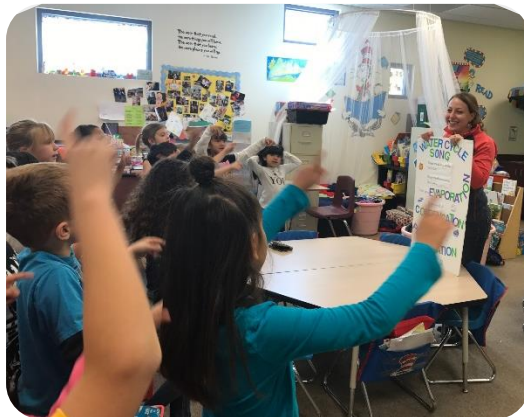


# Water Wise Youth Education Program Elementary School Curriculum Guide



The University of Arizona  
Cochise County Cooperative Extension



# *Water Wise Youth* Curriculum Guide 2021-2022

*Water lessons available to Cochise County elementary classroom teachers by  
The University of Arizona Cooperative Extension*

*(520) 458-8278 ext. 2150*

<https://waterwise.arizona.edu/youth-education>

## Water Education Program Overview

The *Water Wise Youth* Program curriculum has five focus areas:

- **Water Basics** (the water cycle, where water is found, amounts of water in different places on the planet);
- **Aquifers and Watersheds** (how water moves through the ground, where is it stored, and how is it removed);
- **Conservation** (practical ways to save our water resource);
- **Water Quality** (where does our household water come from and where does it go after we've used it; how do we keep it clean; health impacts from unclean water).
- **Special Activities** (After-school programs, guest readings, and special school events such as STEM Days, Family Science Night, Earth Day etc...)

The goals of the *Water Wise Youth* water education program are to help students develop a deeper conceptual understanding of water and to encourage a personal connection to water as a limited resource. All activities are taught by experienced conservation educators through the University of Arizona Cooperative Extension and are offered free of charge. **Please note:** There are Middle School and High School components for many of the classes listed below and several other higher grade options are available. Please contact Alex Kosmider (520) 458-8278 ext. 2150 or alexkosmider@email.arizona.edu to discuss additional opportunities.

## How to Schedule Classroom Lessons

1. Please read through the lesson descriptions to determine which class(es) meet your needs. Classes can be modified or combined to meet specific educational goals. Each class is adapted for specific grade levels to meet Arizona State Academic Standards. Arizona State Standards can be found at: <http://www.azed.gov/standards-practices/>. A copy of relevant Arizona State Standards will be provided to teachers for each class delivered upon request (once post-common core AZ Standards are confirmed).
2. We encourage you to choose one to four classes you would like taught to your students. The topic categories enable you to choose classes that emphasize one or several areas of interest. There is a time (duration) listed for each activity. ***This timeframe can be flexible.***
3. Several of the classes can be modified or combined to create a specialized experience. Please contact Alex Kosmider (520) 458-8278 ext. 2150 or alexkosmider@email.arizona.edu ***several weeks*** in advance if you would like a class tailored to your specific classroom needs.

# Class Listing 2021-2022

The following icons in the curriculum guide are used to show the focus area for each lesson.



Water Basics



Aquifers and Watersheds



Conservation



Water Quality



## Water Basics

### Learn the Water Cycle (Grades K – 4)

Duration: 45-60 minutes



Depending on grade level, students participate in an interactive lesson where they learn all about the water cycle while either constructing a water cycle poster or completing a coloring book and practice using water cycle vocabulary words. They also learn and sing the “Water Cycle Song”.

Subject areas: Earth Science, Music

Learning styles: Visual, Kinesthetic (placement of objects), Auditory (discussion/song)

Special classroom request(s): Drawing utensils (crayons/colored pencils), scissors, and glue

### Incredible Journey (Grades 3 - 6)

Duration: 45-60 Minutes



This class teaches the water cycle to older students in a fun and informative way. Students become a water drop and journey around the earth and through living things by tossing a cube which tells them where on earth they go next. They collect colored beads at every location they visit and move through the earth as a gas, liquid or solid. They use the beads to make a bookmark which provides details of their trek. Students discuss their journey, make inferences and draw conclusions about where most of the water on earth is located and how living creatures use water.

Subject: Earth Science (the water cycle)

Learning styles: Primarily Kinesthetic & Visual, some Auditory (discussion)

Skills: Analyzing (identifying components & relationships); Interpreting (relating); if modified Organizing information (mapping)

Modifications: This class can be combined with other classes as a “mini-water festival”.

