



Dams that Tamed Arizona's Rivers

Students learn how the taming of Arizona's rivers encouraged economic and population growth in the desert region

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Grade Level	4
Duration	2-3 class periods

Adapted from a GeoLiteracy lesson by Barbara Post called What's Holding Up the Water?

National Geography Standards

ELEMENT ONE: THE WORLD IN SPATIAL TERMS

How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.

ELEMENT FOUR: HUMAN SYSTEMS

How human actions modify the physical environment

Arizona Geography Strand

CONCEPT 1 The World in Spatial Terms

PO 1. Use different types of maps to solve problems

PO 2. *Interpret political and physical maps*

PO 3. *Construct maps using symbols to represent human and physical features.*

Concept 5 Environment and Society

PO 3 Describe the impact of human modifications on the physical environment and ecosystems (e.g., dams, mining, air conditioning, irrigation, agricultural).

Concept 6 Geographic Applications

PO 1 Describe the impact of geographic features (rivers, mountains, resources, deserts, climate) on migration and the location of human activities (e.g., exploration, mining, transportation routes, settlement patterns).

Other Arizona Standards

Strand 1: American History Concept 7: Emergence of the Modern United States

PO 1. Describe the economic development of Arizona:

- mining
- ranching
- farming and dams

ELA Common Core Standards

Reading

Literature

Key Ideas and Details

4.RL.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text

Informational Text

Key Ideas and Details

4.RI.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

Integration of Knowledge and Ideas

4.RI.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

Writing

Text Types and Purposes

4.W.1

Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose.

Overview

Although Arizona is composed of three distinct geographical regions: plateau, mountain, and desert, most of its current population is located in the desert region. How did that happen? How did people transform the arid desert into a place where farming, ranching, and mining were not only possible but profitable? Through the course of this lesson, students will be able to understand and explain the contribution of dam construction to the enrichment of Arizona, whose state motto is "Ditat Deus". (God Enriches)

Purpose

In this lesson students will gain a better understanding of economic and population growth in Arizona due to the construction of dams.

Materials

- Maps: Arizona (Blank Outline), Landform Regions of Arizona (labeled and unlabeled), Arizona's Topography and Rivers, Important Dams in Arizona, Population of Arizona's Counties
- Read Aloud: "Them Petrified Buzzards" from Library of Congress—edited for young audiences
- Worksheet: Important Dams
- Dams Information Sheet
- Writing Activity
- Bell quiz

Objectives

The student will be able to:

1. Locate and label Arizona's major cities, rivers, and dams.
2. Analyze the affect of dam construction on population and economic growth.

Procedures

Prerequisite Skills: Students should be able to describe the characteristics of a desert region, and know the elements of a map.

SESSION ONE

1. Give students the Bell Quiz as the anticipatory set.
 - a. In 2-3 sentences describe the characteristics of a desert.

- b. People tend to settle near what kind of physical features? Why? Explain your answer in 2-3 sentences.

Have these 2 questions written on the whiteboard. As the students share their answers write them on the whiteboard under the correct bell quiz question. (Good chance to clarify that all deserts are not hot. Desert refers to rainfall not temperature.)

2. Read aloud "Them Petrified Buzzards" Discuss life in the desert "back in the day." Have the students look at the whiteboard questions and add anything the primary source document added to what was already written.

3. To understand where the deserts, mountains, and plateau areas are in Arizona, have students label and color the Landform Regions of Arizona map. Instruct students to provide a legend for the three different regions.

4. Have students will write a 2-3 sentence prediction—Where do you think most of the Arizona pioneers settled in the late 1800's-early 1900's? Why? Discuss their predictions.

SESSION TWO

5. Distribute Arizona's Topography and Rivers map. Have the students color the rivers blue so they are highlighted.

6. Discuss the terms flood (too much water for the earth to absorb) and drought (not enough rainfall). Discuss why these are problems. Ask which event was the Petrified Buzzard story explaining? (drought)

7. Have the students look at their Arizona's Topography and Rivers map. Have them pair-think-share about which rivers of Arizona might flood. Then read the Dams Information Sheet.

8. Distribute the Important Dams in Arizona map. Have them think back to their prediction in about which rivers might flood. Then have them complete Important Dams worksheet.

9. Homework: Students will complete blank outline map by drawing in major rivers, locations of dams, and major cities. The map will have a legend, symbols, and correct labels for the features.

SESSION THREE

10. Distribute the Population of Arizona's Counties map. Have the students look at where the rivers are located and where the most people live. Is there pattern?

11. Discuss the affects of the dams on settlement.

- reservoirs allow AZ to have a large population
- farmers live near the rivers or use water from the canals which are fed by the rivers
- ranchers live near the rivers or canals
- rivers and canals provide water for industry and mining
- dams prevent flooding on the Colorado, Little Colorado, Gila, Salt, Verde and other AZ rivers
- without reservoirs—so many people could not live in AZ during drought times, industries, miners, ranchers, and farmers could not operate during drought times

Assessment

Landform Regions of Arizona map can be graded for accuracy. 80% or higher would be considered mastery.

Important Dams worksheet can be graded for accuracy. 80% or higher would be considered mastery.

The blank map of Arizona will have major rivers, locations of dams, and major cities drawn and labeled. The map will have a legend, symbols, and

correct labels for the features. Since this map has so many features, it is holistically graded with 10 pts for outstanding work, 8 pts for satisfactory work, and 6 points or less for needs improvement.

Writing the newspaper article will be assessed using the scoring guide provided to the students. Twenty points out of 25 will be considered mastery.

Extensions

Students may research and write reports about dam construction.

Sources

Primary sources and the reading about Uncle Robertson can be found at <http://memory.loc.gov/ammem/index.html>

maps can be found at <http://alliance.la.asu.edu/azga/>

Another lesson on dams in Arizona can be found at <http://alliance.la.asu.edu/azga/> under the GeoLiteracy section. It is called What's Holding Up the Water?