

Arizona Project WET

July – December 2018 Report

This semi-annual report reflects the workshops conducted during the school year that focus on deepening content knowledge using the world renowned *Project WET Curriculum and Activity Guide version 2.0*. In addition, it demonstrates the direct student outreach that is being delivered to support teachers in implementing effective STEM education.

Teacher Academies

Teacher Academies offer professional development that evolves teachers’ instructional practice and water-related content mastery through STEM integration, student-directed learning, and collaborative work.

Task 3: 2.0 Teacher One-day Workshops

APW program coordinators conducted seven one-day workshops during the reporting period reaching 95 teachers. Those teachers report reaching 2,755 students each year (Table 1). **One hundred percent of workshop participants** strongly agree or agree with the following statements: *I intend to become a better water steward as a result of this workshop, The workshop activities were relevant and improved my knowledge, The workshop met my expectations & will have an impact on my teaching, and The information, strategies and instructional methods presented during the workshop were helpful to me.* Learning or skill gains measured through pre- and post-workshop self-rating on a 10 point scale can be seen for each workshop in the Tables in the Appendices at the end of this report.

Table 1: One-day workshops in Maricopa County

Date	# Students Reached	# Participants	#Full Days	#Participant Days	Location	City	Length of WS
7/23	174	6	1	6	Tempe Bustoz PLC	Tempe	7
7/25	464	16	1	16	Mabel Padgett Elem School	Litchfield	7
8/25	348	12	1	12	ASU Techshop	Chandler	7
9/4	638	22	1	22	Peoria Unified School District	Peoria	7
9/22	493	17	1	17	MCCE	Phoenix	7
9/27	290	10	1	10	MCCE	Phoenix	7
9/29	348	12	1	12	Jasinski Elementary School	Buckeye	

Direct Student Outreach

Arizona Project WET’s Aqua STEM Program was initiated to address the need for STEM education at the middle and high school levels. APW’s in-classroom instructional specialists deliver key components of the STEM units (School Water Audit, Rainwater Harvesting and Riparian Exploration) to assist teachers in implementation.

Units incorporate Systems Thinking, a method to deepen understanding and engage students in self-construction of knowledge through four simple systems thinking patterns – making Distinctions, seeing part-whole Systems, uncovering Relationships, and understanding Perspectives. Research shows that

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relevant project-based education can interest students in learning and be a catalyst for learning and understanding STEM subjects.

The Water Scene Investigation (WSI) was developed by Arizona Project WET for use in middle school classrooms to inspire simple actions that result in real water savings. The WSI is a two-day, in-classroom project; the two days are separated by a week to allow for homework completion. To date, the water audits have reached **15,036 students and saved an estimated 49 million gallons of water.**

Task 4: School Water Audit and Water Scene Investigation Programs

These STEM units engage students in collecting data through a scientific process, and calculating water savings based on the installation of water efficient technology. Water Efficient Technology presentations (WSI) were delivered to **840 students in 31 classes** for a total of 62 instructional hours.

In surveys given to teachers whose students participated in the Water Scene Investigation home water audit project:

- 100% of teachers agreed that this project was very effective at deepening students' content knowledge of water conservation.
- 100% of teachers strongly agreed that students were enthusiastic about this project.
- 100% of teachers agreed or strongly agreed that students were engaged in collecting their own data and reporting their findings.
- 100% of teachers strongly agreed there is great value in incorporating this project based learning activity that integrates subject area content into their instruction.
- 100% of teachers strongly agreed this is an excellent program that they would like to do again next year.

Task 5: Engineering Design Process

The E in STEM is the most difficult subject to incorporate for most teachers. APW will support teachers who attend our professional development sessions in facilitating Engineering Design Projects that might include rainwater harvesting systems. Rainwater Harvesting Launch presentations were delivered to **179 students in 7 classes** for a total of 8.5 instructional hours.

