I. Introduction

Arizona Project WET (APW) entered into a 1-year Intergovernmental Agreement (IGA) with Arizona Department of Water Resources for the 2018-19 school year to enhance the ability of teachers to instruct students, and students to learn about interconnected earth systems and Arizona’s water resources. The Scope of Work defined in the IGA includes multi-day academies; two-day academies; one-day workshops for teachers; and direct student outreach through the School Water Audit, Water Scene Investigation, Rainwater Harvesting, Riparian Exploration programs, and Groundwater presentations. This is the annual report for programs delivered through July 2019.

APW develops water stewardship and STEM literacy by providing teacher professional development that evolves instructional practice and deepens content knowledge, direct student outreach that delivers or extends classroom learning, and community engagement. Professional development includes STEM Academies and workshops to support curriculum integration. APW also works with district specialists to develop and provide professional development necessary for teachers to evolve their instructional practices for today’s learners. Partnerships increase the breadth of offerings and extend APW’s exemplary professional development and education to a wider audience.

II. Teacher Professional Development

Arizona Project WET Teacher Academies offer professional development that evolves teachers’ instructional practice and water-related content mastery through STEM integration, real-world and relevant application, and collaborative work. APW provides teachers with the support needed to adopt instructional practices that encourage students to apply their learning to develop ideas, design solutions and deliver positive change. During this reporting period in Maricopa County, Arizona Project WET provided over 116 hours of professional development to 191 teachers with your support. These teachers reported reaching 13,154 students annually.

At the end of APW multi-day academies, teachers often express amazement at how much they learned and accomplished. Teacher content knowledge is a key factor in producing positive student outcomes as determined by the Committee on Integrated STEM Education, “The expertise of educators working in classrooms and in after/out-of-school settings is a key factor—some would say the key factor—in determining whether integrated STEM education can be done in ways that produce positive outcomes for students. One limiting factor to teacher effectiveness and self-efficacy is teachers’ content knowledge in the subjects being taught” (National Academies Press, 2014). APW measured large increases in teachers’ mastery of the skills and content in all workshop offerings. These increases are highlighted in the professional development summaries below.

APW accesses an extensive network of water providers and school districts to market programs. In addition, we maintain a list serve of all past participants in the program. An APW website invites sponsors, partners, teachers and future collaborators to explore APW programs including: Teacher Academies, Arizona Water Festivals, Water Scene Investigations Program, School Water Audit Program, and the Aqua STEM Program (program logos are themed to match the APW logo for branding purposes). APW is active on Facebook, Instagram, and Twitter.
**Task 1 - Multi-day Academy**

**Aqua STEM Unit Academies**

APW implemented three 2-day academies designed to prepare teachers to implement the three Aqua STEM Program curriculum units. The Aqua STEM Program supports teachers in implementing APW-developed STEM Units infused with systems thinking through professional development, support for curriculum implementation through STEM coaching, and in-classroom presentations. The three 10 to 12 lesson units include Rainwater Harvesting, World of Water, and Riparian Exploration. APW community coordinators support teachers through facilitation of lessons delivered in the classroom and in the field. During the reporting period, **32 teachers** attended the Aqua STEM academies for a total of **416 instructional hours received** (which includes the mandatory Systems Thinking 101 workshop). Those teachers report teaching **2,856 students** annually. Figure 1 depicts knowledge gains on engineering objectives specifically as reported by teachers themselves on pre and post evaluations of the academy.

![Day 1: Level of Understanding Pre- and Post-Workshop Evaluation Results](chart.png)

According to pre- and post-academy evaluations, average knowledge and skill percent gain are as follows: 1) **Evaluating the design of rainwater harvesting system that best meets measurable criteria and constraints** (274% gain); 2) **Constructing a model to represent your school watershed within the larger watershed** (270% gain); 3) **Designing solutions to mitigate extreme heat by planting native trees** (248% gain); 4) **Making an argument on evidence about the effectiveness of rainwater harvesting to lessen climate impact in our region** (238% gain).
Table 1 – Overall Workshop Evaluation

Teachers attending all of APW workshops and academies are asked to complete a post survey. In Table 1 shows that teachers on post-academy evaluations agreed or strongly agreed 100% of the time to all statements except for the 92% agreement on the clarity of objectives. Because the teacher ratings on surveys are consistently high, the tables for the other workshops will not be included in this report. They are available upon request.

