use for life-sustaining purposes, and they explore the concept of water scarcity in both physical and economic terms. They look at the many ways that humans use water and investigate international trends in agricultural, industrial and household water consumption. The lesson also sets up the focus of this course: the concept of water footprints. Students explore how water footprints are an invaluable tool for identifying patterns of water use so that individuals, businesses and even nations can more effectively manage their use of one of the most precious resources on Earth: water. Critical to this exploration is a visit to [watercalculator.org](http://watercalculator.org), where students calculate their personal water footprints, analyze the results and set a base point for tracking and conserving their water use.

### Objectives

Students will be able to ...

- ✓ Describe the availability of water on Earth.
- ✓ Describe several ways that people use water.
- ✓ Differentiate between direct and indirect (or virtual) water.
- ✓ Give examples of ways we can conserve water (directly or virtually).
- ✓ Explain how a water footprint can help contribute to the better management of our water resources.
- ✓ Evaluate their water footprint using the water calculator located at [watercalculator.org](http://watercalculator.org).



## LESSON 2: MY WATER FOOTPRINT

*Estimated time needed: One 55-minute session*



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### Lesson Summary

This lesson centers on a deeper exploration of the water footprint associated with food. Students learned in Lesson 1 that virtual water, especially as it relates to food, typically makes up the majority of their water footprint. In this lesson, they find out why. First, they see an attention-grabbing demonstration of how much water is needed for three food products. Second, they break into groups to do research, and then they teach their classmates about key aspects of water use related to food and agriculture. Next, they think about how their diet is influenced by social groups, advertising and the structures in place at home and at school that encourage them to potentially eat food with large water footprints. Finally, they brainstorm ways they might be able to influence change in those areas. The lesson concludes with students sharing their ideas and providing one another with constructive feedback.

### Objectives

Students will be able to ...

- ✓ Provide examples of how different foods require different amounts of virtual water.
- ✓ Research key topics related to the water footprint of food.
- ✓ Teach key topics related to the water footprint of food.
- ✓ Identify external factors that influence their diet and share ideas for overcoming those influences.



## LESSON 3: The Value of a Water Footprint

*Estimated time needed: Two 55-minute sessions plus extra time for school audit and implementing conservation ideas on campus.*



Scupham, B. (2012, July 28). Earth. Creative Commons. Attribution 2.0 Generic. Retrieved from <http://tinyurl.com/flickr-scupham-earth>

### Lesson Summary

Session 1 of this lesson begins with a quick activity to get students thinking about their direct and virtual water use. It introduces a few new ideas for virtual water use that may surprise students, including the virtual water required for the household goods we buy and use. Then students form marketing teams to explore five categories of water use (indoor, outdoor, diet, electricity and buying habits) and create infographic posters to share what they learn. Then, in Session 2, students remain in teams to audit the school's indoor and outdoor direct water use as well as several categories of virtual water use: food, energy and electronics. They use what they learn to create a strategic conservation action plan that incorporates their How to Save Water awareness campaign in an effort to decrease the school's overall virtual water use. The lesson can be conducted as a short project or a more comprehensive capstone project.

### Objectives

Students will be able to ...

- ✓ Quickly categorize examples of water use as either direct or virtual.
- ✓ Create an infographic poster and awareness campaign to communicate water conservation ideas to the school community.
- ✓ Work with classmates to audit the school's direct and virtual water use.
- ✓ Create a strategic action plan with suggestions for improving the school's water footprint as well as ideas for implementing their awareness campaign.