9/14/07
Water Cycle Bracelet

DRAFT

Activity Description
This activity teaches students about the different parts of the water cycle.

Take Home Message
The water on the earth today is the same water that has existed for billions of years. It is continually being recycled through the water cycle.

Massachusetts Frameworks
Earth Science
Earth Material #1

Supplies
- Colored Beads
  - Light blue
  - Green
  - Dark Blue
  - Yellow
  - Clear
  - White
- 12" strand of hemp
- clear plastic cups
- scissors

Set-up
For each child set up the following:
- 1 - 10-12" strand of hemp
- 1 plastic cup with light blue, dark blue, white, clear, yellow, and green bead in it

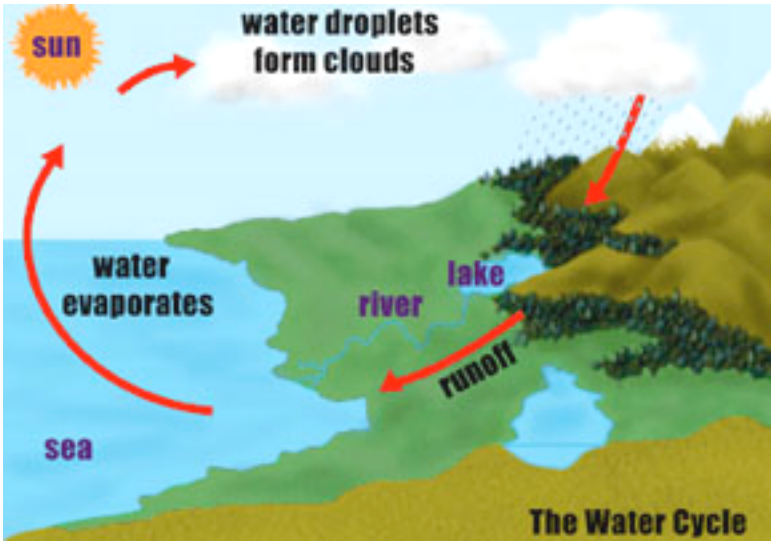
Set up the Water Cycle Poster on an easel at an angle on the table. Set-up the working water cycle model from the Flow Below on the table (not critical, but nice)

Science Background and Vocabulary

The Water Cycle

All water on earth moves through the hydrologic cycle. This cycle includes four basic processes: precipitation, percolation and surface runoff, evaporation and transpiration, and condensation.

Rain and snow are the most common forms of **precipitation**. After reaching the earth's surface, some portion of the water is absorbed into the soil. On Cape Cod, over half of the rain and snow that falls each year filters into the ground and recharges the aquifer or groundwater supply. The water is pulled downward by gravity and **percolates** or **infiltrates** through the air spaces. Water taken in by the roots of plants is returned to the atmosphere through the process of **transpiration**, along with water evaporated from ponds, lakes, rivers, oceans, puddles, and the soil. These two paths of water returning to the air are often lumped together under the term **evapotranspiration**. Water vapor in the air rises up and may condense from gas to liquid to form clouds. Much of this falls back to earth as precipitation, thus completing the hydrologic cycle.



Activity Procedure/Script

- Tell the kids you are going to make a bracelet that will help them remember how the hydrologic cycle works. **Ask them if they know what the hydrologic cycle is.**
    - Tell them it is another name for the water cycle.
- Talk about how all the water on the earth today is the same water that's been here for millions of years, just recycled over and over. They are drinking the same water the dinosaurs drank.
- **Have them place the light blue bead on the string which represents the rain**. See if any of them know the word precipitation. See if they can name other forms of precicpation including snow, hail, sleet, etc. Have the students guess how much precipitation Cape Cod gets per year.
    - The Cape gets about 42" in a year.
- **Ask the students what happens when it hits the earth?**

    - When the water hits the earth it runs off, percolates, or seeps down into the ground and becomes groundwater, as well as fills up the lakes, ponds, streams, and oceans.
    - **Have the students add the dark blue bead to represent the groundwater and other water found on earth.**
- **Have the students add the green bead and ask them what is something green that uses water that falls to the earth?**
    - Plants, trees, and grass are all great examples.
    - **Ask the students if they know how plants get water**
        - Plants get water from their roots. The water is pulled by the roots up from the soil and distributed to the plant.
        - A great way to see this is to put a piece of celery in kool-aid and watch the kool-aid travel through the celery root.
    - Explain to the students that plants, trees, and grass give off excess moisture just like humans. They do this through the tiny pores on the leaf surface. When humans sweat it is called perspiration and when **plants sweat it is called transpiration.**
    - **Ask the students if they have ever seen wilting leaves on a plant.**
        - That's what happens when a plant loses too much water. If you water the plant, the leaves stop wilting.
- **Have the students add the yellow bead.** See if they can guess what it represents. The yellow bead represents the sun.
    - Explain to the students that the sun provides energy for "transpiration" to occur. See if anyone can remember what transpiration is. Remind students that the sun is what changes the water from a liquid to a gas.
- **Ask the students what happens to a puddle when the sun comes out?**
    - A puddle will dry up, evaporate. Explain that we can't see evaporation, so we add a clear bead because water is changing from a liquid to a gas and going up into the sky.
- **See if they can guess what the white bead is for.**
    - The white bead is for clouds. The water vapor forms clouds. It cools and condenses or comes together into tiny droplets that attach to specks of dirt, dust or salt crystals from the sea and come back down again as precipitation.
- **Tie the bracelet to complete the circle and therefore the cycle.** See if they can repeat what each bead means or the water cycle.

Clean-Up

During the festival

- After each group, clean up the extra pieces of hemp from cutting the bracelets
- Put additional beads in each cup
- Cut more 10-12" hemp pieces

After the festival

- Clean up all the extra pieces of cut hemp
- Put the beads back in their respective plastic bags
- Pack everything up into the box and help other people clean up.
- If you have used the water cycle model, empty water, clean and dry and return to box