

Where's My Watershed?

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Grade Level	3
Duration	2 class periods

National Standards	AZ Standards	Arizona Social Science Standards
GEOGRAPHY Element 2: Places and Regions 4. The physical and human characteristics of places Element 5: Environment and Society 14. How human actions modify the physical environment	ELA Writing Production and Distribution of Writing 3.W.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.	GEOGRAPHY The use of geographic representations and tools helps individuals understand their world. 3.G1.1 Use and construct maps and graphs to represent changes in Arizona over time. Human-environment interactions are essential aspects of human life in all societies. 3.G2.1 Explain how people modify and adapt to the Arizona environment.

Overview

Water is one of the basic necessities of life. We use it every day, yet students may have little understanding of where it comes from or how it got there. Starting locally and examining one's own watershed can help to identify water systems and issues on a larger scale.

Purpose

Students will review the water cycle and how it impacts their local watershed. Students will identify their own watershed and explore how their actions and other actions around them affect the overall water quality.

Materials

- *Why Care About Water?*
<https://www.youtube.com/watch?v=Fvkzjt3bdU>
- Student journals/paper
- Sum of the Parts handout from Project Wet
- [https://www.projectwet.org/sites/default/files/content/documents/WASH/Water is Life EN.pdf](https://www.projectwet.org/sites/default/files/content/documents/WASH/Water%20is%20Life%20EN.pdf) (Page 9)
- Arizona's Watersheds map (color)
http://geoalliance.asu.edu/sites/default/files/maps/AZ_Watersheds_COLOR.pdf

- Arizona's Watersheds map (B&W)
http://geoalliance.asu.edu/sites/default/files/maps/AZ_Watersheds.pdf
- Colored pencils/crayons
- Water Cycle diagram
http://geoalliance.asu.edu/sites/default/files/maps/Water_Cycle_s.pdf
- River Property sheet
- Small pieces of gravel or other debris
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Objectives

The student will be able to:

1. Identify their watershed and how a watershed is affected by human activity.
3. Describe changes they can make to improve the water quality and availability in their community.

Procedures

Prerequisite Skills: Students should have some background knowledge of the water cycle. Teachers should know which rivers in their county flow constantly or which ones are usually dry. Teachers should know the average rainfall for their area and the areas of high and low elevation.

SESSION ONE

1. Begin the lesson by projecting the video clip, *Why Care About Water?*
<https://www.youtube.com/watch?v=Fvkzjt3b-dU>
(2.29 min) Ask students how they use water each day and where it comes from. Discuss for 2-5 minutes.
2. Ask students to pre-write in their Student Journal, or on a sheet of notebook paper, "I think a watershed is...".
3. Call on a few students to share their answers.
4. Have students write beneath their entry, "A watershed is *the area of land where all of the water drains off of it and goes into the same place*. Use the *Sum of the Parts* handout from Project Wet to further explain a watershed.
[https://www.projectwet.org/sites/default/files/content/documents/WASH/Water is Life EN.pdf](https://www.projectwet.org/sites/default/files/content/documents/WASH/Water%20is%20Life_EN.pdf)
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5. Distribute the black and white version of *Arizona's Watersheds* map and colored pencils. Project the same map and model for students the following activities 6-8).
6. Have students identify the city in which they live by placing a solid black dot in the location and labeling the name (if necessary) and to identify the county in which they live by tracing the outline in black
7. Identify the individual watershed(s) within the county by coloring each one a different color. Talk about the elevation of your county.
8. Trace the water sources blue (rivers/lakes) within their county. Discuss the direction of water flow (from high to lower elevation) and how that relates to your city (flowing toward, away from, through the city, etc.). Are these sources continuous or mostly dry and fill with rainfall?
8. Determine as a class which watershed provides water to the community (O) and which watershed is being impacted by the activity of the community (X). *NOTE:* These may be the same or different, depending on location.
9. Project the Water Cycle diagram
http://geoalliance.asu.edu/sites/default/files/maps/Water_Cycle_s.pdf and review the water cycle and discuss how this plays a role in Arizona specifically.
Precipitation- The lower the amount per year--the less dependable, mountainous topography allows for quick fill/flow, often resulting in sudden flooding
Evaporation- heat is a key component; more heat equals quicker evaporation (less water collects)

Condensation- with a warm, dry climate, Arizona has less moisture and humidity and thus less condensation

10. End the class by having students draw a diagram in their journal of a single drop of water cycling through *their* watershed.

