

Water Roll

Facilitator Guide

Learning objectives

- Sustainability solutions address today's biggest challenges to create the future we want.
- We all have a role in creating a more sustainable future.
- People need water for many things, but clean water is a limited resource.

Materials

- "Water Roll" activity guide and sign
- Set of three boxes (Home, Farm, and Factory)
- Blue marbles (at least 20)
- Small cups to hold marbles
- Cloth bag
- Length of pipe insulation tubing with funnel

The activity guide, sign, and take-home activity sheet can be downloaded from www.nisenet.org/sustainability or sustainablekits.asu.edu.

Marbles are available from discount stores and toy stores. Any shatterproof cup can be used to hold the marbles, and the marbles can be stored in a drawstring bag.

Pipe insulation tubing is available from hardware and home improvement stores; choose the kind that is a solid tube, not split lengthwise. You can attach a funnel (optional) to make it easier to drop the marbles down the tube; be sure it fits inside the pipe insulation and that the marbles fit through the funnel.

Preparation

Read through this facilitator guide, look at all the activity materials, and practice the activity with a friendly audience until you feel comfortable with it. (Note that the guests have an activity guide they can follow, which has the same step-by-step instructions as this facilitator guide.)

Step-by-step instructions

This activity is meant to promote conversation about how water is distributed and used, and how we can work together to conserve this limited resource. In different parts of the country, guests may be familiar with different issues around water. For example, in some areas, purity of water may be more relevant to visitors than drought. You can tailor the presentation of the activity to better reflect local concerns.

1. Ask your guests if they'd like to play a game about water. Show them the three boxes, representing homes, farms, and factories. Explain that the group is going to work together to manage a local water system and get the water to the places that need it. For this game, we're using marbles to represent water, and we're running the water through the flexible "pipe." One person can "turn on the water" by dropping marbles through the top of the tube, and another person can make sure it gets to the right place by directing the bottom of the tube to the correct box.

2. Start with 20 marbles:

Home: 2 marbles = 10% of our water.

Farm: 4 marbles = 20% of our water.

Factory: 14 marbles = 70% of our water.

Safety: Monitor the marbles closely. While the marbles are too small to present a choking hazard, err on the side of caution and do not let young guests place them in their mouths. If any marbles fall on the floor, pick them up so they don't present a slipping hazard.

3. Tell the group that sometimes we have less water available, and we need to work together to make choices about how to use it. So we're going to do this activity again, this time with only 10 marbles. The group can decide how to allocate the marbles.

Note: As you facilitate this activity, encourage guests to work together to manage the "water system." It's also important to emphasize the role we all can play in conserving water: directly, through our use of water at home, school and work, and indirectly, through the products we buy and the policies we support.

Optional: In the second round of the game, if guests can come up with ideas to save or reuse water during the "drought"—at home, on the farm, or in the factory—you can let them "earn" more usable water by giving them another marble to roll. This can be surprisingly motivating to children! As you wrap up the activity, help families think of ways they can save water in their own lives.

Common questions

How did you come up with these water use numbers?

Different agencies measure water draw and use in different ways, and so you'll see some variety between reports. Some of the numbers in this activity come from USGS (the United States Geological Survey), and do not include water consumption by thermoelectric water use. Other figures are reported from international agencies.

Why do factories use so much water?

In many places in the world, industry accounts for a majority of water use. Different industries use water in different ways. Sometimes it's a key ingredient in the final product (for example, soda pop) and sometimes water is used in the manufacturing process (for example, to cool equipment). When

we think about making our factories more sustainable, we consider both saving water and keeping water clean.

Why do farms use so much water?

Most of the water used by farms is used to grow plants and feed livestock. Water use in agriculture is sometimes measured in relation to the final consumer food product, by weight or by energy content. Generally speaking, meat is more water intensive than plant crops. For example, raising livestock for beef requires 20.3 gallons of water per protein gram or 2.1 gallons of water per kilocalorie, while growing beans to sell dried requires 6.1 gallons of water per protein gram or 0.4 gallons of water per kilocalorie.

Where do we use the most water at home?

The top three domestic indoor uses of water are flushing toilets, washing clothes, and bathing. Outside uses, such as watering gardens and lawns, also use a substantial amount of water.

There are lots of ways we can use less water at home:

- Taking shorter showers or using less bathwater
- Washing your clothes only when they need it
- Turning off the water while you brush your teeth
- Using gray water (such as leftover bathwater) to water plants

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