Flyer for the Aqua STEM Academies can be found in Appendix A. Academy locations are included on the flyers.

**Task 2 - Two-Day Academy**

**Exploring the Colorado STEM Academy**

APW staff delivered a two-day academy for 19 middle and high school teachers from across the county. Those educators report teaching over 2,032 students annually. This 14-hour workshop focused on helping teachers deepen their content knowledge about the Colorado River Watershed which makes life in the arid Southwest possible. Teachers learned how every drop of water has been allocated and grappled with the challenges involved in water management in an era of drought, climate change, an overestimated base flow and a water budget that doesn't account for evaporation. Figure 2 below depicts overall knowledge and skill gains as reported by teachers themselves on pre and post surveys.
According to pre- and post-academy evaluations, average knowledge and skill percent gain are as follows: 1) Arizona’s water resources and supplies (162% gain). 2) Behavioral and technological changes that lead to more efficient water use (160% gain) 3) The connection between the groundwater and surface water systems (158% gain) 4) Watershed stewardship and management for water quality and quantity (150% gain) 5) STEM professions related to water in natural systems and the built environment (134% gain).

Flyer and agenda for this two-day academy, which include location and dates, can be found in Appendix B.

**Task 3 – One-Day Workshops**

One-day workshops are offered to Arizona Water Festival program participants to further deepen their content knowledge, evolve their instructional practices using the Project WET Curriculum & Activity Guide version 2.0 and model lessons to be taught pre and post festival day. Arizona Water Festivals instill a deeper understanding of water in the earth system and Arizona’s water resources through a community water festival event, these one-day teacher professional development workshops, and extensive volunteer and community involvement. As per the IGA, APW conducted two 1-day workshops during the reporting period reaching a total of 27 teachers. These teachers report teaching 2,648 students annually. APW delivered 11 other one-day workshops in Maricopa County not included in this report for a total of 135 teachers impacting 8,266 students during the 2018-19 school year. Figure 3 below depicts overall knowledge and skill gains as reported by teachers themselves on pre and post surveys for the workshops.
Some highlights of the teachers knowledge and skill percent gains are as follows: 1) What a watershed is and what forms its boundaries (152% gain); 2) Watershed stewardship and management for water quality and quantity (127% gain); 3) Arizona’s water resources and supplies (107% gain); and 4) STEM professions related to water in natural systems and the built environment (93% gain).

Agendas can be found in Appendix C and include the workshop locations. Fliers are available by request.

### III. Direct Student Outreach

The 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 began delivering key components of the STEM units (School Water Audit, Rainwater Harvesting and Riparian Exploration) in September 2016 as part of the Arizona Department of Water Resources funding.

Units incorporate Systems Thinking or 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 relevant project-based education can interest students in learning and be a catalyst for learning and understanding STEM subjects.

The total number of students involved in direct outreach delivered by APW staff and volunteers was **4,005 students** from **120 classes** across the valley.

**Task 4 – Water Scene Investigation Programs**
This STEM unit engages students in collecting data through a scientific process, quantifying the amount of water used in a year, and calculating water savings based on the installation of water efficient technology. The Water Scene Investigations (WSI) Program inspires participants to adopt home water conservation practices through the installation of water efficient technology and the comparison of their savings with other water users’. WSI presentations were delivered to 958 students in 35 classes changing 176 aerators for a total combined annual savings of 690,625 gallons. An estimated total of 13,670,917 gallons of water have been saved from household faucets to date as a result of the WSI Program.

Student Self-Report:
- 95% of the students agreed that learning about water is very or extremely important
- 97% of the students correctly selected the best definition for technology
- 90% of the students agreed that the Water Scene Investigation program is a good class project or one of the best class projects ever

One teacher commented: “This is a really good program and a great opportunity. Students learned a lot about saving water. Thank you so much.”

Flyers for these programs can be found in Appendix D.

**Task 5 – Engineering Design**

The E in STEM is the most difficult subject for most teachers to incorporate in their instruction. APW supports teachers who attend our professional development sessions using the Engineering Design Process to develop rainwater harvesting systems. The Rainwater Harvesting Unit presentation was delivered to 433 students in 16 classes for a total of 17.5 instructional hours. In Table 2 below students saw a 69% overall knowledge gain on pre- and post-assessments about rainwater harvesting concepts.