Task 6: The Groundwater System and Riparian Areas

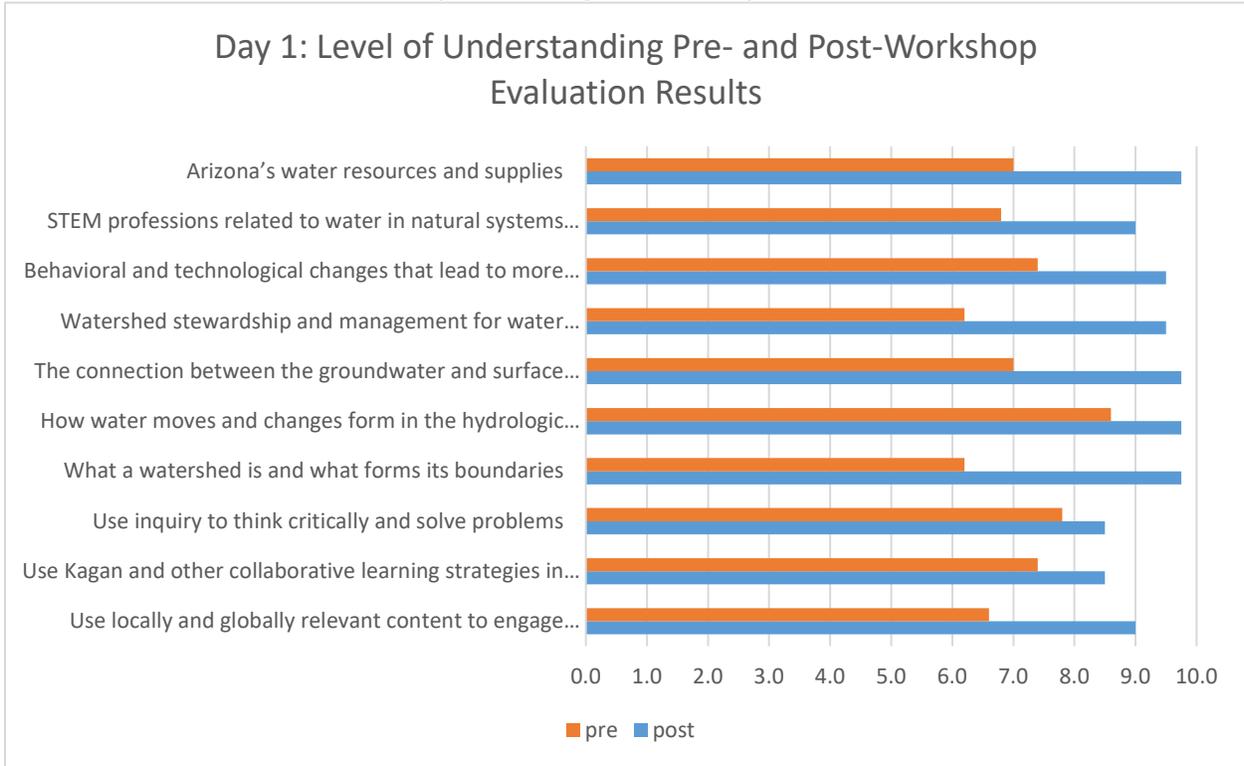
The groundwater system is one of Arizona's most important water reserves. Increasingly, in many areas of the state, we are even managing water storage using the groundwater system. Arizona students need to understand this system as a crucial part of the water cycle to ensure that, as decision makers, we manage this resource for future prosperity. Groundwater presentations were delivered to **768 students in 31 classes** for a total of 31.75 instructional hours.

In addition, students need to understand the value of water to all life. Riparian Area presentations were delivered to **245 students in 11 classes** for a total of 8.5 instructional hours.

