6. WATER, WATER EVERYWHERE

This Lesson's Goals

- » To show the significance of water and water sources
- » To show the dangers of pollution and the importance of preventing water pollution
- » To learn ways to keep water available to meet the needs of plants, animals, and people
- » To recognize the significance of water ceremonies in our culture and others

Opening [10-15 min.]

Gather for silent worship. Use the songs, presentation, and scripture to introduce the theme of how precious water is.

Take care with water activities. Set up procedures for handling things like dyes and bleach safely.

Songs

Wade in the Water Eternal Father! Strong to Save Peace Like a River Spirit of God in the Clear Running Water

Sample Agenda

Posting a simple agenda can help both the teachers and the children stay on track. Choose which activities work best for you.

- **1. Opening:** Silent Worship, Song, Scripture
- 2. Group Activity: How Much Water is There?
- 3. Small Group Activities: If your total program time is less than one hour, you may want to focus on two to four activities from those listed below, allowing for the age and size of your group, season and weather, and space and materials needed.
- 4. Closing
- 5. Sharing of Take-Home Materials

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Scripture

lsaiah **58:9-12**

If you feed the hungry from your own plenty, and satisfy the needs of the wretched, then your light will rise like dawn out of darkness and your dusk shall be like noonday; the Lord will be your guide continually and will satisfy your needs in the shimmering heat; he will give you strength of limb; you will be like a well watered garden, like a spring whose waters never fail.

Materials: Bring in a twelve-inch diameter globe

How Much Water Is There? [5-10]

Scripture Sharing

In Isaiah, God asks people to care for the hungry and less fortunate and then says that as a reward, the generous will be like a well watered garden.

- » What does that mean?
- » How is water a blessing?
- » In what other Bible stories is water a good thing or a bad thing?

When you close your eyes and think of water what do you see? Ask if anyone sees something other than liquid water.

Water is found in three forms: gas as in clouds, steam; liquid as in rivers, lakes, seas; solid as in ice, snow, sleet. Where do we find these three forms?

Look at the globe. Discuss the fact that all the water on Earth is all that there ever has been or ever will be. Note that 71% of the surface is water. Of that, 97% is sea water. About 80% of the remaining fresh water [or 2% of all the water] is contained in the Antarctic ice sheet.

The water in lakes, rivers, oceans, ice caps, and vapor in the atmosphere keeps us alive. Water is sacred.

Because of its importance to life, water has had ceremonial as well as practical uses. The presence of water in a place is seen as a sign of blessing.

How many place names refer to water sources? Think of names that include "springs, falls, ford, wells, rill, creek, beck, bay, cove, harbor, beach, shore, lake," etc.



Small Group Activities

Select from these activities. Consider your group's size and ages as well as season and facilities. Is there room to dance? Do you have a safe place to boil water?

1. Magic School Bus at the Waterworks [15-20]

This illustrated book by Joanna Cole deals with the water cycle and water purification. The protagonists shrink and swim through the system. How are the systems where the children live like that one or different?

2. Toilet Talk [5-10]

Keith Helmuth, a Friend and former farmer, suggests we consider whether flush toilets are a good use of our technology.

Ask the children what they think might be wrong with flush toilets from this Quaker's point of view. After some initial silliness with the topic, see how many ecological reasons they think of.

Keith Helmuth's four main points about flush toilets are:



- » They use a lot of water to do little work.
- » They get people used to thinking of water as a tool to carry off waste.
- » They let people think there is such a place as "away" where it is safe to send waste.
- » They remove some needed nutrients from the "soil to plant to animal to soil" cycle.

What are the building codes for toilets in your area? Are waterless or composting toilets permitted? If not, should you work to change the building codes?

The pamphlet, *If John Woolman Were Among Us: Reflections on the Ecology of Flush Toilets and Motor Vehicles*, Canadian Quaker Pamphlet No. 32, by Keith Helmuth, may be available from QEW.

3. Water Cycle Demonstration [10]

Materials: Water, Pyrex pot, stove, ice cubes

Simple physics experiment! Heat water in a Pyrex pot so the children can see it boil. (Proverbially, this will take longer than you expect.)