Special classroom request(s): large indoor or outdoor space.

## **Globe Toss (Grades 1 – 5)**

Duration: 30 minutes for grades K – 2; 20 minutes for grades 3 – 5



Students gain an understanding of the distribution of water on Earth and the limited amount of water available for human use through a tossing an air filled globe and discussion of basic water cycle principles.

Subjects: Earth Science, Geography, Math (fractions or percentages)

Learning styles: Primarily Kinesthetic & Visual, some Auditory (lecture)

Skills: Analyzing (identifying relationships); Interpreting (relating);

Special classroom request(s): Space for students to stand beside their desks

**Note:** For older grades this exercise is usually combined with the “Drop in the Bucket” class.

## **Drop in the Bucket (Grades 1 – 6)**

Duration: 45 Minutes



Students may know the earth is covered with water but may not realize that only a very small amount is available for human consumption. Through a visual demonstration, students learn that water is a very limited resource which helps them appreciate the need to use water wisely.

Subjects: Earth Science, Math (fractions/percentages)

Learning styles: Auditory (lecture), Visual (observation)

Skills: Gathering information (observing, listening); Organizing; Interpreting (drawing conclusions)

Special classroom request(s): None

**Note:** For older grades this class is usually combined with the “Globe Toss” class.

## **The Thunderstorm (Grades 1 – 5)**

Duration: 45-60 Minutes



This class has both a lecture component and a fun activity! The lesson teaches students how to stay safe during thunderstorms which often occur during our monsoon season. They learn the difference between thunderstorm “watches” and “warnings”; the 30/30 rule and other precautions to take if they are inside or caught outside as a storm approaches. For the activity, students simulate the sounds of a thunderstorm through physical gestures which are recorded and played back. If time allows, the class can be broken into teams and the teams can compete with each other to see which group sounds the most like a real thunderstorm.

Subjects: Earth Science (meteorology); Music

Learning styles: Auditory (lecture), Kinesthetic (body movements) & Visual

Skills: Gathering information (listening); Applying (designing, composing)

Special classroom request(s): Space for students to stand beside in a circle

## **Aquabodies (Grades 2 – 6)**

Duration: 45-60 Minutes

Students learn how much of their bodies are composed of water, where water is found within their bodies and the function of water in their bodies. Demonstrations with fresh and dried fruit are used to illustrate the concept that all living things are comprised of water.



Students work in teams to trace their body on a piece of butcher paper. They divide their drawing into 10 sections. Lower grades color six of the sections to get a visual representation of how much water is in their body. Older grades also trace their bodies and then calculate the weight of water in their own body. Additional options for older grades include learning the percentage of water in eight different organs; learning where those organs are located in the body and what their functions are. (A second class or longer time period is recommended for this option.)

Subjects: Life Science, Art, Math (older grades)

Learning styles: Kinesthetic (hand/eye coordination), Auditory (lecture), Visual (observation)

Skills: Gathering information (calculating); Organizing (estimating, categorizing); Analyzing (comparing, identifying patterns)

Special classroom request(s): Space for students to lie down and trace their body. A table for the fruit demonstration. Locations around the room to display “organ cards” – if that option is chosen.

## **The Life Box (Grades K – 2)**

Duration: 30-45 minutes



Students identify the four essential factors necessary for life: Soil, Sunlight, Air, and Water. They learn how living things use these four factors and how they work together as a system.

Subjects: Earth Science

Learning styles: Primarily Kinesthetic & Visual, some Auditory (lecture)

Skills: Analyzing (identifying relationships); Interpreting (relating)



## **Aquifers and Watersheds**

### **Seeing Watersheds (Grades 3 – 6)**

Duration: 45-60 mins



Students learn what a watershed is and get to see and feel their watershed on a topographical map. Students will participate in a “hands on” demonstration on how water drains in a watershed and complete a coloring worksheet to further grasp the concept. Students will also learn about how communities impact their watersheds with the placement of farms, industrial sites, landfills, toxic waste sites, etc. How can all these locations be affected by the natural processes within a watershed? How can these activity sites impact their health and safety? Students learn vocabulary

terms related to watersheds, identify key geographic features, predict drainage patterns, and analyze and discuss natural and human environmental impacts.

