



## How Much Water Are Your Really Using

<b>Grade(s):</b> 3 <sup>rd</sup> -4 <sup>th</sup> Grade	<b>Topic:</b> Water Usage	<b>Time Frame:</b> 6- 45 minute class periods
<b>Lesson Description:</b> This lesson is essential for students to engage in because it informs students the different uses of water and the importance of conserving water.		
<b>Specific Learning Outcomes:</b> <ul style="list-style-type: none"> <li>Discuss the different types of water on Earth</li> <li>Summarize why not all the Earth's water is drinkable</li> <li>Examine and calculate personal water use</li> </ul>		
<b>Resources Needed:</b> <ul style="list-style-type: none"> <li>Science Journal</li> <li><i>The Water Cycle and Water conservation</i> Article</li> <li><i>Estimated Water use in the United State</i> Article</li> <li><i>Water Rationing as Drought Hits California</i> Article</li> <li>Teaching Close Reading Annotation Chart Document</li> <li>World of Water activity sheet</li> <li>3-5 gallon aquarium</li> <li>3 gallons of water</li> <li>Measuring cup (24-ounce)</li> <li>Green or Red food coloring</li> <li>Two 6-ounce see through containers</li> <li>Eye dropper</li> <li>Sand</li> <li>Laptops or iPads</li> </ul>	<b>Lesson Websites</b> <ul style="list-style-type: none"> <li><a href="http://www.epa.gov/watersense/kids/index.html">http://www.epa.gov/watersense/kids/index.html</a></li> <li><a href="http://www.swfwmd.state.fl.us/conservation/thepowerof10/">www.swfwmd.state.fl.us/conservation/thepowerof10/</a></li> <li><a href="http://www.discoverwater.org/">http://www.discoverwater.org/</a></li> </ul>	
<b>Activity Standards</b>		
<b>TN Science Standards</b>	<b>Next Generation Science Standards Practices</b>	<b>Common Core Standards</b>
<b>SPI.0407.7.2</b> Analyze how different earth materials are utilized to solve human problems or improve the quality of life.	<u>Obtaining, Evaluating, and Communicating Information</u> Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods. <ul style="list-style-type: none"> <li>Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1)</li> </ul>	<b>CCSS.ELA-Literacy.RST.6-8.8</b> Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
		<b>CCSS.ELA-Literacy.RST.6-8.9</b> Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic

### Guiding Questions

Also known as your essential questions. What do you want the students to be able to answer by the end of this lesson?

- What is the main utilization of water in the United States?
- Why is it essential to conserve water? Explain
- What are best practices to live by when it comes to water sustainability? Explain

### Possible Preconceptions/Misconceptions

- There is a never-ending supply of water.
- The amount of water vapor in the air at any place depends on the amount of liquid water available on the surface of the earth at that place, the temperature of the air, and where the air moved from.

### Activities/Task

What learning experiences will students engage in?

### Teacher Information

Only about three percent of the world's water is available for drinking. As the world's population increases, more and more people need this natural resource. However, like all natural resources, there is not an infinite supply of water.

### Introduction - Day 1

- Have this question written on the board - *Is there a never-ending supply of water?*
- Have students to discuss their thoughts with a shoulder partner, group, and/or whole class

#### Procedure 1:

Have students to read the article *The Water Cycle and Water Conservation*.

- **Reading Method**
  - *Jigsaw Reading – Divide the reading into sections. Pair the students up into groups. Assign a section of the reading to each group. Provide students with chart paper to jot down or draw facts or key ideas from their section. Give students 10-15 minutes to read and compile information on their chart paper. Have students to share out their group findings with the rest of the class. Have students to make notes in their science journal as each group presents. At this time the teacher will ask higher order questions/text dependent questions about the reading to ensure that students comprehend the content.*

#### Procedure 2:

Students will define key terms from the reading. Terms will be defined in their science journal. To extend this part of the lesson, the teacher can have the students to complete a Frayer Model for each word.

- **Key Terms:**
  - *Transportation*
  - *Evaporation*
  - *Conservation*
  - *Hydraulic Cycle*
  - *Clean Water Act*

#### Procedure 3:

- *Ask students, in their science journal, to jot down all the different activities they do that involve the use of water (2-3 minutes)*
- *Have students to share their finding with the class and then jot down all findings on chart paper or on the board,*
- *For each activity, have students to raise their hand if they to participate in the activity. Tally up all student responses for each activity.*
- *Now ask students to think of an estimated gallon amount that they think they use on an average day. Have students jot down estimation in their science notes. Take a tally of all students' estimation and jot it on the board or chart paper.*

#### Procedure 4:

- *Inform students that they are going to use an online water usage calculator to compare their actual water usage with the estimated number they came up with*
- *Display the website [www.swfwmd.state.fl.us/conservation/thepowerof10/](http://www.swfwmd.state.fl.us/conservation/thepowerof10/) on the board. Go through how to use the site with the students.*
- *Pass out laptops or ipads or whatever technology device that may be available for each student to compute their own water usage calculation*
- *Have students to write down their calculation in their science journal*
- *Pass out the Water Use Table sheet. Inform students that you want them to collect data on how much water their family uses in a day.*
- *Go over the sheet with the students – This activity is an at home assignment (homework)*