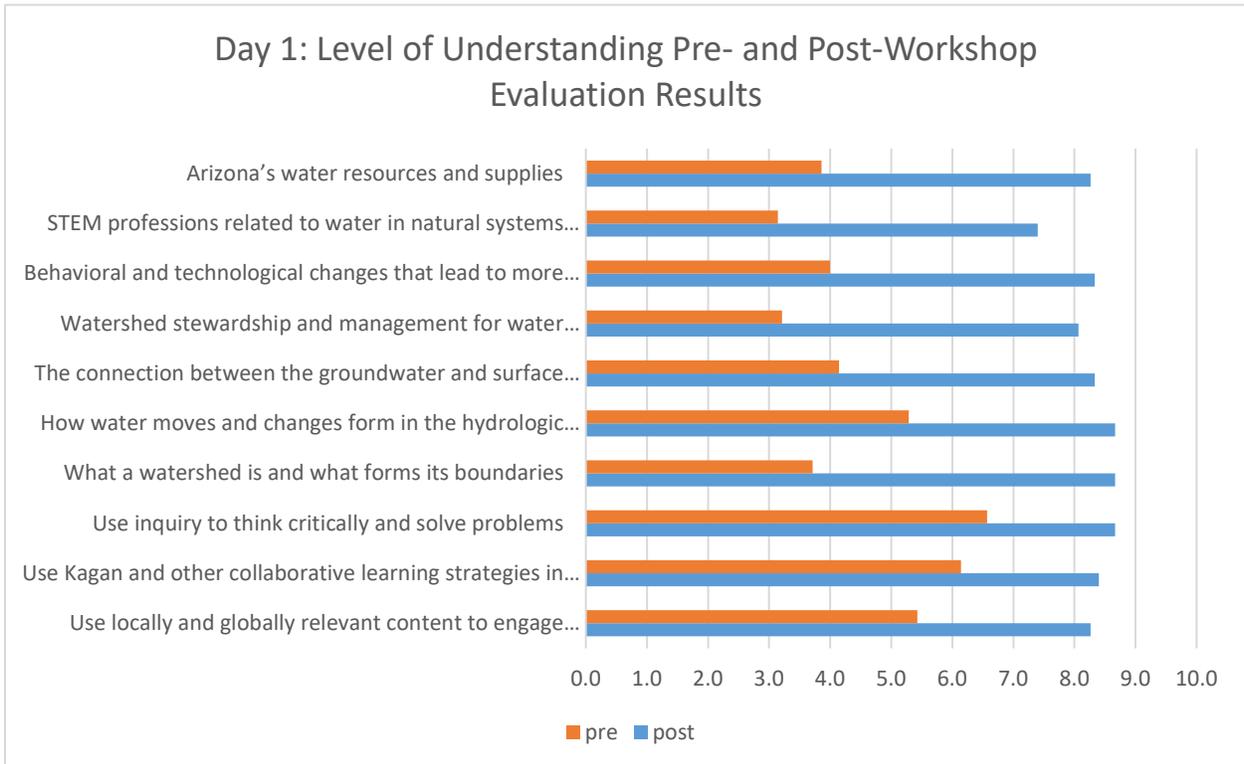
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APPENDICES