<table>
<thead>
<tr>
<th>Results by Concept - All Schools</th>
<th>Pre</th>
<th>Post</th>
<th>KG [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understood the 3 things a RWH system needs to do with water</td>
<td>62</td>
<td>87</td>
<td>40%</td>
</tr>
<tr>
<td>Knows the best type of roofing surface to collect water</td>
<td>45</td>
<td>55</td>
<td>22%</td>
</tr>
<tr>
<td>Understood what the Run-off Coefficient expresses</td>
<td>37</td>
<td>50</td>
<td>35%</td>
</tr>
<tr>
<td>Able to list benefits of rainwater harvesting</td>
<td>81</td>
<td>181</td>
<td>123%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>56</td>
<td>93</td>
<td><strong>66%</strong></td>
</tr>
</tbody>
</table>

**Table 2 – Overall Knowledge Gain**

**Task 6 – Groundwater System & 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 our water supply 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 921 students in 34 classes for a
total of approximately 41 direct instructional hours. In Table 3 below students saw a 28% overall knowledge gain on pre- and post-assessments about groundwater concepts.

<table>
<thead>
<tr>
<th>Concepts</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Learning Gains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can identify where groundwater is found</td>
<td>85</td>
<td>111</td>
<td>31%</td>
</tr>
<tr>
<td>Understands ground water feeds surface water</td>
<td>77</td>
<td>106</td>
<td>38%</td>
</tr>
<tr>
<td>Stated reasons groundwater is important</td>
<td>182</td>
<td>250</td>
<td>37%</td>
</tr>
<tr>
<td><strong>AVERAGE</strong></td>
<td><strong>115</strong></td>
<td><strong>156</strong></td>
<td><strong>36%</strong></td>
</tr>
</tbody>
</table>

Table 3 – Overall Knowledge Gain

In addition, students need to understand the value of water to all life. Riparian Area presentations were delivered to 702 students in 26 classes for a total of 52 direct instructional hours. To allow these students the opportunity to visit a riparian area and complete their group field investigations, several volunteers are necessary. There was a total of 310.5 volunteer hours invested by 69 volunteer mentor scientists to make this learning opportunity a reality. In Table 4 below depicts overall knowledge and skill gains as reported by teachers themselves on pre and post surveys

<table>
<thead>
<tr>
<th>School Year 2018-19 Riparian Habitat Exploration</th>
<th>Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>One - Water In the Environment</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concepts</th>
<th>Pre</th>
<th>Post</th>
<th>Knowledge Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knew water is most essential part of a riparian area.*</td>
<td>342</td>
<td>385</td>
<td>13%</td>
</tr>
<tr>
<td>Understands humans impacts rivers and riparian areas.</td>
<td>240</td>
<td>380</td>
<td>58%</td>
</tr>
<tr>
<td>Understands relationships between riparian areas and biodiversity.</td>
<td>7.5</td>
<td>96</td>
<td>1180%</td>
</tr>
</tbody>
</table>

| **Average** | **196.5** | **287** | **46%** |

Table 4 – Overall knowledge Gain

Arizona Project WET has hosted West Valley middle and high school students engaged in the Riparian Exploration Unit at Hassayampa River Preserve for the last four years. Bob Ellis, Professor at Prescott College stated, “I cannot say enough good things about the Aqua STEM Riparian Habitat experience. For the past ten years my undergraduate students have volunteered to facilitate the Aqua Stem program at the Hassayampa River Preserve. And as a teacher of 30 years, I have been involved in many field-based experiences and I see Aqua STEM as the "gold standard." It is sophisticated in design, fun for students and quite possibly life altering for children as they get hands-on experience in an authentic setting, investigating real questions. The Project WET folks are pros!”

IV. Summary

Arizona Project WET’s comprehensive, statewide water education program since its inception has instructed over 12,082 teachers on water topics and best instructional practices. Those teachers have engaged over 845,740 students in water education. Strategic support for APW provides effective educational opportunities to an extensive network of educators, young adults and children. We appreciate your partnership in helping to ensure that Arizonans understand their interconnected water resources, are conservation savvy and are prepared to help ensure a safe, reliable water supply.

APW August 2018–July 2019 Report
APPENDIX A
New Arizona Science Standards are integrated into all Arizona Project WET Summer 2019 Academies

Arizona Project WET offers professional development that evolves teachers’ instructional practice and helps integrate the new Arizona Science Standards by looking deeply at phenomenon, revealing cross-cutting concepts, embracing science and engineering practices while using models, student-directed learning, with real world and relevant applications to water and natural resources.