Subjects: Earth Science (water movement), History/Anthropology, Art

Learning styles: Kinesthetic & Visual, some Auditory (discussion)

Skills: Analyzing (comparing); Interpreting (identifying cause & effect); Applying (planning, problem solving, developing and implementing action plans)

Special classroom request(s): None. (A sink or convenient water source is helpful)

## Get the Groundwater Picture (Grades 4 - 6)

Duration: 45 minutes (basic class) – 1 hour plus for expanded version (*often combined with the Ground Water Flow Model*)



Students learn about basic groundwater principles. They are asked to predict the behavior of water as it moves through substrates (soil) and then make observations on the rates (time) which water moves through various soils such as gravel, sand and clay. Basic concepts discussed include watersheds, aquifers, porosity and permeability. Other concepts may be expanded upon based upon grade level, classroom participation and inquiry. Students may be asked to role play soil particle interactions.

Subjects: Earth Science (hydrogeology), Math

Learning styles: Visual, Auditory (lecture); some Kinesthetic

Skills: Analyzing (identifying patterns); Interpreting (inferring, translating); Organizing information

Special classroom request(s): None (A sink or convenient water source is helpful)

## Groundwater Flow Model (Grades 4 – 6)

Duration: 45 minutes – 1 hour (*often combined with other activities for specialized classes*)



Students interact with a simulated model of an underground aquifer. They pump water from the aquifer to investigate how water moves underground and observe the effects of groundwater pumping. A practical discussion of how increased development, changes in water use, and environmental conditions (drought) can all impact how water moves through the environment and ultimately impact our water resources. If time allows or if a second (higher level) class is requested, students will “contaminate” the model, observe and discuss the results.

Subjects: Earth Science (hydrogeology)

Learning styles: Visual, Auditory (lecture); some Kinesthetic

Skills: Analyzing (identifying patterns); Interpreting (inferring, translating); Planning

Special classroom request(s): Table to display model. (A sink or convenient water source is preferred but not necessary)

Modifications: This class can be combined with other classes as a “mini-water festival”.

**NOTE:** The model takes at least 20 minutes to clean between uses. Back to back classes are not recommended because of the required cleaning times. Two models can be used to illustrate different ground water processes and issues.



## Conservation

### Everyone Comes to the Water Hole (Grades K – 2)

Duration: 30 minutes- story time



Students participate in the story, *The Water Hole*, by Graeme Base by becoming animals in the story. They experience the feel of a “water hole” that is being depleted as the animals drink all the water. Students make connections to our natural earth cycles, like the monsoon season in Arizona, and discuss how the animals adapt to changes in the environment. If time allows, a secondary role play activity is performed which demonstrates how our own personal use of water can affect everyone.

Subjects: Earth Science (natural cycles), Reading (comprehension, listening skills, vocabulary)

Learning styles: Auditory (story telling); Visual, Kinesthetic

Special classroom request(s): Students usually sit on the floor around a large cloth “water hole”. For role play, a table or desk for water jug and cups is needed.

### A Heavy Load to Carry (Grades 3 - 6)

Duration: 60 minutes



Students form teams and compete to move water from one point to another as a way to understand the energy and time required to physically transport water by hand. They learn that one-third of the world doesn't have easy access to water and often it is the responsibility of children in developing countries to walk long distances to collect water for their family's daily needs. Parallels are made to early settlers in America. Students gain an appreciation of how easy it is for us to have access to water through modern technology. Principles of conservation are discussed.

Subjects: Earth Science, History, Anthropology

Learning styles: Kinesthetic (transporting water), Auditory (lecture/discussion), Visual (pictures)

Skills: Gathering information (observing, listening); Interpreting (drawing conclusions)

Special classroom request(s): Outdoor access to water. Outdoor area where a water hauling course can be set up. Note: This class can be combined with other classes as a “mini-water festival”.

### Water Zig-Zag Race (Grades 3 - 6)

Duration: 60 minutes



Students enjoy teaming up to create a race course using passive rainwater harvesting principals (*slow it down, spread it out, soak it in*) and then compete against each other's landscape designs. The winning team's water moves the *slowest* through their designed landscape course.

Subjects: Earth Science (passive water harvesting, erosion), Building & design

Learning Styles: Primarily Kinesthetic & Visual, some Auditory (lecture)

Skills: Analyzing (comparing); Interpreting (identifying cause & effect); Applying (planning, problem solving, developing and implementing action plans)

Special classroom request(s): Level surfaces (such as tables or desks) with sufficient space for students to observe the race. (A sink or convenient water source is helpful)

## **Learn About Water Conservation (Grades K – 5)**

Duration: 45-60 minutes



Students learn all about water conservation while they read and discuss the Educational Coloring and Activity Book, “Learn About Water Conservation” with the Water Wise Youth instructor. This robust activity book contains information about water distribution, water pollution, the water cycle, rainwater harvesting, waste management, and has tips on conserving water in the kitchen, bathroom, laundry room, and yard. After class has finished reading and discussing the topics in the activity book, they are free--time to color and complete the activities.

