

4-H Water Education Program Develops Science Skills

Marianne Bird
4-H Youth Development Advisor

Trisha Dixon
4-H Program Representative

Aarti Subramaniam
Researcher

Science Education After school

The US faces a significant challenge as young people are not prepared with the necessary science, engineering, and technology knowledge and skills to compete in the 21st century. The gap in science literacy is especially prominent for Hispanic and African American youth. The future of our workforce—and our communities—depends on a science-literate citizenry.

The National Science Education Standards (NSES) state clearly that students learn science best through hands-on and minds-on activities that encourage skills such as observation, inferring and experimenting (NSES, 1996). After school programs offer opportunities for expanded learning in a fun context. 4-H Water Wizards in Sacramento County serves a diverse, mostly lower-income audience in after school settings with exactly this type of program.



4-H Water Wizards Program

4-H Water Wizards is a 12-week project that teaches 4th-6th grade students about water and its importance to the planet. Delivered to children in after school settings, students participate in hands-on learning experiences that encourage inquiry, teach basic information about water, and develop awareness about this valuable resource. Youth also take action on a water issue in their community.

Water and the Environment:

- The Water Cycle
- Watersheds
- Keeping Our Water Clean: How does pollution enter a watershed?
- Home Water Study: How much water do we use?

Water Properties

- Water Taste Test: Is bottled water better?
- Water Salinity: How salty is that water?
- Water Density: Do equal amounts of water always weigh the same?
- Water Hardness: The science of soap suds

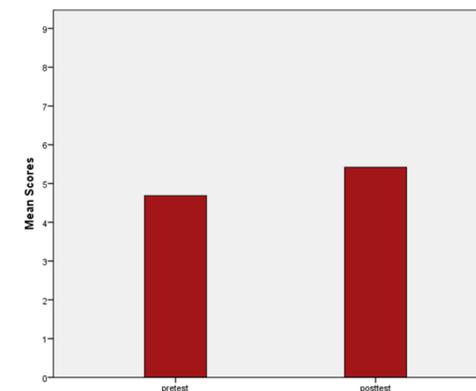
Making a Difference

- Exploring Service Learning
- Planning a Community Service Project
- Evaluating and Celebrating Our Project

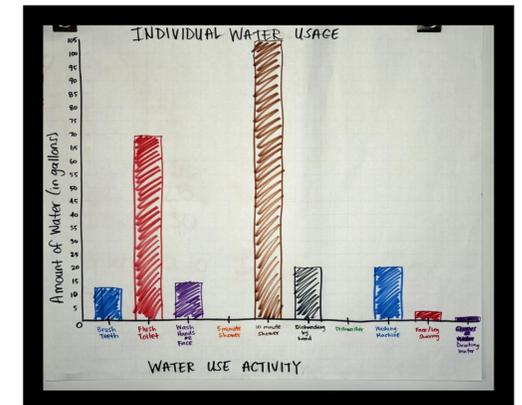
“My students asked me if we can do it again. They loved it, so I loved it!”
--program leader

Students Learn

The research team measured student learning through pre and post-testing. Six after school program sites participated in the survey, a total of 93 students. Total pre-test and post-test scores were tallied then compared using a paired samples t-test. As shown below, post-test scores were significantly higher ($p=.001$).



- Over 80% of students reported using less water as a result of participating in 4-H Water Wizards.
- 78% of after school program staff indicated they better understood how inquiry relates to science.
- 98% of students said they enjoyed the project.



4-H Water Wizards offers hands-on activities designed not only to educate 4th-6th grade students about water and its importance, but to engage young learners as scientists themselves. It balances the need for critical information about water with discovery through the process of doing science.



University of California
Agriculture and Natural Resources