## **Close Reading Activity – Day 2**

### *Procedure 1:*

- *Math*
  - *Have students to average out the number of minutes and gallons per fixture, for each person in their household.*
  - *Create a classroom chart that shows how long and how many gallons all families in the classroom use per fixture. Have students to calculate how many gallons are used per fixture for the entire class.*
  - *Create a class bar chart for this activity.*
  - *To extend this portion of the activity the students can use excel, or a web-based chart create to show the average gallon use for each fixture.*

### *Procedure 2:*

- *Close Reading Activity*
  - *Pass out the article [Estimated Water Use in the Unites States](#)*
  - *Have students to read the article.*
    - *Read with a pencil/highlighter/crayon*
      - *This strategy is a reading strategy that aids in assisting students in comprehending the text.*
      - *Students highlight words that are unfamiliar, facts, authors purpose and more.*
      - *Annotation Sheet available.*

### *Procedure 3:*

- *Have students discuss article in their group.*
- *In group students will elaborate on the annotation they made with their group and share finding, understandings, and misconceptions with one another*

### *Procedure 4:*

- *Teacher will discuss article as a whole class*
- *Teacher will ask text dependent questions that extend students thinking.*

### *Procedure 5:*

- *In the science journal student will briefly summarize the article focusing on the different usages for water.*

## **Demonstration Activity – Day 3**

### *Procedure 1:*

- *Remind students about the reading on the previous day about water usage*
- *Put 3 gallons of water in an aquarium. Explain that this water represents all the water on earth*

### *Procedure 2:*

- *In students science journal, have them to take 3 minutes to write down the estimation of water for the following:*
  - *Ocean*

- Groundwater
- Rivers
- Ice caps/glaciers
- Freshwater lakes
- Inland seas/ salt lakes
- Atmosphere
- Have students share their estimations with another student.
- Have students to share out their estimations with the class.

**Procedure 3:**

- Using a measuring cup, remove 20 ounces of water from the aquarium. Using food coloring, color the remaining water in the aquarium. **(The dyed water represents the earth's ocean and the water in the measuring cup represents all the water in the world that is NOT ocean water.)**
- Pour 15 ounces of water from the measuring cup into a clear container. **(This water represents ice caps and glaciers)** Because it is in the form of ice, it is not readily available for use so it has to be separated from the world's supply of fresh water.
- The remaining 5 ounces of water in the measuring cup represent the world's available fresh water. Of this water, only a small percent of an ounce composes the world's freshwater lakes, and rivers. Use an eyedropper to collect this water and place it into a student's hand.
- The water remaining in the measuring cup, after removing ice caps and glacier water and freshwater lakes and rivers (about 4.5 ounces), is groundwater. Pour this water into a cup of sand and explain that this water is what is referred to as groundwater and that it is held in the pore spaces of soil and cracks in bedrock.

**Procedure 4:**

- Students complete the World of Water activity worksheet.
  - **Answer – 0.419% total and 2.799% grand total**
- Have students to share their thoughts about the amount of fresh drinking water there is.
- Ask students to take 5-10 minutes to respond to the following questions in their science journal:
  1. Why isn't all fresh water usable?
  2. Why do we need to take care of the surface and ground water?
- Have students share out and write responses on the board or chart paper.
- Show brief video and have students compare their methods to the methods provided in the video.
  - <http://www.epa.gov/watersense/kids/simpleways.html>

**Procedure 5:**

- Have student to read: Water Rationing As Drought Hits California
  - Reading lexile range can be scaffolded with this article
- Have students to identify the main idea of the article and provide supporting details for the main idea.
- Discuss article in whole class setting.
- Chart information provided by students on board or chart paper.

**Procedure 6:**

- Students will write an explanatory paper on water usage and ways to conserve water. Students must use the three articles read throughout the lesson to support their paper.
- The teacher will facilitate the task.
- Students will type their completed, error free paper in a word processor.
  - Teacher will use a writing rubric to grade finished papers.

<p style="text-align: center;"><b>Reading Task</b></p> <p>One of the literacy shifts in common core is for students to focus on more complex, non-fiction literature.</p>	<p style="text-align: center;"><b>Writing Task</b></p> <p>In science students are responsible for writing either an explanatory or argumentative piece. Below simply type the writing prompt in which students will dive into.</p>
<p>Throughout the lesson the students will dive into three articles that relate to water usage, the water cycle, and water conservation.</p> <p>Articles</p> <ul style="list-style-type: none"> <li>- The Water Cycle And Water Conservation</li> <li>- Estimated Water Use in the Unites States.</li> <li>- Water Rationing as Drought Hits California</li> </ul>	<p>From the three articles read throughout the lesson, the students will write an explanatory paper about the usage of water and the importance or water conservation. The students will use the articles read to pull evidence to support their writing. Students will cite evidence ensuring that readers know where the student pulled the information.</p>
<p><b>Assessment</b></p> <p>How will your students be assessed? How will you use the above learning experiences as formative assessment opportunities? (If activity is several days long, please specify the day with the activity/reading task)</p>	
<ul style="list-style-type: none"> <li>- Science journal writing responses.</li> <li>- Peer discussion/group discussions.</li> <li>- World of Water Activity sheet.</li> <li>- End of lesson explanatory writing assignment.</li> </ul>	
<p><b>Modification/Accommodations:</b></p> <p>What curriculum modifications and/or classroom accommodations can be made for students with disabilities in a class</p>	
<ul style="list-style-type: none"> <li>- For students that need additional assistance or accommodations can use the following link to retrieve information to follow along with the lesson <a href="http://www.discoverwater.org/">http://www.discoverwater.org/</a></li> </ul>	