While waiting, give out ice cubes. Talk about the nature of water. Sing "Itsy Bitsy Spider"

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to show the water cycle:

"The itsy bitsy spider went up the water spout. Down came the rain and washed the spider out (precipitation). Out came the sun and dried up all the rain (evaporation). Then a big puffy cloud formed in the sky again!" (condensation)

- » When the water boils ask, "If there is only water in the pot, then what is in the bubbles?" [water vapor]
- » With tongs or an oven mitt, hold a pie plate full of ice cubes over the steaming pot. Soon it should begin to collect moisture and cause a little "rain" to fall.
- » If you have only solar heat, you can still demonstrate evaporation and condensation by putting water in a large black plastic garbage bag, placing it closed, in the sun, to warm up and then holding the plate of ice cubes over the open top of the bag. The effect will take a little longer.
- » How does this process happen on a global scale?
- » How can human activity affect that process? Can people cause rain or drought?
- » Where in this global process of evaporation and condensation can pollution occur? How and where might pollution spread?

Older children may know how evaporation of water relates to humidity, clouds, rain, rivers, lakes, and oceans.

4. Water Pollution [10-20]

Materials: Water, glass bowl, glass cup, food coloring, dirt/crumbs/sawdust, coffee filter, bleach

- 1. Pour fresh water into a clear bowl.
- 2. Dip some into a glass, drink it or offer it to a child. Pour the remainder back in. Who would drink from it now?
- 3. Dip your hand in the water, shake it off. Who will drink it now? How can this water be made pure?
- 4. Put a few drops of food coloring or paint in. Watch how it spreads. How might the dye be removed?
- 5. Sprinkle crumbs, dirt, or sawdust on the water. Is it easier to cover the bowl so pollutants can't get in? Try pouring the water through a coffee filter. That will remove the particles but not the food coloring.
- 6. Finally add chlorine bleach and be prepared to wait 5 to 10 minutes for it to work.

Consider visible versus invisible pollution. Who could drink this bleached water? How long before it's potable? Where it would be safe to pour this water? How is the drinking water in your area purified? How does pollution get into rivers, lakes, and bays? Can it get into the water piped into our homes? What is the most common source of pollution found in water?

In the United States, non-point pollution or runoff from streets, yards, gardens, parks, and farms is responsible for at least half the water pollution.

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Ask the children to take on the role of a water engineer/consultant: what would they suggest families and communities do to prevent water pollution? Consider inviting the children to share their ideas at an upcoming Meeting for Business and ask the wider community what they are prepared to do to prevent water pollution at the Meeting and in their homes.

Resource: *Water: The Fate of Our Most Precious Resource* by Marq de Villiers

5. Should We Ban Water Bottles? [10]

Consider modeling a thoughtful discernment process regarding water stewardship and practical decision making. Many communities and schools have begun banning plastic water bottles. "[It is] Wonderful how completely everything in wild nature fits into us, as if truly part and parent of us. The sun shines not on us, but in us. The rivers flow not past, but through us, thrilling, tingling, vibrating every fiber and cell of the substance of our bodies, making them glide and sing. – John Muir

Why would they do that? Divide into smaller groups and ask groups to generate a list of queries to consider whether it is showing good stewardship to purchase bottled water.

Show "The Story of Bottled Water" at <tinyurl.com/thestoryofbottledwater123> and share the fact sheet here: <www.banthebottle.net/bottled-water-facts>

With older children, hold a Meeting for Worship for Business to discuss what the guidance should be for Meeting activities around serving bottled water.

Why should we use a water bottle instead of bottled water? Most bottled water comes from the same place, the tap. Bottles become trash, whereas your water bottle is used again and again. Note that many new water fountains have water bottle filling ability and they often provide statistics on how many bottles don't end up in landfills.

Encourage the children to bring their own water bottles to class and use them.

6. Living with Drought or Flood [10]

Materials: Bring in samples of water saving devices used by people living in droughts or dry climates, like un-thirsty plants, a low-flow shower head, a toilet tank spacefiller or low flow model, a drip irrigation system, a squeeze-controlled hose spray nozzle, rain water collectors, or a bucket to collect shower water to flush with

Talk about them and other ways to conserve water. Ironically, in the midst of major floods, there is no water service in many areas. How do people manage with a flood of polluted water, and nothing drinkable?

Talk about flood prevention and how flood control levees sometimes make flooding worse. What ideas do they have to deal with the challenges of drought and floods?

Discuss experiences the children have had with too much or too little water.

7. Rain Dance/Prayer [10-15]

Snack Ideas

If they are in season, the most appropriate snack is watermelon! Or learn to make sushi or watercress sandwiches. With either of these, you can serve ice water in elegant stemware glasses and then toast to each other's health!