Tempe Knowledge Gains – July 23, 2018

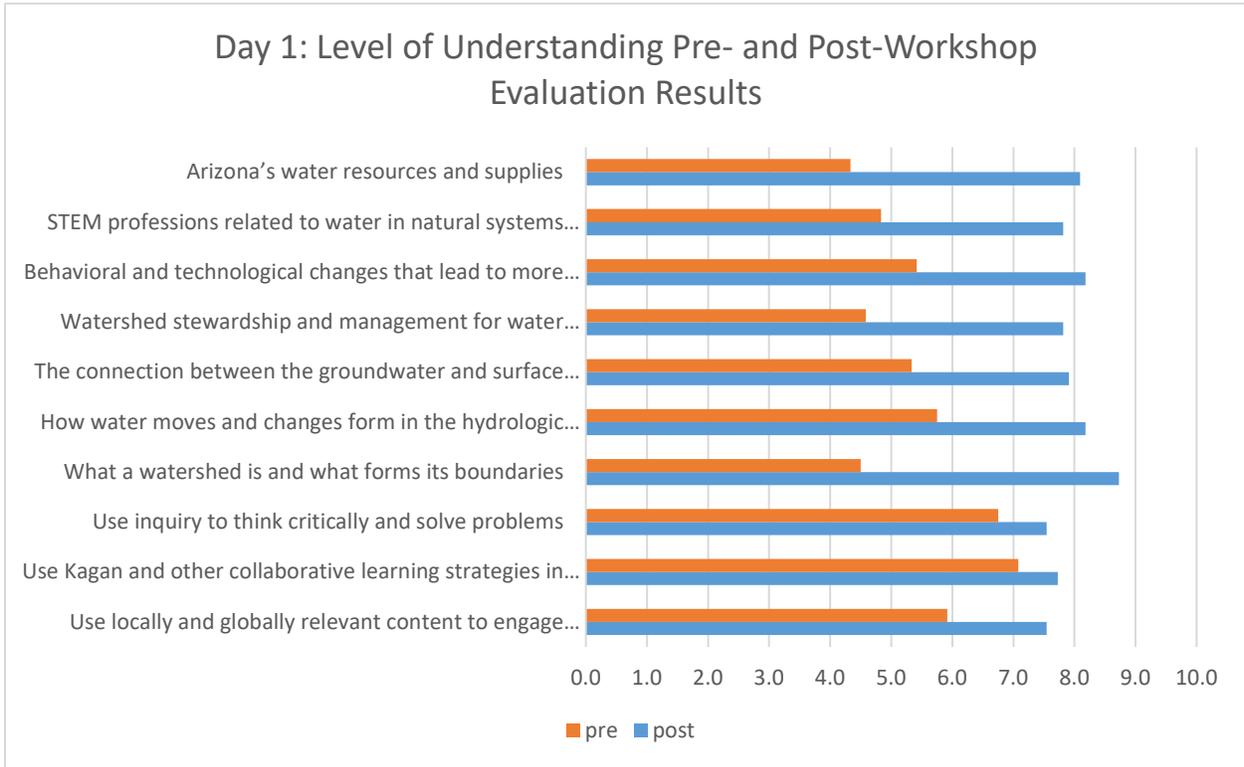


Litchfield Knowledge Gains – July 25, 2018

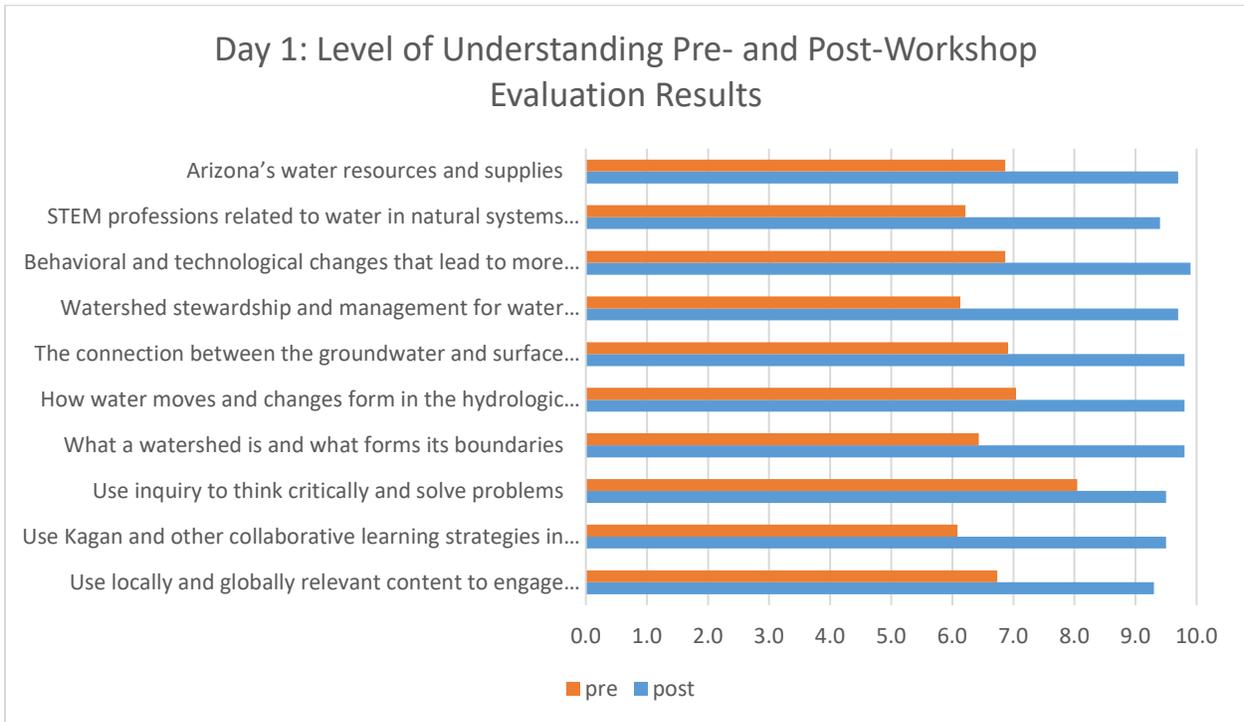


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Chandler Knowledge Gains – August 25, 2018



