

Revised Water World

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1 Objective

The student will be able to state the 3 step water cycle, three ways to conserve water, and what region of California provides water to San Diego.

Grade Level:	4 / 5
Water Unit:	Resource, Cycle, Conservation

2 Resources / Materials

- Apple & a butter knife
- Four bottles (filled with water, salt water, pond/dirty water, and vinegar)
- Small sheets of paper
- Gallon of water & a tablespoon

3 Intro./Anticipatory Set

Motivation *Students listen an audio recording of water - raindrops, thunderstorm, a rushing river, ocean waves, drips from a faucet, etc. I will the materials I plan to use to outline what will be learned -i.e. hold up the map of California's waterways and say, "As residents of San Diego, you will learn where the water we drink and use comes from."*

4 Instruction

This lesson involves constant interaction between the students and the teacher. The teacher guides the students into making discoveries through a variety

of activities—some interactive, some making smart guesses *while working in collaboration with table-mates* & contributing to the class' knowledge.

4.1 Percentages of Water on the Earth

Teacher holds an apple in hand & asks the class to guess what it is — it is a representation of the earth. Students are asked, "What percent of the earth's surface is land?"

"What percent, then, is water?"

"Can we drink and use all this water?"

Teacher continues with a series of questions leading the students to the understanding that of all the water on earth, only 3% is fresh water, and only 1% is available.

Students work together as a team at their tables to brainstorm and record their ideas and guesses. When the time limit is up, each table reports their final guess. The students' responses are recorded (on the board or the overhead, possibly by a student), the answer is announced by the teacher, and the correct information is written on the board for the students to see.

Points include:

- 25% of the Earth's surface is land, 75% water
- 97% is salt water & unusable for many needs (drinking, agriculture, etc.)
- Of the 3% fresh water, 2/3 is unavailable (glaciers)

A gallon of water (represents total amount on earth) is another visual used to show 1% of fresh water available (one table spoon).

This is used on day two to review what they have learned. This additional visual aide helps the students to interpret the information.

4.2 Water Uses

Students work with a partner to brainstorm and create a list of 10 ways people within a community use water. Hydroelectric power, agriculture, hygiene, recreation, cooking, drinking, and other major uses should be mentioned.

Drought! Your community is on water restriction. Cross out all but the three most important ways to use water.

Table polls together a common list & writes the water uses on the board. After drought, table decides their top three uses of water, and circles these on the board from their original list. Possible writing assignment about how this would effect their family & community.

4.3 Where Our Water Comes From

Ask students where all the water we use comes from. Try to lead them into thinking about San Diego (dry, dry, dry!) specifically and the amount of annual precipitation compared to the amount our city consumes.

We get water from rain, snow, rivers, but do you go to the river every day and lug buckets of water to your home? How does it get from the river to the faucet? What rivers? Which part of the state are these rivers coming from? Etc.

Create a large visual (or on transparency) of California displaying the natural water ways flowing from the Sierra Mountains & lakes especially in Northern CA, the Colorado River, and the aquaducts en route to So Cal. Have the students interpret the map and its implications first within their groups, and then whole class. Lead if necessary.

4.4 Conservation.

The introductory set provides a lead-in to conservation. For each way students can suggest to conserve

water, they receive a slice of the apple until it is finished.

Scratch the above. As a team, each table brainstorms five to ten ways to conserve water. After the list is completed, one student from the group copies their list on to the board. Read through the list and have the students raise their hand if they are willing to commit to conserve water in that way.

4.5 Water Cycle

Evaporation, Condensation, Precipitation

If in a small group (15 or less), this can be presented as a line strut/chant - 'The Water Cycle Boogie.' Otherwise, lead the kids into discovering the cycle of a drop of water while teaching the scientific names. Students know that water in puddles goes back into the clouds, but will learn it is called "condensation."

Request volunteers who are eager to perform in front of the class - "I need six lively, enthusiastic, wanna-be actor volunteers. I'm going to teach you the Water Cycle Boogie dance - I've seen it on Soul Train and I want to teach you the latest moves."

To class - "Okay, what is that cool scientific word used to describe what happens when water in puddles disappears back up into the sky?" "Evaporation"- a student calls out. "Okay, disco dancers, here's your first move - knees bent, fingers to the ground fidgeting around, and stand up - "E-vap-or-a-tion!" Continue through the cycle.

4.6 Water Quality

Four glass bottles, labeled 1-4, are presented to the class. By table, students come up to look at the bottles, and record with tally marks, which bottle of liquid they would drink. Volunteers are chosen then to use their sense of smell and taste to discover the true contents of the bottles. This activity may lead into discussion about filtration of water and/or safety.

The tally marks, representing student choice, is interpreted (a little math) & left on the overhead for students to notice as we find out the true contents of the bottles - "Ah, sixteen people chose to drink the vinegar."

5 Closure

A few students will recall an important fact, something new s/he learned, or a way s/he can conserve water at home.

6 *Independent Practice*

Students are given a preprinted list of ways to conserve water. The objective is to choose the ways that the individual will actually be able to conserve water and record their actions for a course of a week.

Draw & color a picture of the water cycle and label the three steps.

7 Future Activities

Tomorrow, the 'Joy of Reading' guest will read *A River Ran Wild* by Lynne Cherry, a book about the effects of pollution over the years to a river, and the two people who decided to clean it up. A complementary lesson on filtration of water can be a near future topic—the hands-on process using cups, coffee filters, alum, etc. & discussion of similarities to grand city scale.