Rain dances and songs are a way people in many cultures have prayed for rain. Why would people do that? Water is seen as sacred and is honored in the practices and beliefs of many religions. Why? Water cleanses, and is often used symbolically to make a person clean, externally or spiritually, ready to come into the presence of the divine light. It also literally can wash away impurities and pollutants. Water is also a primary building block of life. While we don't act this way, we all know that without water there is no life.

Mayim is a well-known Israeli rain dance. You may easily find the music, videos and instructions on the internet and teach it to the children. Native American rain dances are also readily found on YouTube.

World Water Day is held every year on March 22nd. Consider celebrating with a water blessing ceremony, Meeting for Worship by a body of water or restoring a stream or other waterway in your community. Visit <worldwaterday.org>.

8. Water in its Many Forms [10-25]

Snow walk: If you have fresh snow on the ground, it's a good time to look for animal tracks in the area of your special plot or a nearby park. What animal tracks are visible? When and how were they made? How do the animals and plants in our area live through winter?

Make a snow cave. Consider the insulating qualities of snow and how people have

used snow caves for blizzard survival. Where will this snow go as it melts?

Rain walk: Step in a water puddle and walk on the sidewalk or make water footprints on paper or hand prints with water on a warm sidewalk. Watch them disappear. Why? What's happening? Discuss rain and other precipitation.

9. Perceptions of Water [5-10]

Materials: Bring in an eye dropper and bottle. Fill it with filtered water.

Tell the children to hold out their hands. Place a drop of the water in each palm. Ask them to hold it carefully, and cherish it. Roll it around, notice its fluidity. Smell it if you can. What does it feel like? What does it weigh? Notice that you see your skin through it. Now imagine where it came from.

After they propose sources, you invite them to imagine it came from: a tear from a baby crying, someone's urine, the faucet in the kitchen, the ocean, the toilet

How did your feeling change with each different possible source? So, we have feelings about water! Imagine all the places from your body that water can exit: eyes, nose, mouth, bowels, skin, and where does it go?

Can you make water talk? Most will say no. Ask them to rub the water in their hands until disappears. Where did it go? Some evaporates and some is absorbed in the skin. So, now say "hello." Well, you just made water talk. When water is absorbed into you and becomes you, then it talks through you. What else do you think water might want to say?

The above exercise can be done another day with a piece of ice.

10. Marbleized Paper Stationery [10-20]

Materials: Paper marbleizing kit, sheets of paper

This craft uses water to disperse the colors. There are egg dying kits that use the same principle. If you have not done this activity before, you may want to practice first.

In dishpans, float various paint colors on the surface of the water. Each child selects 2 or 3 pieces of paper of different sizes and weights to dip. Lay out news-papers for drying. Follow directions for refreshing the colors and let the children experiment with different dipping or swirling techniques. Allow time for drying.

As the children take turns, talk about all the things that float on water. You might enjoy sharing *A Drop of Water* by Walter Wick, with its beautiful water photographs, or read from *The Secret Life of Water* by Masaru Emoto and discuss his theory of water's response to thoughts and ideas.



Use the marbled paper for making note cards, stationery or in other art projects. Some may be framable, just as they are.

Field Trips & Service Projects

World Water Monitoring Day [10]

Held early each fall, this program engages communities in monitoring the condition of local rivers, streams, estuaries, and other water bodies.

See their website at <worldwatermonitoringday.org> for ways to be involved locally.

Storm Drain Labeling Service Project

Find out where your storm drains send the run off. Consult with your water and sewer authority for information about local storm water policies. Borrow a stencil from the public works department and the quick drying paint needed to make reminder signs on the curbs by the storm drains. If they don't have a warning sign, help them develop one. In some cities, the sign is painted light blue with some ducks and reads "Caution: drains to the bay." Go around your neighborhood with the group and paint signs above all the storm drains.

Closing [10]

Gather in a circle. Ask each child to name a different way they could help take care of our precious gift of water. Sing a song from the opening. Ask each child to finish the sentence "Today I learned...". Enter into silent worship.

Other resources

A Long Walk to Water by Linda Sue Park One Well: The Story of Water on Earth by Strauss and Woods The Snowflake: A Water Cycle Story by Waldman A Drop Around the World by McKinney and Maydak

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Take Home Page