

Where does our water come from and how does it get to us?

Author's Name: June Smith

Subject/Grade: 7th grade Science



1-2 Sentence Lesson Summary

Students in middle school think that you turn on the faucet for unlimited water. This water unit will help students understand that clean reliable water can be a limited resource that has a cost. We will investigate where our local water comes from and how it gets from the source to the faucet, including all the people involved in getting water to our homes.

Driving Question that Students Will Explore

When you turn on a faucet, where does the water come from and how does it get to the faucet?

Water Industry Connection (e.g., an industry-related career, skill, or challenge; addresses **reducing water pollutants, conserving water resources, and/or inspiring watershed stewardship**)

*–Industry related careers involved in getting water from source to faucet.
–Why we need to take care of our local watershed.*

Learning Goals: Make sure to address how your lesson will:

- Involve your students in a [Community Environmental Action](#)
- Develop Critical Thinking Skills (e.g. CERs, Student Inquiry)

Students will be able to:

*–show evidence of their observation skills
–show evidence of their research skills researching where our water comes from and what types of jobs are involved in our local water system
–practice academic conversations and critical thinking skills talking with partners and groups while investigating the steps water must take from source to faucet
– carry out an investigation of water filtration and communicate results
–communicate and explain what they have learned from research
–choose and complete a local community environmental action involving water*

Instructional Outline: This should be the bulk of your writing. Bullets of what the students will do throughout the lesson to reach the learning goals you have set.

Hook/Intro: Nature walk to get students to start thinking about how we get water.

Nature walk to observe a living thing (non human!) outside near the creek next to school.

–Students explore the outside area and will be encouraged to pick different living things amongst the group to closely observe.

–Students draw and label their organism and write 4 observations using a [modified version of the nature journal pages](#).

–Students answer Who/What/Where/When/Why questions, and answer an additional question about how their organism gets water.

Starting the Water unit:

–Class discussion to share out how organisms get water, leading to how do humans get their water? Can we drink from the creek? (Some students may not know it is not safe to drink directly from the creek.)

–In groups, students generate a list of possibilities on large whiteboards for how they think water gets to the faucet. Prompt groups to think all the way back to the water source. Ask groups to think about who is responsible for getting each step done to start them thinking about how humans are responsible for water coming to the faucet. (is it a person, the city, the government?)

–Gallery walk of ideas

–Each student picks one idea of how our water system works to get from sources to pipes and diagrams the steps of the system in their science notebook with lots of room for future additions. This first idea will be revised and added onto as the unit progresses and we learn more. This reinforces the idea that science is always changing with new evidence. New information will be added in a different color so they can see how their thinking changes.

Next Steps:

–Webquest using our local water district ACWD website to find out what our water sources are and what kind of jobs are involved in getting water to our homes. Part of the webquest will involve visiting the “Who are we” part of the website to see bios of some of the people involved in getting water to our homes.

–Class discussion using Google maps to see where our water sources are located.

–Add specific water sources to our water system diagram.

–Since most of our water comes from reservoirs, we will follow the [EPA Reservoir lesson plan](#) to build a reservoir for a hands-on understanding of how reservoirs work. Students draw and label their model reservoir in the science notebook.

–The creek behind our school empties into Alameda Creek, so we will take the East Bay Regional Park virtual tour of Alameda Creek. This video adds to our knowledge of reservoirs and how we share the water with other living things. Add to our water system diagram that we share water with other living things. Students will also use a website called [River Runner](#) to trace a drop of water through the watershed.

–Students take notes/drawings/observations in their science notebook.

–We also get water from desalination so read Newsela article: [California to tackle water scarcity by converting seawater](#) . Research and add desalination to our water system diagram. Virtual tour of the desalination plant in Newark using pictures from an in person tour. Add desalination plant to our water system diagram.

–Segue into the filtration activity with questions: Can we drink directly out of the creek or reservoir? What has to happen before we can drink the water? Do the Tech’s Greywater Gadgetry Filtration activity.

–Discuss results of filtration investigation. How do we know when filtration is complete? What happens to our water? Investigate where it is treated, purified and tested using the ACWD website.

–Add filtration/purification/treatment to our water system diagram.

We now have a completed water system diagram in our science notebooks which is counted as an assessment.

–What if people don't live near a river or reservoir? Research uneven distribution of water in our own state. Compare and contrast well dependent Central Valley towns vs Bay Area towns during drought years and why some towns ran out of water. Use various newspaper articles in a jigsaw activity where each group teaches what they learn from their article to the rest of the class.

Reflection: Wrap up the unit with reflection questions–Is water free? What contributes to the cost of water? Why do we need to protect our water sources?

Community Action Piece: At the end of the unit, students choose from a list of actions they can take for good water stewardship.

1. Commit to a behavior change–what can I do myself to conserve water or protect water.
2. Participate in a creek clean-up (if possible!--may do as weekend or after school with parents participating as well)
3. Design a family plan to reduce use and impact
4. Run an awareness campaign at school for peers–put up posters to encourage students to not let trash blow into our creek/ conserve water/
5. Start or join a school club involving environmental awareness
6. Engage in a citizen science project –[American Chemical Society](#) water quality testing citizen science program If materials still available, may add this to the unit
7. Create a meme to raise awareness of local environmental activities or concerns

Standards: Common Core, NGSS, CTE, GoalBook or another state or national list.

Disciplinary Core Idea

ESS3.A: Natural Resources

Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes. (MS-ESS3-1)

With crosscutting concept of Systems and System Models

Assessment: How will you check your students' understanding? Check out these [creative assessments](#) if helpful.

- final Water System diagram, labeled in different colors each time new information is added
- oral report to class of Greywater Gadgetry activity results
- oral report to class about articles for Central Valley water crisis
- Reflection questions
- Community Action

Materials/Resources

Materials: Science notebook with nature journal [page print out](#)
Whiteboards and markers
Materials for Greywater Gadgetry lesson

Resources:

[Nature journaling, Nature Journal One Pager](#)

[ACWD website](#)

[The Tech “Greywater Gadgetry” lesson](#)

[Virtual Tour of Alameda Creek EBRPD](#)

[River-runner.samlearner.com](#) (raindrop tracing path through watershed)

[Water quality for ACWD](#)

[Water treatment for ACWD](#)

[Newsela article California to tackle water scarcity by converting seawater](#)

[EPA Reservoir activity](#)

[Desalination plant photo from tour](#)

Various newspaper articles about the Central Valley water crisis during the drought

Ignited's [Community Environmental Action](#) list