

# Round and Round the Water Goes

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## **Standards of Learning**

Science 6.1, 6.9, LS.4, LS.8, LS.9, LS.12, LS.14

English 6.1, 6.2, 6.5, 7.1, 7.7

History USII.1, USII.2, USII.3, USII.5, USII.8, CE.1

## **Objective**

The student will:

- illustrate how multiple users of water resources can affect water quality and quantity.
- examine the complexities of providing water for all water users.

## **Materials**

- A large bucket to hold several gallons
- 1 container per student ( can use a milk carton)
- 17 large household sponges
- Various colors of food coloring colors of food coloring (put several drops of food coloring of any color on all the sponges and sponge pieces)
- Markers
- Poster board

## **Background Knowledge**

The journey water takes as it circulates from land to sky and back down is called the water cycle. Another name for the cycle is the hydrologic cycle.

Heat from the sun provides energy to evaporate water from the Earth's surface (pond, streams, lake, and oceans). The water vapor eventually condenses, forming tiny droplets in clouds. When the clouds meet cool air over land (condensation), precipitation is triggered, and water returns to the land. Precipitation comes in solid or liquid form. Precipitation soaks into the ground. Some of the underground water is trapped between rock or clay layers; this is called groundwater. Most precipitation which lands on the ground forms runoff whether it stays on the surface or sinks underground. The runoff flows underground or above into streams, rivers, ponds, and eventually the ocean. Then the cycle continues all over again.

## **Procedure**

1. Cut the sponges in the following fashion:
  - cut 3 of the sponges into fourths
  - cut 5 of the sponges into thirds
  - cut 5 of the sponges in half
  - leave the last 4 whole(You can increase or decrease these numbers to fit the number of students that you have.)
2. Fill a large bucket to the brim with water. (This represents water stored in a reservoir, pond, or lake. Some communities depend on ground water. If this is the case, the bucket represents water underground and the sponges symbolize wells.)
3. Tell the students that they are going to simulate changes in a watershed over several time periods. (Each 30 second round represents a time period)



4. For each round the students should be equal distance from the water source, when the round starts, students fill their sponges with water from the reservoir to represent consumption. They squeeze the water out of the sponges into their containers. They can refill as often as they like per round.
5. At the end of each round, note how much water is still in the bucket. Tell students to empty half of the water from their container back into the bucket. (This represents the water that comes back to the reservoir (i.e. When it percolates through the solid, when it is discharged from a factory, after it runs off the surface) Students will notice that it is colored, this represents sewage and runoff from urban and rural areas.
6. Record the student's comments about the amount of water used and the amount of waste materials generated. Compare after each round.

After each round refill the bucket with clean water to represent the water source eventually cleaning and replenishing itself over time.

**Round 1:** It is 200 years ago. A few homesteaders operating small farms inhabit the watershed. (Three students represent the homesteaders. Give each of them one-fourth of a sponge and a container.)

**Round 2:** One hundred years have passed. A large farm and a small town are now located in the watershed. Distribute sponges cut in fourths to 6 students (town dwellers) and a half sponge to a student representing the farm. Provide each student with a container.

**Round 3:** It is now just after WWII. The size of the town has increased. Many of the town residents are employed in an industry that makes typewriters. Half a sponge represents the factory. Two farming areas supply milk and some food, like meat grains and vegetables for the town. They get one sponge each. Give one sponge to a student who represents a power company. Several community services, such as hospitals, schools, and stores, are now a part of the town; watch student representing such, a service agency gets half a sponge. Provide each family, about 10 students with a third of a sponge. Provide each student with a container.

**Round 4:** It is now the present. The town has continued to grow. A new industry that makes household cleaning products has moved in (1 Sponge). Represent residential expansion by giving sponge pieces and a container to any remaining students. Complete a round.

### **Discussion Questions**

How do we use water in our town?

How does the water in our area replenish itself?

How can adjustments be made in this activity to ensure enough clean water for everyone?

What are some ways that we can conserve water?

What has the growing population and businesses done to other parts of the environment, how does it affect plants and animals?

How has the use of water changed from time period to time period, and what effect has that had on water quality?

### **Extension**

- Find out what your community does to conserve water



- Tour or have someone come in from the local water district.
- Make a graph to depict the water users in each of the four rounds.
- Create a different scenario based on the occurrence of a drought. (Full bucket for a normal year, half bucket for a drought year.)
- [www.kidzone.ws/water](http://www.kidzone.ws/water)
- [www.ga.water.usgs.gov/edu/watercycle](http://www.ga.water.usgs.gov/edu/watercycle)

