Efficient Water Technologies

60 Minutes

In this lesson, students examine a variety of water efficient fixtures that can be utilized in homes and schools. By exploring an interactive website, students learn about the technology of how these fixtures work and compare them with their inefficient counterparts. Afterward, students determine which water-saving fixture would be most beneficial in reducing water use in their homes and in their school.

Objectives

- Students will predict the areas of greatest water use in their school.
- Students will examine efficient and inefficient water fixtures and explain how they work.
- Students will determine which water-saving water fixtures would be most beneficial for their home and for their school.

Materials

- Handout: Water Fixtures Worksheet (one copy for every two students)

Background

On the market today there are hundreds of efficient technologies that save both money and precious resources. From aerators to dual flush toilets, there are technologies that drastically reduce the water needs of buildings. When considering the replacement of fixtures, there are many factors to consider including its age, cost, projected water savings, payback period, and so on. In this lesson, students focus on the amount of water saved, and consider how they would calculate these other factors if considering one or more efficient fixtures for their school.

Advance Preparation

You will need computers with internet access for the Activity. Spend some time familiarizing yourself with the website and all of its components, which can be found at: http://www.greeneducationfoundation.org/water

Do Now

Have students respond to the following question in their notebooks: *In what areas of the school do you think we use the most water and why?*

Mini-Lesson

1. Place students in pairs and have them share their Do Now responses with their partners. Invite volunteers to share their responses with the class.
2. Tell students that they are going to learn more about water fixtures that are used in their homes and their school. They will explore the technologies behind these fixtures, and compare and contrast inefficient water fixtures with more efficient ones.
3. Continue your discussion by asking students the following questions:
    - In the school areas with the greatest water use, what water fixtures contribute to that use?
    - Where else do we use water in the school and what water fixtures contribute to that use?
    - Are there ways we might reduce the amount of water used in the school?
    - What efficient water fixture technologies have you heard about and how do they save water?

- What might be the benefits and drawbacks of replacing inefficient water fixtures with more efficient ones?
- What information would you need to know in order to determine whether it is worth replacing inefficient water fixtures with more efficient ones?

Activity

1. Explain to students they will be working in pairs on computers to explore an interactive website on different water-saving technologies available for the home and the school. They will use this information to determine how they might use efficient fixtures to reduce water use in their homes and school. (**Note:** This activity focuses on the ways efficient water fixtures can reduce water use. It is important for students to also examine the role of school policies, personal behavior, and facilities practices when considering ways to reduce water.)
2. Divide students into pairs and distribute *Handout: Water Fixtures Worksheet*. Point out that they need to select either the school or home portion to see the related water fixtures around the building. By clicking on the different water fixtures they can learn about the available technologies, their benefits, and how they work. Show them that clicking on the "How it Works" button takes them to a video that explains how that particular technology functions.
3. Monitor pairs as they work and complete the handout. Allow adequate time – about 20 or 30 minutes – for pairs to fully explore the interactive website.
4. Facilitate a class discussion in which students share their responses to the handout. Use the questions on the handout to guide the discussion. Allow multiple pairs to share their answers and encourage pairs to share why they selected the technologies they did.

Assessment

Have the class create a "human bar graph" to show which efficient water fixtures they think would be most beneficial for the school. Begin by writing the names of the efficient fixtures, evenly spaced across the front of the board. Then, have students stand in front of the fixture they would choose. If a student is already standing there, they should create a "bar" by standing in front of that student. Have students note the most popular choice on their human bar graph and invite volunteers to explain the results based on their discussion earlier in class.

Homework

Have students select one water-saving fixture that they would like to consider for their home and write a paragraph explaining why they chose that technology.