

Unit Title: Earth Science: Water Cycle

Grade Level: 4th grade

Subject Area: Science/ELA

Duration/Length/Number of class periods: 18

Description:

Students will investigate the movement of Earth's water, identify the terms related to the water cycle, and analyze their own water footprint.

Established Goals (National, State, Local):

Standard 4.1.1.1 Students will be able to ask questions about aspects of the phenomena they observe, the conclusions they draw from their models or scientific investigations, each other's ideas, and the information they read.

Benchmark: 4E.1.1.1.2 Ask questions about how water moves through the Earth system.

Standard 4.2.1 Students will be able to read and interpret multiple sources to obtain information, evaluate the merit and validity of claims and design solutions, and communicate information, ideas, and evidence in a variety of formats.

Benchmark: 1E.4.2.1.1 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

Standard 4.2.2.1 Students will be able to use mathematics to represent physical variables and their relationships; compare mathematical expressions to the real world; and engage in computational thinking as they use or develop algorithms to describe the natural or designed worlds.

Benchmark: 4E.2.2.1.1 Interpret charts, maps and/or graphs of the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.** (P: 5, CC: 4, CI: ESS2) *Emphasis is on oceans, lakes, rivers, glaciers, ground water, and polar ice caps.*

What **Enduring Understandings** are desired?

1. Every living thing needs water.
2. The water cycle describes how Earth's water is not only always changing forms, between liquid (rain), solid (ice), and gas (vapor), but also moving on, above, and in the Earth. This process is always happening everywhere on Earth.
3. Water moves through the Earth system through processes of evaporation, condensation, and precipitation.

4. Heat energy & gravity can influence the water cycle.
5. Human actions can impact the water & there are ways humans can conserve water.


What [Essential Questions](#) will be considered?

Where can you find Earth's water?
 How does water move throughout the Earth?
 How can your water consumption affect the Earth?


Students will know / be able to:

Students will be able to explain where water collects on Earth.
 Students will be able to describe the movement of water within the water cycle.
 Students will be able to evaluate their water footprint and describe changes they can make to conserve water.

Description	Formative	Summative	Introductory Activity	Learning Activity	Student Technology Used	Teacher Technology Used	ISTE Standards
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<p>Observation of water cycle in a bag. (Three weeks before the unit: place a transparent cup 1/3 filled with water & mark that water line with a marker. Place the cup in a baggy, seal & tape the baggy to a window.</p> <p>Students observe the baggy of water & record observations on a padlet. Water Cycle in a Baggy Padlet</p> 			x		padlet	padlet	6a&6d
<p>Water KWL padlet -Students discuss in groups what they know about water, one person types in the What we know about water column and What we want to know about water. (Leave what we learned column blank for now.)</p> <p>(This is used to assess what the class already knows about water, the water cycle & water conservation.)</p> <p>https://padlet.com/becky_pollard/9py0jq21uvj4</p>	x				padlet		6a &d
<p>Incredible Journey game, discussion & writing activity</p> <p>Students transform themselves into a water droplet & travel around the world.</p> <p>Roll the Cube activity:</p> <p>Students roll the cube, record their roll, take a bead to add to their pipe cleaner. They continue 12 times.</p> <p>Class discussion:</p>				x	Google Doc through Google Classroom, or tell the		2a & b

<p>Teacher leads class through a discussion of the different beaded pipe cleaners. (Why did Joe have so many ocean beads? Why did he roll the ocean so many times? Discuss how each of the cubes were made and why some cubes had the same picture on so many sides.)</p> <p>Writing activity: Students are given a Google Doc or Flipgrid through Google Classroom in which to write their incredible journey as a water droplet.</p> <p>The Incredible Journey-water cycle activity Further Incredible Journey lessons</p>					story in Flipgrid		
<p>Writing workshop: Students pair up to listen to another's story, help edit and give suggestions. As students work with the teacher, other students can listen to the story A Drop Around the World read to them</p> <p>A Drop Around the World READ ALOUD</p>				x		youtube	

<p>Where is the Earth's water activity: Interactive Science curriculum page 230, create a slideshow with 3 pages. one page is prediction, 2nd page is next prediction after reading pages 231-234 based on more information, and 3rd page of slideshow is for after teacher discussion to record the actual answers to Where is Earth's water.</p> <p>Where is the Earth's water slideshow activity</p>  <p>The diagram shows a water cycle with components: groundwater, oceans & seas, lakes, rivers, streams, ice caps & glaciers, and atmosphere. Below the diagram are measurement tools: a 2,139 mL bottle, a 47 mL graduated cylinder, a 13 mL graduated cylinder, a pipette labeled '4 drops', and a smaller pipette labeled '1/2 drop'.</p>				x	Google slides how		
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<p>Assign: Readworks.org Water and the Earth</p>	x			x		Read works.org	
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<p>How can water move in the water cycle? Interactive Science Curriculum pages 237-241 Google form quiz</p> <p>Water cycle diagram-beginner students</p> <p>Water cycle diagram-intermediate students</p> <p>Water cycle diagram-advanced students</p> <p>Refer back to the baggy experiment</p> <p>Optional could be Google form drawing of water cycle</p>	x			x	google form quiz from reading		
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<p>Read & discuss the Young Naturalists & answer questions through google forms</p> <p>Splash: Story PDF Teachers guide PDF</p> <p>Learn where tap water comes from and what happens to it when it goes down the drain.</p>	x			x	google form quiz		
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<p>Water conservation: Family activity to calculate water consumption. Water Footprint Calculator</p> <p>Poster creation slideshow for one way to conserve water –try Big Huge Labs poster creator</p>				x	big huge labs poster		
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<p>Final assessment: Water Cycle assessment</p>		x			quizzizz		
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Materials, tools and resources: weblinks, Interactive science curriculum, chromebooks, ProjectWet, Young Naturalists, Quizzizz

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Additional credit given to: Young Naturalists DNR articles, weblinks, YouTube read aloud with Mrs. Gibson, USGS, Project Learning Tree, ProjectWet