Red Butte Garden
THE UNIVERSITY OF UTAH

Conserving Water In the Desert

Lesson 6: Turn off the Tap!

Enduring Understanding

There is a limited amount of clean water available, especially in the desert, for various human needs, which means we must protect and conserve the water we have.

Essential Question

How can each person in a family household change various behaviors to lower water usage in Utah?

Background Information

The greatest impact individuals can have on water usage is for their landscaping since it is the single largest quantity of water used in individual households. Not only can families learn to water wisely, they can also choose plants for their landscaping that are more drought tolerant to conserve water. If everyone conserves water in different ways, we can all impact water usage over time.

We can also look at the hidden usage of water and make an impact by "voting with our dollars" and choosing the most water efficient products as well as conserving material goods. For example, if we are aware of the amount of water needed to process a piece of paper, we can choose to use paper more wisely. This processing is calculated based on the overall water footprint and is called "virtual water". If it takes more "virtual water" to grow an orange rather than a tomato, we may choose to purchase the tomato rather than the orange. The more informed we are, the better choices we can make.

Lesson Plan

Materials

- BB Student Worksheet Home Survey
- BB Home Water Usage Data (Appendix)
- BB Book *Why Should I Save Water?* (lower grades)
- BB Book *One Well: The Story of Water on Earth*
- Art materials such as markers, colored pencils, paper or
    - Computer

Procedure

Warm-up

Lower Grades: Read *Why Should I Save Water?*
Upper Grades: Read *One Well: The Story of Water on Earth*.
Discuss the ideas that are presented in each of these books.

Activity #1: Home Survey

Students will take an online home audit to see how efficiently water is used in their homes, with particular attention paid to their home landscape. They will compare their usage with the statistics on percentages of water use in a home and in a community. Have each student go to the Water – Use it Wisely website to take the home audit:

Water – Use It Wisely: www.wateruseitwisely.com

Select: 100-ways-to-conserve/home-water-audit

Have them complete the Student Worksheet Home Survey and discuss the Communicating Your Findings section as a whole group.

The students will use this information and information on the Water – Use It Wisely website to create a brochure demonstrating ways to conserve water by changing habits in the home. (i.e., how much water is saved by changing the length of your shower.) The brochure can be created with various art media or computer-generated on a graphics program.

For information on conserving water in the home visit the Utah Division of Water Resources: http://www.conservewater.utah.gov/tips.html

RED BUTTE GARDEN
BOTANY BINS

Name: _____ Date: _____

Student STEM Practices Worksheet

Lesson 6: Home Survey, 3rd – 8th grade

Objectives
You will complete the home water audit and look at the ways you and your family could conserve water. Then you will create a brochure using a computer graphics program, or paper and various art media that outlines ways to conserve water in the home by changing habits.

1. Gathering Data:

Questions I have: _____

_____

Predictions: (circle one)

My family is very water conscious.

My family could improve our water conserving habits.

Your teacher will give you instructions on how to access a website to take an online water audit that will reveal whether you can improve habits in conserving water at home. You will then be guided to websites to help you create your brochure on how to change habits in your home that will improve the ways your family uses water!

2. Reasoning:

Analyze your data. Look at your score after taking the home water audit and make some determinations about which areas in your home need the most attention when it comes to improving your water usage.

3. Communicating Your Findings: You may sketch your brochure here before you begin.

Create a brochure to demonstrate ways to conserve water by changing habits in the home. (i.e., how much water is saved by changing the length of your shower.)

Activity #2: My Backyard

Materials

- BB Student Worksheet My Backyard
- 3-6 Empty soup cans or other small can (tuna or cat food sized)

Students will measure the water used to water their outdoor lawn or landscape one day of the weekend. They will calculate the amount that is used and research whether or not that is an appropriate amount for each of the seasons: spring, summer, and fall.

See the following website at the Utah Division of Water Resources to gather additional information on watering recommendations:

http://www.conservewater.utah.gov/guide.html

Students will come up with a recommendation for how resetting or rescheduling the sprinklers for Spring, then Summer, and back to Fall would conserve water. (They will determine the type of grass they have or plants they have, determine the water needs, and summarize the amount of water needed for their landscape).

RED BUTTE GARDEN
BOTANY BINS

Name: _____ Date: _____

Student STEM Practices Worksheet

Lesson 6: My Backyard, 3rd – 8th Grade

Objectives
You will measure the amount of water used on your home landscape, and then determine the appropriate adjustments your family could make to conserve water. If you have automatic, timed sprinklers, you will also determine how to reset these timers to conserve additional water.

1. Gathering Data:

Questions I have: _____

_____

My Prediction: _____

_____

2. Reasoning:

List plants that are in your yard by their water needs. You may use the plant lists in the Appendices or research the information online.

	Water in tin can (record in inches)	**Spring**	**Summer**	**Fall**
Current Use Of Water				
Recommended Use of Water				

Using the data you have gathered above, have an adult family member help you analyze the plants in your landscaping and the seasonal water needs of the plants. Discuss with them whether you could adjust your watering to conserve water.

Low water needs	**Medium water needs**	**High water needs**

3. Communicating Your Findings:

After your discussion above, list or draw your recommendations for your home landscaping that could impact water conservation in your yard (some ideas are: group plants together by their water needs, replace some of the landscaping with decorative gravel or mulch paths, install water catchments.) You may draw a picture.

Activity #3: Waterwise Plants

Materials

- BB Student Worksheet Waterwise Plants
- BB Plant List (Appendix)
- BB Plant specimens samples in rikers (black shadow boxes)
- BB Utah Plant Hardiness Zone Map (Appendix)

Students will research the plants that are most water efficient for the area in Utah where they live (elevation, growing season, average precipitation). There are various plant specimens in the Botany Bin for examples of some different plants they might consider.

Waterwise Plants for Utah Landscapes:

http://www.waterwiseplants.utah.gov/

http://www.slcgov.com/sites/default/files/documents/forestry/2012/forestry_waterwisetreelist.pdf

For information on Utah native plants, visit the Utah Native Plant Society website:

http://www.unps.org/index.html

In addition to websites, there are plant lists for different environments included in the bin materials for students to use.

Students will make recommendations for their home landscaping.

RED BUTTE GARDEN
BOTANY BINS

Student STEM Practices Worksheet

Lesson 6: Waterwise Plants, 3rd - 8th Grade

Objectives
You will research plants that are most water efficient for the area in Utah where you reside. After gathering data, you will make recommendations for your community and home in planning outdoor landscapes.

1. Gathering Data:

Questions I have: _____

_____

My Prediction: _____

_____

	My Growing Zone	My Elevation	My Biome or Average Annual Rainfall
Best Water Saving Plants			
Good Water Saving Plants			

2. Reasoning:

Look at your plant lists and make a list of those that are best/good for all three criteria listed above:

3. Communicating Your Findings:

You may draw a picture or use a computer graphics program to design a waterwise garden:

Extension

Students can work in small groups to create a PowerPoint to demonstrate the usage of water in different states, including Utah. They will be prepared to discuss the differences and recommendations based on their research.

Project Wet Curriculum and Activity Guide:

Water Usage: My Water Footprint, page 441

Water Audit: page 469

Virtual Water: page 289