

Wonders of Water - Investigate and Design

Water is a fascinating and essential part of your body and all parts of nature - plants, animals, the air and sky around you, the ground you walk on, the lakes and streams you like to visit. So it is perplexing to think that drinking water is rare and precious. Explore the wonders of water through these activities, design challenges, videos and citizen science projects. They touch on some of the ways water affects the lives of people and the world we live in.

Seven Water Activities - one for each day of the week!

1. **Water Drops Activity.** ([English](#)) ([Spanish](#)) (activity) Investigate how much water you use in a day by using beans, marbles, pennies or other items to count each time you use water.
English: <https://drive.google.com/file/d/1PSNipC347b9OxYvzexBSYW3iDqFJxSRj/view>
Spanish: <https://drive.google.com/file/d/1HWktECw2hE88nTj3F5gT1H0jclv6QsKX/view>
2. **Watercalculator.org.** ([English](#)) ([Spanish](#)) (internet technology) Use this interactive website to calculate your water footprint. How much water do you use each day?
English: www.watercalculator.org/ Spanish: www.watercalculator.org/wfc2/esp/
3. **CoCoRaHS: Community Collaborative Rain, Hail, and Snow Network.** (citizen science project) Visit this map, updated daily, to look for precipitation patterns across your town, the state, and the USA. Become a citizen scientist by joining; measuring rain, hail, and snow at your house; and posting your data on the map. www.cocorahs.org/
4. **Search for Water Critters.** (shoreline or wet-feet field investigation) Explore a creek, stream, pond, or lake near you. Use a net, piece of cheesecloth, or an old t-shirt to catch some water critters. Stretch the fabric across the flowing water, from bottom to water surface. Upstream of your fabric, knock stones together, stir up dirt, and let the critters drift into your fabric. After 15-20 seconds take your fabric to shore and look at what you caught! Remember to release them back into the water! You can also catch and release with a cup or bowl. **Macroinvertebrate identification chart:** <https://bit.ly/2W5S411>
Identification key: <http://clean-water.uwex.edu/pubs/pdf/riverkey.pdf>
5. **Water Tower Design Challenge** (design challenge) Design your own water tower that can deliver water to a paper cup that is about 36 inches (90 cm) away. You must be able to stop and start the flow and fill the cup up just half way.
<https://tryengineering.org/wp-content/uploads/watertower.pdf>
6. **Video: Where on Earth is the water? Earth's Water Distribution.** (Video of an activity) <https://youtu.be/e-FoTmQVL5c>
Video: What happens if you don't drink water? (video - animated storyboard)
<https://www.youtube.com/watch?v=9iMGFqMmUFs>
7. **Design boats of clay or aluminum foil.** (design challenge)
 - a. **Clay boats:** ([English](#)) ([Spanish](#)) How can we design a boat out of clay that floats?
English: www.teachengineering.org/sprinkles/view/cub_clayboats OR
Spanish: www.teachengineering.org/sprinkles/view/clayboats_spanish
 - b. **Foil boats:** How much weight can aluminum foil boats float?
www.sciencebuddies.org/stem-activities/aluminum-foil-boats-float

Want some more ideas? Check these out on the next page!



STEM Design challenges and activities

- **Aqua-Thrusters**. ([English](#)) ([Spanish](#)) Design a propellant that will move a boat through the water, using seltzer tablets, film or medicine containers, and water.
www.teachengineering.org/sprinkles/view/cub_aquathrust OR
www.teachengineering.org/sprinkles/view/aquathrust_spanish
- **Build a Machine to Lift Water**. Design a water wheel that will collect and store water, using a plastic plate and cups, tape, and a tub of water.
www.sciencebuddies.org/teacher-resources/lesson-plans/build-a-machine-to-lift-water
- **Design a filtration system that cleans water.**
 - [Water Filtration Project](#): Make and test water filters (video instructions)
www.teachengineering.org/activities/view/water_filtration
 - [Cleaning Water Activity from NASA STEM: Forward to the Moon](#)
www.nasa.gov/stem-ed-resources/cleaning-water-activity-from-nasa-stem-forward-to-the-moon.html
 - [Clean Enough to Drink](#): Making devices to filter dirty water.
www.teachengineering.org/activities/view/uoh_cleandrink_activity1
- **How Water Works**. Four activities and design challenges: Rethinking Wastewater; Which Water?; Designing Around Water; and Design a Water Park.
www.scholastic.com/njaw/

Citizen science project

- **EarthEcho Water Challenge**. (previously called **World Water Monitoring Day**) Conduct basic tests to monitor the water quality of your local water lake, pond, or stream. www.monitorwater.org/

Videos

- **H₂O: The Molecule That Made Us**. A series of PBS videos about water. (55 minutes) www.pbs.org/wgbh/molecule-that-made-us/home/watch/
- **How Do Water Treatment Plants Work?** How does water get cleaned and to your tap? https://youtu.be/0_ZcCqqpS2o