Register for APW Phoenix Academies and Workshops!

May 30 – 31: Explore the Colorado River STEM Academy
Discover Arizona’s history by learning its water story: the Colorado River is the Lifeline and its Watershed is our home - geared for 5th - 12th grade teachers. Location: Maricopa County Cooperative Extension, 4341 E. Broadway Rd., Phoenix, AZ

June 3 OR June 18: Bringing Science Standards to Life with Systems Thinking
Systems Thinking is a powerful technique to help you deepen student learning while meeting the new science standards. This Workshop is a prerequisite for any Aqua STEM Academy. Location: Maricopa County Cooperative Extension, 4341 E. Broadway Rd., Phoenix, AZ

June 4 & 5: Aqua STEM: Riparian Habitat Exploration Academy
Using science practices, students take on the role of a field scientist to ask questions and define problems to plan and carry out investigations at a local riparian area. (6th–12th grade teachers) Location: Maricopa County Cooperative Extension, 4341 E. Broadway Rd., Phoenix, AZ

June 6 & 7: Aqua STEM: Rainwater Harvesting Academy
Using models and math, students learn how to analyze and interpret data to plan and design a rainwater harvesting system for their school. (Installation not required) (6th–12th grade teachers) Location: Maricopa County Cooperative Extension, 4341 E. Broadway Rd., Phoenix, AZ

June 19 & 20: Aqua STEM: World of Water Academy - New!!
Students learn how construct explanations and design solutions for Arizona’s water resource challenges. (6th – 12th grade teachers) Location: Maricopa County Cooperative Extension, 4341 E. Broadway Rd., Phoenix, AZ

June 24 - 28: Water Solutions: Past, Present and Future 2019
Explore our water’s past and present, and design its future in this APW & SRP STEM Academy! Accepting 3rd - 8th grade teachers. Location: SRP PERA Club, 1 E Continental Drive, Tempe, AZ

For more information on Phoenix area and Maricopa County Arizona Project WET events, please contact Pam Justice at: pjustice@email.arizona.edu (602) 827-8233 Or see: arizonawet.arizona.edu/calendar/event-list
Explore the Colorado River
An Arizona Project WET STEM Academy
5th - 12th Grade Teachers

**Dates:**
May 30 & 31, 2019
8:30 - 3:30 daily

**Location:**
Maricopa County Extension Office
4341 E. Broadway Road
Phoenix, AZ 85040
Ocotillo Room

Explore the systems of the Colorado River - the life blood of the Southwest!

- Why does Lake Mead have that “bathtub” ring?
- How is the CAP water linked to the California water crisis?
- Why is 1075’ an important number?

The Colorado River and its tributaries carry the water that makes life in the arid southwestern United States and northwestern Mexico possible. Come and learn how every drop of it’s water has been allocated and the difficulty behind managing it’s conflicting demands!

APW workshops evolve teachers’ instructional practice and help integrate the new Arizona Science Standards by looking deeply at phenomenon, revealing cross-cutting concepts, embracing science and engineering practices while using models, student-directed learning, with real world and relevant applications in the area of water resources.

To register and for more information go to:
https://arizonawet.arizona.edu/Colorado_River

Join us for this informative PD and receive 13 professional development hours and copies of two Project WET curriculum guides to use in your classroom. Lunch will be provided.

Receive this great educators guide full of creative hands-on language arts, social studies and science lessons geared to grades 5-12 along with the Project WET Curriculum and Activity Guide 2.0.
Explore the Colorado River
An APW STEM Academy

Sponsored by Central Arizona Project and Arizona Department of Water Resources
Thursday, May 30 & Friday, May 31, 2019

Objectives

- Overarching: Model 3-Dimensional Learning from the Arizona Science Standards
- **Develop and use models** to identify parts of the water cycle for our region
- **Develop and use models** to identify parts of a watershed and what a watershed is a part of
- **Use a model and mathematical thinking** to identify the inputs and outputs in the Colorado River system
- Relate the Colorado River Watershed and the human water management system
- Relate surface water and watersheds from a **cause and effect perspective**
- **Construct explanations and design solutions** for water management and distribution
- **Analyze & interpret** tree ring data to relate past and future streamflow
- Use **evidence to construct an argument** regarding the impact of human activities on the environment
- Engage in **argument from evidence** about past, present, and future management of the Colorado River

**Overarching Question:** “How can we ensure that a reliable Colorado River water supply is available to the Phoenix Valley for the next 150 years?”

