Water Conservation

Cognitive Demand:

Interpreting Concepts (C)

Recalling Science (R)

Overview:

Students will calculate how much water they use in their schools and in their homes. They will then come up with ideas to conserve water.
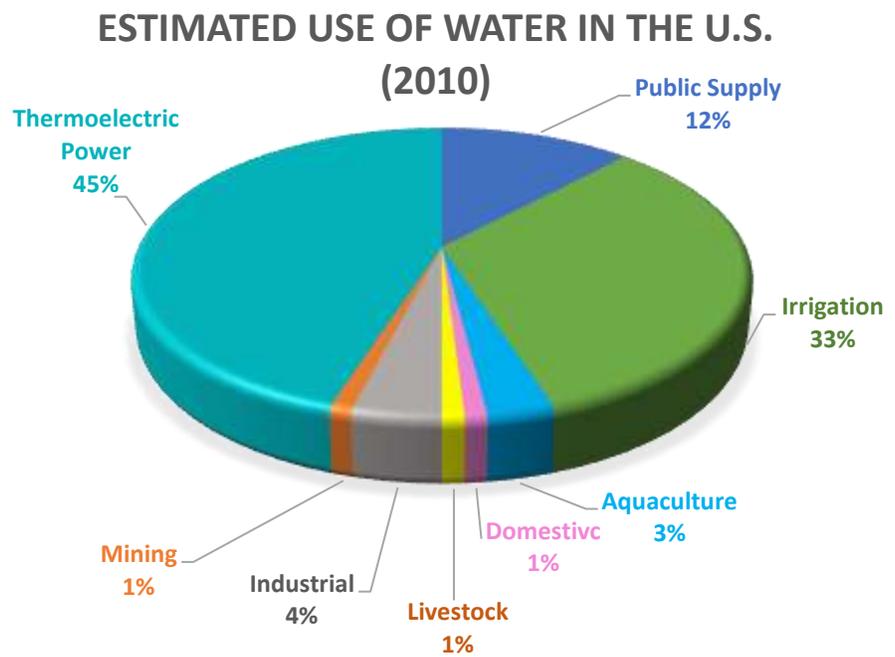
Materials:

1. Data sheets

2. Composition Notebook

Teacher Background

A report by the U. S. Geological Survey (USGS), "Estimated use of water in the United States in 2010" (USGS Circular 1405), shows that about **355 billion gallons of water per day** were withdrawn for use in the United States during 2010, which was 13 percent less than in 2005. The 2010 estimates put total withdrawals at the lowest level since before 1970. Withdrawals in 2010 averaged nearly 1,148 gallons per day per person;

Setting the Stage

Begin by showing the class one gallon of water. Asking students to estimate the amount of water they use each day. Have students write down their estimates and put them aside for future reference.

ESTIMATED USE OF WATER IN THE U.S. (2010)

- Public Supply 12%
- Thermoelectric Power 45%
- Irrigation 33%
- Aquaculture 3%
- Domestivc 1%
- Livestock 1%
- Industrial 4%
- Mining 1%

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Acquisition of Learning

1. In cooperative groups of three students, ask the class to brainstorm all the ways they can think of that they use water every day. Have them record the information in their notebooks.
2. Compile a class list of the answers the groups made.
3. Ask the students to share the amounts of water they estimated they used at the beginning of class.

Chart of Water Use by Fixture

Fixture	Fixture Rate
Non-low-flow toilet (old)	5 gallons per flush
Low-flow toilet (new)	3.5 gallons per flush
Ultra-low-flow toilet	1.5 gallons per flush
Regular shower head	7 gallons per minute
Low-flow shower head	2 gallons per minute
Bathtub filling	3.0 gallons per minute
Clothes washer	37 gallons' average load
Dish washer	15 gallons' average load
Faucet	3 gallons per minute

- Show the gallon jug again; explain that two-thirds of the people in the world use just thirteen gallons of water each day. Ask how this compares with their estimates.

- Explain that they are going to estimate the number of gallons the students at the school use each day. Have the students write down a prediction in their notebooks.

- Next, let the students brainstorm to figure out what information they need to calculate the amount of water the school uses in one day.

- *(Information should include: number of students in the school; Average number of times student uses bathroom; number of minutes they wash their hands; number of gallons used by flushing toilet; number of gallons used by washing hands; number of students that drink from water fountains; Amount of water from water fountain).*

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- The students can use estimates or measure quantities like amount from faucets and water fountains.

- Have the students calculate the estimated number of gallons used by the students at the school each day.

- Discuss the number that the students calculate. Is it lower or higher then what they calculated? What other ways is water being used at the school that they didn't figure into the equation? (*cafeteria, teachers, lawn care, generating electricity…*)

- Now explain that they are also going to calculate the number of gallons of water their family uses in one day.
- Give each student a worksheet to take home to record their information.

Closure

Discuss the results that discovered at home. Explain that in the US most people use about 80-100 gallons of water per day. Is their average the same or higher or lower?

Have the students write in their composition book five ways that they can conserve water.

Extensions

Have students research where their drinking water comes from at their home and school. Is it pulled out of a local river or well? If so, which one?   How much does water cost per month for each person at home or school?

📄 Water Conservation Worksheet Example 📋

Name: _____

Bathroom:

Toilet: 18 flushes X 5 gal/flush = 90 gal

Sink: 6 minutes X 3 gal/min = 18 gal

Shower: 25 minutes X 5 gal/min = 125 gal

Kitchen:

Sink: 6 minutes X 3 gal/min = 18 gal

Dishwasher: 1 cycle X 15 gal/use = 15 gal

Other:

Laundry: 1 cycle X 37 gal/use = 37 gal

> 90
> +
> 18
> +
> 125
> +
> 18
> +
> 15
> +
> 37
> =
> **Total Use of 303 gal**

Per-person Rate = 303 gal / 3 people = 101 gallons per person

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Student Worksheet   Keep a tally of the items listed below. Insert the gallons used for each activity and multiple to find the total number of gallons used for each item.

Bathroom:

Toilet ___ flushes X ___ gal/flush = ___ gal

Sink ___ minutes X __ gal/min = ___ gal

        Shower ___ minutes X __ gal/min = ___ gal

Kitchen:

Sink ___ minutes X __ gal/min = ___ gal

Dishwasher ___ cycle X __ gal/use = ___ gal

Other:

Laundry ___ cycle X __ gal/use = ___ gal

Total Use _____ gal

Per-person Rate _____ gal / _____ people =_____ gallons per person

Additional Resources

How to Protect Your Watershed Videos

1. https://www.youtube.com/watch?v=aq_AydC77Gs

2. https://www.youtube.com/watch?v=9cIwSuDS5ZY

3. https://www.youtube.com/watch?v=LJ63xGJY4pM

Game

http://games.bellmuseum.umn.edu/watershed/

https://www.extension.purdue.edu/extmedia/FNR/FNR-476-W%20Discovering%20the%20Watershed%2013.pdf

Sites

https://www.cserc.org/sierra-fun/games/watershed-game/

https://pbskids.org/plumlanding/educators/activities/build_a_watershed_ed.html