

## Summer Camps 2020

# Water Week

Kendall County Outdoor Education Center \* [www.kcouthoored.org](http://www.kcouthoored.org) \* [dbazan@roe24.org](mailto:dbazan@roe24.org)  
Camp week designed by SarahAnn O'Malley

- At Home
  - Making Music: Water xylophone
  - Sink or Float? Freshwater vs. Saltwater
  - Water Refraction
  - Candle in a Jar
  - Properties of Water
  
- At KCOEC
  - Magic water <https://amotherstowndown.com/water-suspension-science-experiment/>
  - Play in the creek- what do you see living there?
  - Surface tension experiment
  - Build a water filter
  - Rain Garden Exploration

### **BACKGROUND INFORMATION**

We drink it, bathe in it, swim in it. We use it to water our plants and our pets. We wash with it and celebrate with it. Water is very important. In fact, it is one of the most important substances on Earth. All plants and animals need water to survive. No life would exist on Earth if there was no water.

Earth has a closed water system meaning no new water is formed; what we have now has always been here, and that's why it is so important to take good care this precious resource. The water cycle constantly moves our water through evaporation, condensation, precipitation and collection. Water can be found as a liquid, solid (ice) and gas (water vapor). Scientists report that about 97% of water on Earth is found in the oceans, and about 2% is frozen into glaciers. The remaining 1% is found in groundwater, surface water and in the atmosphere. Water can change sound waves to produce different sounds, and it change redirect light waves for some really fun effects. Water can be used to dissolve substances like salt (just like in the oceans).

During camp this week you will have the opportunity to experiment with water in lots of different ways. Don't be afraid to get a little wet as you become a water scientist!

## Activity #1: MAKING MUSIC – WATER XYLOPHONE

**Materials:** glass containers, water, mallet, food coloring (optional)

Can you find a set of glasses, jars or vases that are all the same size? If so, you are prepared to create your own xylophone. Line up the containers and fill them with different amounts of water, starting with a full glass and working down to an empty glass. If you like, you can add a drop of food coloring to emphasize the difference in each glass. Use your mallet (a wooden spoon works well) and gently strike the glasses and listen to the sounds. Can you play a familiar tune?



There is science behind the music. When the mallet strikes the glass, it causes the water inside to vibrate. The speed of the vibration determines the pitch. The glass with the most water slows the vibrations the most, so the sound is lower. When there is no water to slow the vibrations, the sound is higher.

## Activity #2: SINK OR FLOAT (Freshwater vs. Saltwater)

**Materials:** two tubs of water, salt, objects to test, prediction chart

Try this outdoor learning activity to help kids explore and discover which objects float or sink. It's a great way to learn about the scientific method by making predictions and exploring with different materials. Children should be encouraged to ask their own questions and develop their own theories about the experiment results.



Begin by collecting materials to test (see photos for ideas). Create a prediction chart. With a tub of water, begin testing each object and record the results. Compare the results to the predictions and discuss theories to explain what children have observed.



Have you ever been in the ocean? If so, you know what salt water is like, especially if you have tasted it! Run the experiment again, but this time add a second tub of water with dissolved salt (kitchen salt works fine). Ocean water has an average salinity of 35ppt, so you can simulate ocean water by dissolving 2 tablespoons of salt in 4 ¼ cups of water. Now try floating your objects again. Are your results the same in the ocean water as in the fresh water?

The answer is just one word-salt. When salt is dissolved in water (ocean water) it adds to the mass of the water and makes the water denser than it would be without salt. Objects float better on a dense surface, and that explains why they float better on salt water than fresh water.

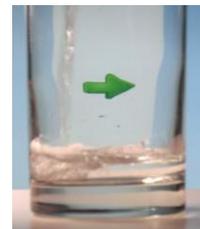


### Activity #3: WATER REFRACTION

**Materials:** clear glass, paper pictures or words, water

Start by watching this quick video to explain water refraction:

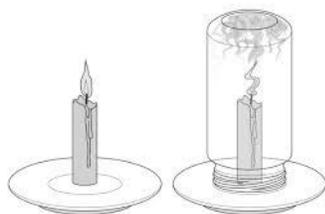
<https://www.youtube.com/watch?v=o08jgkut7e8>



Light travels at its own speed. When the light enters the water, it slows down and changes direction slightly. The word “refraction” means a change of direction. When light slows down in the water, it travels a different direction and changes the pictures we see on the paper. If you enjoyed that video, there are even more fun examples here: <https://www.youtube.com/watch?v=g7Wa3EKEkm8> Experiment and see what you can do!

### Activity #4: CANDLE IN A JAR

**Materials:** small candle, jar, saucer, colored water



This water experiment is all about air pressure. Watch this video to see how to set up the experiment for yourself.

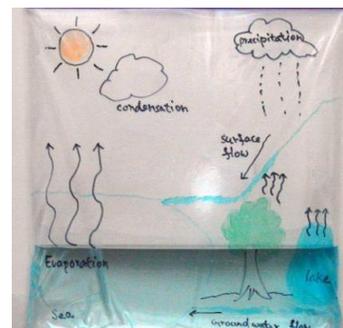
[https://www.youtube.com/watch?v=pyy\\_lup0F4c](https://www.youtube.com/watch?v=pyy_lup0F4c)

How did that happen? At first, the flame heats the air inside the jar causing the hot air to expand quickly. You might see bubbles as some of the hot air escapes. When the flame goes out, the air in the jar cools down and takes up less space. That contraction creates a vacuum (lower pressure). Since the higher pressure is outside the jar, the outside air pushes the water into the jar until the pressures are equal. That’s when the water stops rising. You can repeat this as many times as you like. Enjoy!

### Activity #5: WATER CYCLE IN A BAG

**Materials:** Ziplock bag, markers, colored water, tape

Water travels in a cycle and stays on earth... the water cycle! To demonstrate this cycle, decorate a ziplock bag like the one you see here. Near the bottom, write the word EVAPORATION with arrows going up. Near the top, draw a fluffy white cloud and write the word CONDENSATION. Finally, draw a rain cloud with arrows going down and write the word PRECIPITATION. Now hang your bag in a sunny window. Within 24 hours, the water cycle will be happening inside the bag. For a better idea of what this looks like, check out this video from Science Museum Oklahoma: [https://www.youtube.com/watch?v=VZB44\\_X0pFw](https://www.youtube.com/watch?v=VZB44_X0pFw)



### **Additional Resources**

<https://www.youtube.com/watch?v=9L2ARmPpA78> Water experiments to conduct with your preschoolers (xylophone, water pouring, surface tension, water tornado)

<https://www.youtube.com/watch?v=hLCpt56Wy8s> Dad Lab pressure experiment using a rubber glove

<https://www.sciencekids.co.nz/water.html> Experiments, quizzes, projects, pictures, facts, games, videos and lessons on water

<https://climatekids.nasa.gov/10-things-water/> video; ocean information

<https://www.epa.gov/acidrain> EPA Acid Rain page