SESSION TWO

1. Begin with student journaling, "How do nature and people influence their local watershed?"
2. Call on students to share responses. Record responses in two columns "Nature"/"People" on whiteboard. Some sample responses would be: Nature--drought years, monsoon, topography, kinds of soil
People--build reservoirs, pollute, conserve, change the topography, etc. Discuss positive or negative aspects.
3. Distribute a River Property sheet and colored pencils to each student. Tell them they each have inherited a piece of land along a river (color blue) and they can do whatever they want to with the land. Project the River Property sheet and model how to draw in houses, trees, etc.
4. Give students about 15-20 minutes to "develop" their land by adding features of what they would want (house, boat, camping, animals, trees, etc.).
5. Once students are finished "developing" their individual land plots, assemble pieces so that the papers are attached on flat surface like a table in the following manner. River sections are joined 2 wide and opposite each other (2 papers taped so blue areas touch). Then join these sections together in a long strand, so the river has banks on each side and flows in a long stream. Example for 24 students--you would have taped 2 papers together to form a river with banks and the river would be 12 papers long to show the flow.
6. Start at the source (beginning) of the river and ask each student to describe what they did with their land. As a class, decide which features contribute to pollution of the water. For each item that pollutes, add some gravel (or other small debris) to the river. Periodically ask students how they feel about their portion of the river being contaminated by their neighbor(s). Continue through each student, lifting the gravel "down river" until it all has reached the mouth or end of the river (student papers).

7. Discuss how individual actions contributed to the river pollution and how a small amount by each person added to the problem as a whole.
8. Have each student journal about one of his/her actions (in real life) that would negatively affect the local watershed, water quality, or water availability and give a solution or commitment to improve the community.

Assessment

Geography

Score the Arizona's Watersheds map. Assign points for labeling their city, county, water sources, watersheds, and watershed communities. Mastery will be considered 80% or higher when correctly labeling the map.

ELA and Geography

Grade student journals/paper for completeness and quality of their answers. Mastery will be a 4 or higher on the 6 Traits Writing Rubric in the area of Ideas and Content.

Extensions

- **Social Studies**- Look at the impact of human settlement on various rivers studied.
- **Social Studies**- Use a topographic map of Arizona to see how watersheds and sources are defined by the physical properties of the state. Use *Branching Out!*
https://arizonawet.arizona.edu/sites/arizonawet.arizona.edu/files/shared_resources/Branching%20Out%20Lesson.pdf

- **Language Arts**- Have students write a narrative of the journey of a water drop through their region.
- **Science**- Take a trip to your local watershed and study habitats that exist within. Bring some garbage bags and do a clean-up while you're there!
- **Music**- Create a song that can help students to remember the ten watersheds of Arizona. Make it a contest and offer various popular tunes, such as "Mary Had A Little Lamb" for ideas.
- **Art**- Have students use various media (photograph, draw, paint, video, etc.) to represent their favorite location or activity involving water and have a gallery night where students can share its importance to them.

Sources

Arizona's Watersheds map (black and white and color versions) Arizona Geographic Alliance
http://geoalliance.asu.edu/sites/default/files/map/s/AZ_Watersheds.pdf
http://geoalliance.asu.edu/sites/default/files/map/s/AZ_Watersheds_COLOR.pdf

Sum of the Parts, Project WET Curriculum and Activity Guide,
https://www.projectwet.org/sites/default/files/content/documents/WASH/Water_is_Life_EN.pdf

Why Care About Water? video clip, National Geographic,
<https://www.youtube.com/watch?v=Fvkzjt3b-dU>