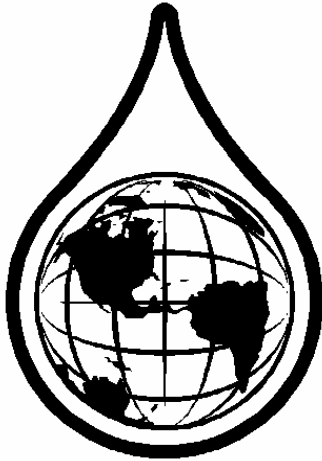




Science/Technology

The Wonders of **Water**



OBJECTIVES

- Build curiosity about water
- Look at creative water activities
- Begin to develop a responsible attitude toward water conservation.

GROUP SIZE

6–8 children per adult volunteer

TIME FRAME

This lesson is designed for a group meeting of 30 to 60 minutes. Each activity takes about 5–15 minutes to complete.

BACKGROUND

Water is pretty interesting stuff. Seventy percent of our Earth’s surface is water. It’s always moving, and it takes different forms: ice, liquid, and steam. These hands-on water activities will help make children aware of the importance of water in their lives and their natural surroundings.


LIFE SKILL AREAS

- Group discussions and experiments will help develop social skills and social understanding.
- Critical thinking and decision-making skills will be developed by measuring and pouring liquids.
- Fine-motor skills and eye-hand coordination will be developed by mixing and folding “flubber” and by using pencils and crayons.
- Large-motor development will be fostered through group role plays and games.

HELP FOR VOLUNTEERS

Try these suggestions:

- Choose one or two of the following activities from each section.
- Try to create appropriate atmosphere by decorating the room with posters and props, using costumes related to the activity, pre-meeting preparation by the 4-H members, thinking about special seating arrangements, and playing background music.
- Discuss various water processes including evaporation and condensation.



Molly Gregg and Chuck Hill,
4-H Specialists

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, and other related acts, in cooperation with the U. S. Department of Agriculture.

The Alabama Cooperative Extension System (Alabama A & M University and Auburn University) offers educational programs, materials, and equal opportunity employment to all people without regard to race, color, national origin, religion, sex, age, veteran status, or disability.



Getting Started

ACTIVITY *Finding the Water*

Materials: pictures clipped from magazines and newspapers that show the different states of water

Liquid—rain over a valley, a tear from a child’s eye, a ripple in a lake

Solid—snow on an evergreen, icebergs in Antarctica, ice in a drink

Gas—a cloud over a mountain, mist clinging to a tree in the rain forest

Post the pictures around the room and ask the children to view them. Talk about the pictures, ask them if they can find the water in each picture. Give hints to help the children in order for them to discover the different forms that water can be found.

Application: When the water in all of the pictures has been identified, ask the following questions:

- Could the water in the pictures have been used years ago by the dinosaurs? (**yes**)?
- Could a single drop be a part of several different pictures throughout time? Why or why not? (**yes**, water is changed from one state to another)
- Can you think of other places you could find water in different states of matter?

Digging Deeper

ACTIVITY *The Water Inside Us*

Materials: bathroom scale and calculators
Weigh each individual, divide that number by 3, multiply this number by 2. The answer is pounds of water in your body. Tell the children that two-thirds of their bodies are water, and water is found in every cell within them.

Application: Further divide pounds of water from above by 8 which will yield the number of gallons of water in one’s body. (Round all decimals to even numbers which are easier for young children.) Have plastic jugs full of water available to help illustrate how much weight is represented as water in the normal human body.

ACTIVITY *Discovering How Water Gets into the Air*

Materials: plastic sandwich bags and 12-inch lengths of yarn

Work in pairs. Place a sandwich bag over one hand, wrap the yarn around the wrist tight enough to close the bag at the wrist, but not so tight as to hinder circulation.

Note to the Volunteer: Make sure the children do not place the plastic bag over their face or mouth. Within moments the hand will start to feel warm, shortly thereafter it will begin to feel wet and this sensation will increase as time passes. When the bag is removed, water droplets will be inside.

Application: Have the group determine where the water came from that is now inside the plastic bag. (perspiration from the skin of the hand)

Looking Within

ACTIVITY *Where Is Water?*

Materials: none

Application: Have the group sit in a circle on the floor, each person in turn tries to name something in which water may be found. Name these things in alphabetical order starting with A. Name things with water of certain colors, shapes, or sizes.

ACTIVITY *Water Cools Us*

Materials: none

Place the back of your hand 1 inch in front of your mouth and inhale quickly and forcefully. Remember how it feels (warm or cool). Moisten the back of your hand with your tongue. Then place it close to your mouth and inhale quickly and forcefully.

Application: What were the differences between the dry hand and the wet hand? Which one felt warm and which one felt cool? After playing outside on a hot day, why do our bodies sweat?