**Day 1**

8:30 Pre-survey, Workshop Overview, and Introductions
8:50 Anchor Phenomena: **Beyond the Mirage Video K**
9:00 Perspectives: **One River Many Voices** (DAW p. 350) K
9:15 Southwest Water Cycle: **Incredible Journey of the Colorado River** (p. 89) P
10:15 Watersheds: **Seeing Watersheds and Blue Beads** (p. 80) and **Branching Out K**
11:45 Lunch
12:15 Water Law and the Colorado River: **Sharing the Shed** (p. 244) Part 1 P
1:15 Watershed Management: **Plumbing the Colorado** (p. 277) K
2:30 Extending the Hydrologic Record - Drought: **Reading the Rings** (p. 148) P
3:30 **Beyond the Mirage Experience:** beyondthemirage.org See you tomorrow!
Explore the Colorado River
An APW STEM Academy
Sponsored by Central Arizona Project and Arizona Department of Water Resources
Thursday, May 31 & Friday, June 1, 2018

Overarching Question: “How can we ensure that a reliable Colorado River water supply is available to the Phoenix Valley for the next 150 years?”

Day 2
8:30 Welcome and recap
8:45 Delivery and management: Engineering the CAP Activity  K
10:30 A Managed System: Many Happy Return Flows (p. 307) P
11:30 Lunch
12:00 Dams and Habitat Modification (fish): Chillin’ with the Chubs (p. 211) P
Dams and Habitat Modification (plants): An Invited Guest (p. 224) K
1:00 A Climate Adaptation: 8-4-1, One For All
1:30 Analyze all the lessons done over the last two days and summarize the big ideas with your group. Develop an argument based on evidence to answer the overarching question.
3:00 Book Review:
   • Project WET Curriculum & Activity Guide 2.0
   • Discover a Watershed: The Colorado Educators Guide
Conclusions, Post-Survey and Evaluation, Certificates
3:30 Thanks for coming!

Thanks to Maricopa County Cooperative Extension for hosting us!

For more information about Arizona Project WET contact:

Kerry Schwartz
Director, Arizona Project WET
The University of Arizona
Water Resources Research Center
Phone: (520) 621-1092
kschwart@cals.arizona.edu

Pamela Justice
Education Coordinator, Sr.
The University of Arizona
Cooperative Extension, Maricopa County
Phone: (602) 827-8233
pjustice@email.arizona.edu

Arizona Project WET Website: https://arizonawet.arizona.edu
Objectives:

- Infuse thinking, communication and collaborative learning skills into classroom instruction
- Model the Inquiry process - using problem solving and critical thinking skills with locally and regionally relevant content
- Deepen content knowledge on the important topic of water
- Prepare students for Arizona Water Festival

8:00 Questionnaire and Introductions
8:20 Overview and Science Notebook
8:40 Thirsty Plants Set-up
8:55 Watershed Lessons
  - Pre-Festival Lessons: Seeing Watersheds and Branching Out
  - Watershed Festival Activity: Watershed definition and model preview
  - Post-Festival Lessons: Storm Water and Sum of the Parts

11:00 Water Cycle Lessons
  - Pre-Festival Lesson: Water Cycle Models
  - Water Cycle Festival Activity: Incredible Journey (a version can be found in the Project WET 2.0 Guide, pg. 155)
  - Post-Festival Lessons: Blue Traveler (discoverwater.org) and Thirsty Plants

12:00 Break for Lunch
12:30 Groundwater Lessons
  - Pre-Festival Lesson: Groundwater Models, Get the Groundwater Picture 1&2
  - Groundwater Festival Activity: Groundwater model exploration
  - Post Festival Lesson: Common Water

2:00 Water Conservation Lessons
  - Pre-Festival Lessons: A Drop in The Bucket and Blue Planet (discoverwater.org)
  - Water Conservation Festival Activity: Water conservation technology preview
  - Post-Festival Lesson: Use Water Wisely - Water Detectives (discoverwater.org)

2:45 Wrap-up, Certificates, Evaluations, etc.
3:00 Thanks for attending ... see you at the Water Festival!

