**Goin’ with the Flow: Aqueducts and Canals**

Students compare the past to the present to learn about the relationship between humans and their environment.

<table>
<thead>
<tr>
<th>Author</th>
<th>Cheryl Wiens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Level</td>
<td>3</td>
</tr>
<tr>
<td>Duration</td>
<td>2 class periods</td>
</tr>
</tbody>
</table>

### National Geography Standards

**ELEMENT FOUR: Environment and Society**

- 14. How human actions modify the physical environment.

### Arizona Geography Standards

- **Concept 2 Places and Regions**
  - **GRADE 3**
  - **PO 2** Describe how physical and human characteristics of places change from past to present.

### Arizona History Standards

- **Strand 1 American History**
- **Strand 2 World History**

- **Concept 1 Research Skills for History**
  - **PO 3**. Use primary source materials (e.g., photos, artifacts, interviews, documents, maps) and secondary source materials (e.g., encyclopedias, biographies) to study people and events from the past.

- **Strand 2 World History**
- **Concept 2 Early Civilizations**
  - **GRADE 3**
  - **PO 3**. Recognize how representative government, mythology, architecture (e.g., aqueducts), and language (e.g., Latin) in Ancient Rome contributed to the development of their own and later civilizations.

### Overview

Students should be encouraged to ask geographic and historic questions. Instruction in geography and history will provide opportunities to reach out in time and place, beyond their “here and now.” A geographic theme that young students can easily explore across space and time is the theme of human environment interaction.

### Purpose

In this lesson students will look at the past to learn how humans interact with their environment. They will also focus on how human characteristics of places change from the past to the present. Students will learn about the aqueducts, the water delivery system of the Ancient Romans and compare the aqueducts to an early system in Arizona, the canals of the Hohokam in the Sonora Desert.

### Materials

- Transparency of Handout 1 Hohokam Canal Images
- Transparency of Handout 2 Roman Aqueduct Images
- Transparency of World map
- Handout 3 Student Reading
- Handout 4 Writing Prompt and Answer Key
- Colored pencils or crayons
Objectives
The student will be able to:

1. Discuss photographs of Roman aqueducts and Hohokam canals
2. Recognize the region of the world that was the Roman Empire
3. Recognize the region of the United States where the Hohokam lived
4. Illustrate how the Romans and the Hohokam built their respective water systems
5. Describe how the Romans and the Hohokam built their respective water systems
6. Discuss that ancient civilizations have changed from past to present

Procedures
Prerequisite Skills: Students should have been introduced to Ancient Roman civilization.
Students should have been introduced in Grade 1 to early New World groups, including the Hohokam.

SESSION ONE
1. Anticipatory Set: Give the students the two unlabeled images handouts, Handout 1 and 2, and project teacher copies, covering the titles. Encourage student thinking by eliciting from the students what questions they have about the pictures. Tell students they are going to be thinking like geographers and historians. Possible questions include:
   • What is pictured?
   • What were their uses? Or, why were they built?
   • How do you think that they were built? What were the tools like?
   • What materials from their natural environment did the people use?
   • When do you think they were built?

Write the class’s questions on the board or chart paper to guide student learning during this lesson. Identify for the students the Roman aqueducts and the Hohokam canals. (The students might be surprised to learn that the Roman aqueducts, even though they are more sophisticated, were built before the Hohokam canals.)

2. Emphasize that the Hohokam and the Romans lived in different times and on different continents, but like all people, they had similar needs to get water. They had to depend on their natural environment. Show the locations on the world map: the southwestern United States and the region of the world which was the Roman Empire (surrounding the Mediterranean Sea).

Note to the teacher: Chronologically, historians date the Roman Republic and Empire between 500 B.C. and A.D. 476. The Hohokam came on the scene in present-day Arizona between 300 B.C. and A.D. 500 and lasted until A.D. 1450. There is no historical or cultural connection between the two civilizations.

3. Tell the class that they will be answering the geographers’ and historians’ questions about the two water systems pictured in Handouts 1 & 2 as they read the passage Ancient Aqueducts and Canals (Handout 3 Student Reading). Before reading, familiarize the students with content vocabulary, defining and pronouncing the words:
   • ancient
   • aqueduct
   • canal
   • civilization
   • concrete
   • crops
   • culture
   • irrigate
   • network
   • system

Tell students to read the passage (Handout 3). In order to provide support for English language learners or struggling readers, the teacher may decide to use the passage as a read-aloud, as a partner read/share, or as a group read/share. If possible, at this point in the lesson, share several pictures of both civilizations so students have a better visual impression of life for both the Hohokam and the Romans. (See Sources; even though some of the sources are for the teacher, they contain excellent pictures to share with students.) Tell students to look at the aqueduct and canal pictures on Handouts 1 & 2 as you read the passage to them, or they read it silently.

4. Close this session with a class discussion based on the reading passage. Guide the discussion with the following questions:
   • What are two reasons given on why the Romans needed water?
   • What made the Roman aqueducts strong?
   • Where did the water come from that the Romans used?
   • Are there any aqueducts standing today?
   • What was the main reason given on why the Hohokam needed to get water from the rivers?
How did the Hohokam people make their canals?

One of the Hohokam canals was very long; according to the passage, how long?

Are there any Hohokam canals left today?

SESSION TWO

5. At the beginning of Session Two, review with students what they learned in Session One about both ancient cultures and their water delivery systems. Revisit the geographers’ and historians’ questions from Session One.

6. Give the students Handout 4 and explain the drawing and writing assignment.

7. As closure, ask several students to share their picture and writing with the entire class.

Assessment

Student learning will be assessed on Handout 4. There are 19 possible points. Mastery will be considered 14 points or higher.

Extensions

1. Students could write a short journal entry from the perspective of a worker who built the aqueducts or the canals.
2. If possible, students can visit the Pueblo Grande Museum in Phoenix to learn more about the Hohokam canal system.
3. Discuss as a class how many ways humans depend on water, emphasizing the basic human need for water.
4. Discuss other ancient civilizations or early North American people. How did they use water? How did they get their water?
5. Read aloud the book Technology of Ancient Rome by Daniel C. Gedacht.

Sources

Hohokam:
http://www.nps.gov/cagr/historyculture/thewohokam.htm


Roman:
www.ngschoolpub.org


“Roman Empire.” National Geographic Vol #192 (July 1997): 2-41.


Water usage throughout history:
www.waterhistory.org (a good teacher resource about both the Romans and the Hohokams, as well as other cultures’ water systems)

Map:
http://alliance.la.asu.edu/azga/

Graphics:

http://worldimages.sjsu.edu/

http://www.primarysourcelearning.org/ from the Library of Congress; lessons and photos

www.nps.gov/ National Parks Service
http://lcweb2.loc.gov/frd/cs/spain/es01_02a.jpg

Library of Congress image of aqueduct

Thanks to: Pueblo Grande Museum for their images of the Hohokam ruins.

www.phoenix.gov/parks/pueblo.html Pueblo Grande Museum
and to:
Jerrold VanNocker
http://www.TravelingInSpain.com
and to:
Arizona State Museum, The University of Arizona, Photography Collections
www.statemuseum.arizona.edu
and
www.waterhistory.org/ for their graphics and images