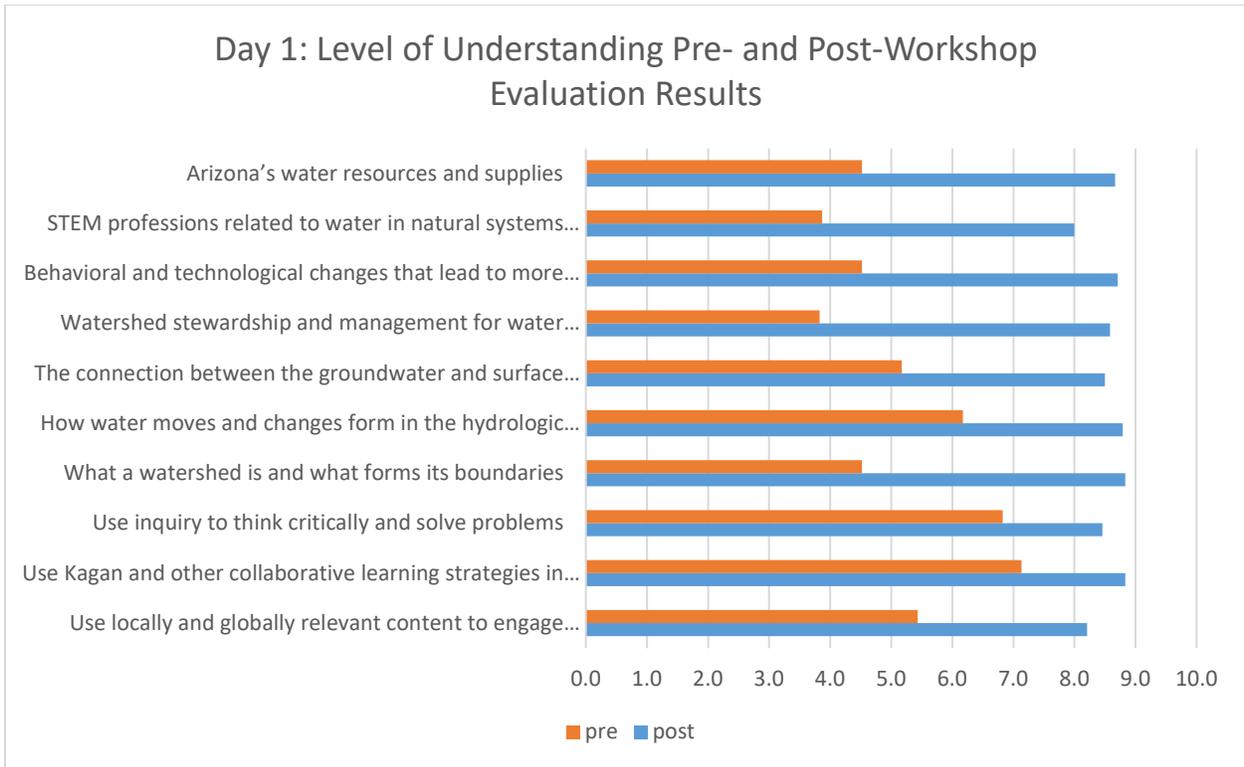
Peoria Knowledge Gains – September 4, 2018



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Phoenix – Roosevelt Knowledge Gains – September 22 & 27, 2018



Buckeye Knowledge Gains – September 29, 2018