Subjects: Earth Science

Learning Styles: Primarily Kinesthetic & Visual, some Auditory (lecture)

Skills: Analyzing (comparing); Interpreting (identifying cause & effect)

Special classroom request(s): Drawing utensils (crayons/colored pencils),

## **Water History Trunk (Grades 2 – 6)**

Duration: 45-60 minutes



This is a type of “living history” class. The instructor takes on the role of an Arizona pioneer and discusses the challenges of having sufficient access to water for their needs over a span of time. Students examine “old-fashioned” items for procuring and using water (dowsing rods, hand held laundry agitator, canvas water bag, windmill, ice tongs, etc.), and discuss their functions and connection with water conservation measures. Students gain an understanding that previous generations used far less water than we do today, discuss reasons that this is the case, and recommend conservation measures. If time allows, students can experiment with “dowsing” for water.

Subjects: Earth Science, History

Learning Styles: Auditory (lecture/discussion); Visual (observation); Kinesthetic (experimentation)

Special classroom request(s): Table for the historical artifacts.

Modifications: Class can be modified using a PowerPoint presentation in place or with the “living history” component.

Note: This class can be combined with other classes as a “mini-water festival”.





## Water Quality

### **There is No Away! (Grades 4-6)**

Duration: 60 minutes (Requires additional time post-lesson)



Students learn the concept that “litter and water don’t mix”. They view a PowerPoint presentation that elaborates on how our disposal of trash/waste affects the water quality of our streams, rivers, and ocean basins. Students learn how litter on the ground travels into our waterways by stormwater and observe the consequences to our environment, people, and wildlife. After the interactive presentation, students discuss ways of preventing water pollution and view examples of PSA campaigns and slogans that have been effective in the past before coming up with their own PSA campaigns and slogan ideas for protecting our waterways from litter or “Reuse, Reduce Recycle.”

Subjects: Earth Science/Ecology (water quality), Language Arts (campaign analysis and creation)  
Learning Styles: Auditory (lecture/discussion); Visual (observation); Analyzing (comparing)  
Skills: Gathering information (observing, listening); Analyzing (identifying relationships)  
Interpreting (drawing conclusions)  
Special classroom request(s): Computer, projector, screen

### **Poison Pump (Grades 4-6)**

Duration: 45-60 Minutes



Through a series of clues, students solve a mystery to discover the source of an epidemic which is based upon a real-life historical event in London in the 1800’s. They learn about the importance of a clean water supply. If time allows or special request is made, the Ground Water Flow model can be used to show how polluted water can impact water wells or other water bodies.

Subjects: Earth Science (hydrogeology), History, Life Science (infectious disease)  
Learning Styles: Auditory (discussion/team work); Visual (mapping); some Kinesthetic  
Special classroom request(s): Classroom locations for six teams.  
Note: May be combined with Ground Water Flow model for specialized class.

### **A-Maze-ing Water (Grades 1-6)**

Duration: 45-60 Minutes

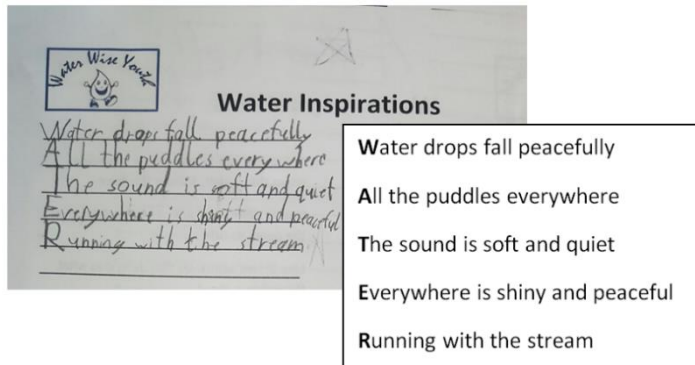


Students will learn the basics of storm water management and how human actions affect water quality. They will be shown illustrations of pollutants and will have discussions on how they can relate to the pollutants and what they can do to prevent them from contaminating future storm water. They will also learn about storm pipes and water treatment plants. They will finish the lesson with a maze worksheet or activity

Subjects: Earth Science (water quality)  
Learning Styles: Auditory (lecture/discussion), Visual (maze); some Kinesthetic  
Skills: Interpreting (identifying cause & effect)  
Special classroom request(s): None.

