



**Pima County Natural Resources, Parks and Recreation
Environmental Education**

**Arizona Water Web
Middle School 6-8 Grade Level Lesson Plan**

Description: Arizona Water Web

Students research the roles of various water users in a typical community. In a group exercise the students act out the roles of selected water users to demonstrate the interdependence among water users in Arizona.

Linked to Arizona Academic Standards – Science - G6-8S3:C1; G6PO2; G7PO2, PO3; G8PO1, PO2; C2: G6PO1, PO2, PO3; G7PO1, PO2; G8PO1, PO2, PO3. HS-S3: C1; PO1, PO2, PO3, PO4, PO5; C2:PO1, PO2, PO3, PO4, PO5.

Duration: 2 hours

Objectives

- Students distinguish between direct and indirect uses of water.
- Students recognize that water is used in the production of everything in our society.
- Students identify water sources and users within their own community and others in the state. Recognize that they use and consume things produce in Arizona.
- Students demonstrate the inter connections of water users within communities, counties, states, and countries. Discuss the complexity of resolving water shortages among interdependent water users.

Conceptual Framework:

- Renewable natural resources are replenished through natural cycles, but are still finite.
- Effective conservation practices depend on clearly defined management objectives, and understanding of natural processes and the application of knowledge from many disciplines.
- The decisions and actions of individuals and groups of people impact natural systems.

Vocabulary

Aquifer, direct and indirect water use, ground water, surface water, domestic water, water user, reclaimed water, reservoir, riparian, native and nonnative species.

Materials:

- Two water filled milk jugs
- yarn balls (different colors for different water users)
- Index cards

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- Markers, pencils, crayons.
- Arizona Watersheds map
- Copies for each student of “Descriptions of Water Users in the Water Web”
- Nametags with description for “water users” categories
- Background information from Arizona Conserve Water pp 15, 193 and 205 – copies for each student.

Description of Activity:

The purpose of the activity is to demonstrate in a visual way the connections among water users.

- Ask students to list ways they use water. Ask students to guess how much water is required to make different items such as a 12 oz can soda, 1 pair of jeans, etc. Ask if they know where their direct water supply comes from (water from drinking, bathing, etc). This discussion gives the opportunity to present definitions of **direct and indirect uses of water** (explain indirect use of water, for example to make computers, cars, etc), **surface and ground water, reservoirs, reclaimed water**. Pass the students the Background Information copy.
- Summarize with the students input the “big picture” of water users and water supplies for Pima County (who use the water and what are the water sources).
- Assign each student a water user category from the “Descriptions of Water Users Student Copy” pass the nametags with the description for water users, and ask the students to read the information. Ask them to think about how their water user depends on water and how they depend on products and services supplied by other water users. Provide the students with the copies with background information. For example:
Category: Agriculture,
Water User: Dairy Farmer, (provide drinking water for cows, clean equipment),
Dependency: on the alfalfa farmer and energy from the power plant
- Place the water-filled milk jugs and the yarn in the middle of the room. The jugs represent the source of water and the ball of yarn the water users’ need for water. Ask students to stand in a circle around the jugs of water. Ask each student to describe the good or water services his/her water user provides and explain its water requirements. Run the ball of yarn to the student (who holds onto a loop in the yarn), back to the jugs and around the string holding the two jugs together.
- Choose one water user (student 1) and hand him/her a different color yarn, ask students to raise their hands if they use the services offered by student 1. Tell student 1 to pass the new yarn to one of the students the raise his/her hand (student 2). Have all the students repeat the process until connections are made among all or most of the students.
- To emphasize the independencies among water users, have one student tug gently on the yarn, and the students who felt the pull? What the tug means? (reliance on both water and student services). Discuss what could happen to the “water source.” if more new water users are added to the web, or some drop from the web.
- With the students help finish the activity drawing the water web on the board showing the connections among all the students/water users.