

Water Conservation

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Could you use less water?

Grade level 7th

Content expectation

Inquiry process

S.IP.)7.11 Generate scientific questions about fluid earth systems and human activities based on observations, investigations, and research.

S.IP.07.12 Design and conduct scientific investigation on fluid earth systems and human activities.

S.IP.07.15 Construct charts and graphs from data and observations dealing with fluid earth systems and human activities.

S.IP.07.16 Identify patterns in data regarding fluid earth systems and human activities.

S.IA. 17.13 Communicate and defend findings of observations and investigations dealing with fluid earth systems and human activities.

S.RS.07.16 Design solutions to problems about fluid earth systems and human activities using technology.

Rationale for lesson- Water seems endless to students in Michigan. We own 40% of the water in the great lakes. Students do not realize the need to conserve water or realize that in parts of the world fresh water is difficult to come by. Water conservations seems an appropriate topic considering that we are facing the worst drought in America since 1988.

The U.S. Department of Agriculture's addition of the 218 counties means that more than half of all U.S. counties in 32 states have been designated primary disaster areas this growing season. (Jim Suhr, Aug 3rd, 2012 Huff Post Green)

Big Idea- Human Interaction and use of natural resources affects the environment.

Lesson Outcome-

Students will measure the amount of water their family uses in one day.

Students will compare through graph the amount of water used by their family in comparison to families in their classroom and around the world.

Students will develop a plan to use less water.

Students will write a newspaper article persuading people to conserve water.

Procedure-

Anticipatory questions-

Guess how much water the average American uses daily? 150 gallons

How about UK? 40 gallons

How about China? 22 gallons

How about Kenya? 13 gallons

CBS 2010

Watch- <http://youtu.be/watch?v=r6eTr41dDYg&feature=related>

Based on the children's picture book_ If the World Were a Village: A book about the World's People (CitizenKid) David J Smith(Author)

As a class students will fill out data table listing items their family uses water for.

Students will then find out how many gallons of water per minute each water use activity uses.

Students will take home worksheet. With their family they will record how much water they use. Near each water source needs to be a clock or stop watch to measure time.

Definitions-

Potable- suitable for drinking

Non-potable- not suitable for drinking.

Conservation- a careful preservation and protection of something: especially: planned management of a natural resource to prevent exploitation, destruction or neglect

Home Family Activity

Saturday or Sunday water usage

Type of usage	Gallons used	Number of minutes	Number or usages	Total # of gallons used
Bath	50 per bath	N/A		
Showers	4 per min			
faucet	1 per min			
Dishwasher	10 per load			
Wash machine front loading	15 per load	N/A		
Wash machine top loading	40 per load	N/A		
Outside water	10 per min			
Toilet flushes	3 per use	N/A		
# of family members _____			Total gallons used _____	

In order to find total gallons per activity multiply number or gallons times minutes of use. How many gallons does your family use on an average weekend day?

How could you reduce the amount of water you use?

Do you think you use more or less water than your classmates?

Do you think you use more or less water than families living in other countries?

Resource materials needed-

Student handout

Internet

Graphing paper

Stop watch

Summative assessment-

Students compare home water use results with classmates and with other countries. Students make a graph showing 5 countries average water usage per day including their families dily water use.

Students then make a plan to conserve water usage in their own homes.

Background information-

Average person in United States uses 100-150 gallons of water per day

A 5 minute shower uses 15-25 gallons of water

A dishwasher used 9-12 gallons of water

Indoor water use statistics

Use	Percentage of total daily use
Showers	16.8 %
Clothes washer	21.7%
dishwasher	1.4%
toilets	26.7%
baths	1.7%
leaks	13.7%
faucets	15.7%
Other domestic uses	2.2%

Average household water use annually (including outdoor): 127,400 gallons

Average daily household water use (including outdoor" 350 gallons

Source: Residential End uses of Water (Denver, Colo. : Water Research Foundation, 1999.

By installing more efficient water fixtures and regularly checking for leaks, households can reduce daily indoor per capita water use by about 35% to about 45.2 gallons per day.

Source; handbook of Water Use and Conservation, Amy Vickers

If all U.S. households installed water- saving feature, water sue would decrease by 30 percent, saving an estimated 5.4 billion gallons per day. This would result in dollar-volume savings of \$11.3 million per day or more than \$4 billion per year.

References-

Science companion document

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