ACTIVITY *Wetter Water*

Materials: bubble solution* and an assortment of objects that will produce bubbles**

Try blowing bubbles with plain water. Compare how much better bubble solution works.

Experiment to locate other objects that will produce bubbles. Before using an object, have the group decide if the item will or will not form a bubble.

Discover ways that the size and shape can be controlled.

*Various formulas exist for bubble solution, all contain varying amounts of detergent, glycerine, and water. See the Basic Bubbling activity in the Bubble-Mania guide for one such formula.

** Only closed forms will work, experiment before trying to do the activity with the children.

Application: What works the best in making small bubbles? Big bubbles? Square and triangle bubbles?

Reaching Conclusions

ACTIVITY *Making Flubber*

Materials: The following are needed for each freezer bag: 1 /2 cup of white glue, 1 /4 cup of cool water, 1 packet of Kool-Aid. The following are to be put into small bowl: 1 /3 cup of warm water, 3 /4 teaspoon borax.

Before beginning activity with youth, prepare contents for each individual freezer bag. After contents of the bag are prepared, begin activity.

When preparing the freezer bags, pour water in slowly so that the bag does not spill. Zip the freezer bag and mix well. Always double check that the bag is sealed. Mix the water and borax together in the bowl. Slowly pour the bowl of water/ borax into the freezer bag. Be careful not to spill. Seal the bag. Gently lift and turn the mixture until only a little bit of liquid is left.

Flubber will be sticky for a short time. Let the extra liquid drip off, and flubber will be ready. Store in airtight container or your freezer bag when not in use. Flubber can be kept for about three weeks. Encourage the children to be recycling scientists, collect used freezer bags,

wash them out, and set them in a dish drainer in the sink upside-down with the mouth open to dry.

Note to the Volunteer: Borax can be purchased at your local grocery store. It is a laundry aid. The most common name brand is 20 Mule Team Borax. Elmer’s Washable School Glue works best, but others will do.

Application: Encourage children to feel the moisture within the flubber. Help them recognize the water going from a liquid to a solid state. To bring closure to the activity, encourage group members to make the flubber again at home and share it with family members as a reminder of the important lessons about water. Ask the group to make a commitment to a “Blue Thumb” celebration. A “Blue Thumb” acknowledges those whose actions show their concern for water. Use note cards or poster board and have the children create exhibits about what they have learned. Younger children often enjoy stamping their “Blue Thumb” print as a border on the poster board.

Going Beyond

ACTIVITY *Family Water Quiz*

Materials: stopwatch or clock with second hand, a copy of the Water Quiz, and a pencil

Application: Time how long each family member runs the water while taking their daily shower. Add these times up and multiply that total by 7. This is the total number of gallons of water your family uses in a normal day for showering. Encourage the children and families to take the Water Quiz and follow the suggestions listed.



WATER QUIZ FOR FAMILIES

Parents: Take this quiz with your child. Help them circle the response that best answers each item.

IN YOUR HOME

1. Where does the water in your house come from?
private well city well river lake
2. Where does the water go that leaves your house?
septic tank sewer
3. Do you let the water run down the drain while brushing your teeth?
Yes No
4. Do you wash clothes in whole loads?
Yes No
5. Do you have a dripping faucet in your house?
Yes No
6. Do you water the garden/lawn during the hottest part of the day?
Yes No
7. Do you dispose of chemicals by pouring them down the drain?
Yes No
8. Do you dispose of chemicals by pouring them on the ground?
Yes No
9. Does your home have a low-flow toilet?
Yes No
10. Do you only run the dishwasher when you have a full load?
Yes No
11. Do you let the shower run a long time to make sure you will have hot water?
Yes No
12. Do you wash the car at home rather than using a commercial carwash?
Yes No
13. Do you water the lawn during dry periods in the summer?
Yes No
14. Do you personally waste water that could be saved?
Yes No

IN THE ENVIRONMENT

15. New sources for water are being discovered every day.
Yes No
16. Two-thirds of the water used in the home is used in the bathroom.
Yes No
17. It's safe to drink water directly from streams.
Yes No
18. 40% of the water used in the home is used for flushing toilets.
Yes No
19. Approximately 80% of Earth's surface is covered with water.
Yes No

Note to the Volunteer: Encourage families to think about how they can lower water consumption or waste. Examples include check leaky faucets, shorter showers, full loads of wash, etc. Yes is the answer to all of the "in the environment" questions.

Reading Adventures

This listing of reading materials can be used as background information, for sharing before the group activity to set the stage for learning, or for sharing afterwards to reinforce the activity.

Water, Water Everywhere, by Mark J. Rauzon and Cynthia Overbeck Bix

Flush! Treating Waste Water, by Karen Miller Coombs

The Magic Schoolbus at the Waterworks, by Joanna Cole

Let's Find Out About Water, by Martha and Charles Shepp

Adapted from materials developed by Ohio State University Extension and Penn State University Cooperative Extension.