How Do Rivers and Streams Flow?
Learning about Arizona's Waterways

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Grade Level	3
Duration	1 class period

National Standards	AZ Standards	Arizona Social Science Standards
GEOGRAPHY **Essential Element 2: Places and Regions** 4. The physical and human characteristics of places **Essential Element 6: The Uses of Geography** 18. How to apply geography to interpret the present and plan for the future	**ELA** **Reading** **Craft and Structure** 3.RI.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area. **Integration of Knowledge and Ideas** 3.RI.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).	**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. Key concepts include but are not limited to locating physical features including the Grand Canyon, Mogollon Rim, Colorado River, Salt River, Gila River Key concepts include but are not limited to locating human features including major cities, counties, Hoover Dam, Roosevelt Dam, and state capital Key concepts include but are not limited to distinct physical and cultural characteristics of Arizona including landforms, the 5C's, climate zones, elevations, plants, animals, Arizona's 22 Indian Nations, diverse ethnic, racial, and religious cultures

Overview

Students are often confused by terms associated with waterways. Since Arizona has only a few waterways that flow all year long, it is especially confusing to call some waterways rivers when there is no water in them. Students are also confused on the direction on which a waterway may flow. Many students make an assumption that all rivers flow south.

Purpose

In this lesson, students will learn that Arizona has only a few waterways that flow all year long. They will also learn that elevation is the factor determining the flow of a waterway.

Key Vocabulary

river: a waterway that usually flows with water
tributary: a waterway that flows into a larger waterway
stream or creek: small waterway that flows into a larger waterway
wash: a low area that only sometimes has water flowing through it
source: the place where the waterway begins
mouth: the place where the waterway flows into another body of water

Materials

ARIZONA GEOGRAPHIC ALLIANCE

- Important Rivers, Streams, and Washes of Arizona (without flow of the water indicated by an arrow) map https://geoalliance.asu.edu/sites/default/files/maps/Az-rivers.pdf
- Colored pencils
- What is a River? (1.51 min) https://www.youtube.com/watch?v=7kgQNRQjIUU
- Important Rivers, Streams, and Washes of Arizona map with direction of water flow marked https://geoalliance.asu.edu/sites/default/files/maps/AZ-RIV-K.PDF
- Arizona's Topography and Rivers https://geoalliance.asu.edu/sites/default/files/maps/AZTOPO.PDF
- Assessment and Answer Key

Objectives

The student will be able to:

1. Use a map to locate and name several of Arizona's major waterways.
2. Use a map to determine the elevation of land and deduce the flow of the water in a waterway.
3. Define terms associated with Arizona waterways.

Procedures

Prerequisite Knowledge: Students should know about dams in Arizona. Three lessons to learn about dams in Arizona are: Why Were They Built? Dams in Arizona,Dams that Tamed Arizona's Rivers, and What's Holding Up the Water?
https://geoalliance.asu.edu/whyDams
https://geoalliance.asu.edu/node/91
https://geoalliance.asu.edu/whatsholdingup

SESSION ONE

1. Introduce the lesson by having students name any Arizona waterways that they know about or have visited.
2. Distribute the Important Rivers, Streams and Washes of Arizona map (without flow of the water indicated by an arrow) https://geoalliance.asu.edu/sites/default/files/maps/Az-rivers.pdf and colored pencils to the students. Project the same map.
3. Model how to color blue the following major rivers in Arizona: Colorado, Verde, Gila, Salt, and Little Colorado. Explain that these are the major rivers in Arizona that will have water flowing through them all year long (called perennial waterways) unless dammed. Have students pair up and highlight with the blue colored pencil the five rivers given above.
4. Discuss the terms: tributary, stream or creek, and wash by sharing the vocabulary definitions.
5. Model how to use the red colored pencil to highlight some tributaries (smaller rivers that join a big river) on the map. Good examples are the Hassayampa, Agua Fria, San Carlos, Big Sandy, Bill Williams, etc.
6. Now have students use the green colored pencil to highlight some of the creeks on the map.
7. Then have the students use the brown colored pencil to highlight some of the washes on the map.
8. Go back through the waterway terms (river, tributary, creek or stream, and wash) having the students point to one or more on their map.
9. Now introduce the last two terms: source (where a waterway begins—usually a spring or in the mountains) and mouth (where the waterway empties into a larger body of water). Show the What is a River video. (1.51 min) https://www.youtube.com/watch?v=7kgQNRQjIUU
10. Explain that water runs from a higher elevation to a lower elevation (from the source to the mouth). Project the Arizona's Topography and Rivers map. https://geoalliance.asu.edu/sites/default/files/maps/AZTOPO.PDF
11. Distribute copies of this map to students. Explain that the darker the color, the higher the elevation of the land. Have students find the Salt River. Have students describe the elevation from eastern Arizona to western Arizona following the Salt River (higher elevation to lower elevation). Have students determine the flow of the river and mark the flow with an arrow.
12. Have partners use information from the two maps to draw arrows on their Important Rivers, Streams, and Washes of Arizona map for the tributaries, creeks, and washes. (Each of these should have an arrow.)
13. When students are finished, project the Important Rivers, Streams, and Washes of Arizona map Have students check their work.
14. Now have partner groups decide on a spot where they would put their house based on what they know about Arizona rivers. Have them draw a house in that location. Have partners agree on two reasons why that location would be a good place for a home. One of the reasons must have something to do with being located close to the river.
15. Have students complete the assessment.

Assessment

Social Science and ELA
The Assessment can be scored for geography and ELA grades using the answer key. A score of 80% or higher will be considered mastery.

Extensions

Have students create a relief map of Arizona to have a kinesthetic way of envisioning the Arizona landscape. Making a Salt Dough Map can be found at http://geoalliance.asu.edu/AZSaltDoughMap

A number of Arizona Geographic Alliance lessons focus on settlement of Arizona based on the location of Arizona rivers Use the search feature http://geoalliance.asu.edu/customsearch and type in "Settlement in Arizona" to get a listing of these lessons.