Online Resources and Networking:

APW website: https://arizonawet.arizona.edu/

Textbook Portal (be sure to register your book for electronic copy pages)
http://portal.projectwet.org/

Teacher Resources Page:
https://arizonawet.arizona.edu/content/arizona-water-festival-teacher-resources

APW Facebook Page:
http://www.facebook.com/ArizonaProjectWET

For more information about Arizona Project WET contact:
Kerry Schwartz
The University of Arizona
Water Resources Research Center
(520) 621-1092
kls4@email.arizona.edu
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3:15 Wrap-up, Certificates, Evaluations, etc.
3:30 Thanks for attending ... see you at the Water Festival!
Water Scene Investigators (WSI)
Arizona Project WET In-classroom Presentations
Avondale 6th Grade Teachers and their Students

In one hour, your students will:
- Explore a Water Saver’s Mystery Box
- Measure water flow from a faucet and record data
- Learn how to install an aerator on a faucet
- Brainstorm household water uses

At home, your students will:
- Inventory their family’s water use
- Measure water flow from bathroom faucets
- Install NEW aerators on bathroom faucets
- Record water savings data

Give us two class periods and we’ll do the rest! All educational materials including aerators and homework packets are provided. Our community coordinators give a one-hour, hands-on presentation and will plan a second visit after the home water audit to help interpret the results and report student data online. The teacher and students must agree to conduct the home water audit of their bathroom faucets and report their data online.

To schedule an in-classroom presentation contact Pam Justice, Education Coordinator with Arizona Project WET at (602) 827-8233 or pjustice@email.arizona.edu
Water Scene Investigators (WSI)
Arizona Project WET In-classroom Presentations

Chandler 6th Grade Teachers and their Students

In one hour, your students will:
- Explore a **Water Saver’s Mystery Box**
- **Measure** water flow from a faucet and record data
- Learn how to **install** an **aerator** on a faucet
- **Brainstorm** household water uses

At home, your students will:
- **Inventory** their family’s water use
- **Measure** water flow from bathroom faucets
- **Install** NEW aerators on bathroom faucets
- **Record** water savings data

Give us two class periods and we’ll do the rest! All educational materials including aerators and homework packets are provided. Our community coordinators give a one-hour, hands-on presentation and will plan a second visit after the home water audit to help interpret the results and report student data online. The teacher and students must agree to conduct the home water audit of their bathroom faucets and report their data online.

To schedule an in-classroom presentation contact:

**Pam Justice**, Education Coordinator with **Arizona Project WET** at (602) 827-8233 or pjustice@email.arizona.edu
August 2018

Dear Parents and Guardians,

The City of Chandler has partnered with Arizona Project WET to sponsor a cutting edge, STEM-based (science, technology, engineering, math) learning activity for your student’s class. During a Water Scene Investigation (WSI) today, students determined the efficiency of a classroom sink faucet by measuring flow rate, estimating daily faucet use, and calculating expected water use. Students then installed a NEW faucet aerator and calculated the projected water savings over time from this simple, but effective, technology upgrade.

To further apply their knowledge, students have been provided the following homework assignment: Conduct the same experiment on a sink faucet at a bathroom at home. Chandler Water Conservation has provided each student with one bathroom faucet aerator, a measuring bag, a procedure sheet, and a data recording sheet so your student can measure the flow rate from your faucet to determine:

1. Baseline flow rate with the existing aerator
2. Flow rate without an aerator
3. Flow rate with the new, water-efficient, aerator

Installation of water-efficient aerators at home will not only authenticate the classroom learning activity, it will save your household water and money. In addition, you can learn how much water your household should be using, and compare it to your actual use at gilbertaz.gov/watercalculator.

This WSI is designed to empower students to save water through action. By providing them with an opportunity to discover how simple, engineered devices can be used to save a significant amount of water over time, they can learn that water-efficient devices really work, are readily available to consumers, and are easy to install (see: epa.gov/WaterSense)!

We hope that you will be as excited as we are to be partners in this endeavor. In advance, we thank you for the time, dedication and support you give to your child and their education. We sincerely appreciate you and your efforts.

Sincerely,

Kerry Schwartz
Director, Arizona Project WET
Extension Specialist
Water Resources Research Center

Pam Justice
Education Coordinator, Sr.
Arizona Project WET
Maricopa County Coop. Ext.

Deina Burns
Water Conservation Coordinator
City of Chandler

Notes:

1. After installing new aerators, please return old aerators to the classroom.
2. If you find that the aerators provided do not fit with one of your bathroom faucets, still conduct the baseline flow with existing aerator test and the without an aerator test (if possible). We understand that not all aerators will match perfectly, however, it is the learning process that is important for the student.