*Water Wise Youth* provides Cross-Categorical lessons, for example:

## Lessons for ELA:



## Water Inspirations (Grades 4-6)

Subject(s): Language Arts, Art, Parts of Speech, Poetry, Science (3 forms of water)  
Duration: 60 Mins

Students discover the impact water has had on humanity by observing and analyzing visual art pieces by artists around the world. While analyzing the artwork, students use the art pieces as inspiration to create 2 types of poems: acrostic and cinquain.

## Raining Cats and Dogs (Grades 4-6)

Subject(s): Language Arts, Figurative Speech, Proverbs/Sayings, Social Studies  
Duration: 60 Mins

Students broaden their understanding of regional and cultural perspectives and practices related to water by studying water-related proverbs. The examination of such proverbs makes clear the central role that water plays in all human society. There is a Water Sayings card activity included with this lesson where students match sayings with illustrations and scenarios.

## Guest Reading



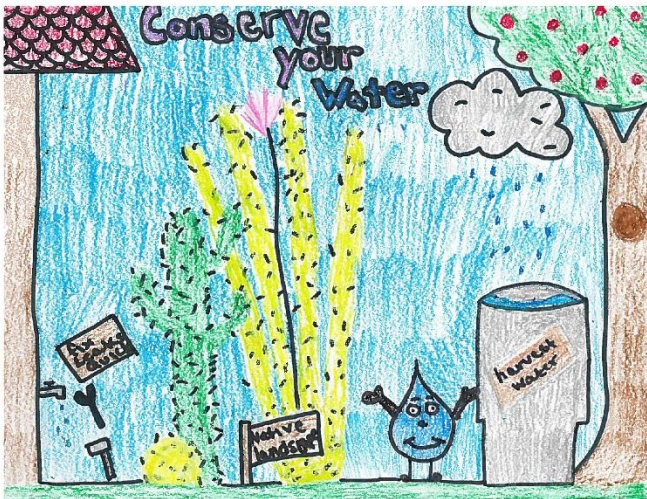
**The *Water Wise Youth* Program can also provide you with a Guest Reader!**

If you are having a special reading activity or *Reading Across America* week in the school or class that requires guest readers, a Water Wise instructor would be happy to come and read at your school or classroom with several engaging water-related books at different reading levels. (Grades K-6)

# Special Activities

## Special Activities include:

- Annual WAM! Water Awareness Month Poster Contest (February to April)
- WAM! - Student Exhibition Projects
- Mini “Water-Festivals” (require assistance from classroom teachers)
- School Related Water Audits
- STEM Day events
- Earth Day programs
- Family Science Night
- After-school programs (Kid’s WORLD, Boys & Girls Club; Girl Scouts; Youth Commission; etc.)
- Field Trips (San Pedro River; Brown Canyon Ranch, Palominas Recharge Project; Environmental Operations Plant; Waste Water Treatment Plants)





## WWY Educator Request Form 2021-2022

Name \_\_\_\_\_ Date \_\_\_\_\_

School \_\_\_\_\_ Grade Level \_\_\_\_\_

Check best way to contact you:      Email       School Phone       Cell Phone

Contact Information: \_\_\_\_\_

1. Select your classes of interest. Check the box in front of each requested class and return to Rebecca via email or snail mail. *(If you would prefer an in-person meeting to discuss class options, individually or at a grade level meeting, please feel free to send an email or call to schedule a date/time to meet)*

Water Basics		Aquifers and Watersheds		Conservation		Water Quality	
	Learn the Water Cycle (1-4)		Seeing Watersheds (3-6)		Everyone Comes to the Waterhole (K-2)		There is No Away! (4-6)
	Globe Toss (1-5)		Get the Groundwater Picture (4-6)		Heavy Load to Carry (3-6)		Poison Pump (4-6)
	Drop in the Bucket (1-6)		Groundwater Flow Model (4- 6)		Water Zigzag Race (3-6)		A-Maze-ing Water (1-6)
	The Thunderstorm (1-5)				Learn About Water Conservation (K-5)	<i>Special Requests/Activities</i>	
	Incredible Journey (3-6)				Water History Trunk (2-6)		Adventures in Density (6)
	Aquabodies (2-6)						Raining Cats and Dogs (3-5)
	The Life Box (K-2)						Book Reading (PreK-6)
							Other/Activity

2. List your first choice date(s) and/or any special requests:

\_\_\_\_\_

\_\_\_\_\_

If you have questions or would like additional information about the *Water Wise Youth* Program, please contact Alex Kosmider at 520-458-8278 ext. 2150 or send an email to alexkosmider@email.arizona.edu

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