



Hydro-Bangles [ME]

Adapted from New Wave of Learning

Grades: 3-5

Time: 45 minutes to 1 hour

Goals: To demonstrate the water cycle using colored beads to represent each component.

Objectives:

Students will be able to: identify and define the components of the water cycle; describe the movement of water molecules through the water cycle; and discuss how pollution can easily get into the water cycle.

Materials:

Blue elastic strip/string cut into 6-8" pieces (depending on student wrist sizes)

Safety pins (caution is advised when students are using these)

White beads

Light blue beads

Brown beads

Dark blue beads

Green beads

Yellow beads

Clear beads

Scissors

Preparation: Before beginning the activity, set up the beads and safety pins in separate containers and place them in rows at "beading stations" around the room. Place a label with each color as follows: white (clouds), light blue (precipitation), brown (groundwater), dark blue (surface water), green (transpiration), yellow (evaporation), and clear (water vapor). The blue string represents the water.

Procedures:

1. Pre-Activity (introduction): Begin by asking students about what they know about watersheds and the water cycle. As they describe it, draw the cycle on the board to give them a visual aid. Make sure to add in the key words so they can associate the components of the cycle with evaporation, transpiration, precipitation, and condensation. Ask them if they know how water travels through the cycle and name the location for each water source. These can also be placed on the board.



2. Activity: Inform the students that they will be making water cycle bracelets and instruct them before assigning them into “beading station” groups. Begin with the white clouds and follow through each of the colors that correspond to each component of the water cycle. Each student will take one safety pin at a time and place beads of the same color on it. Once all the colors are on the safety pins, use two pieces of elastic/string to string the safety pins through the holes in order following the water cycle. Students should be careful when using safety pins and have them ask for help opening and closing their pins.
3. Post-Activity (review): Once each student creates their water cycle bracelet, relate each component to your local watershed by using the names for streams, rivers, aquifers, and towns. Describe the importance of the water cycle in the movement of water through the watershed. Have the students describe their water cycle in terms of where they live (where their water comes from). Discuss some types of pollution and how they might get into the water cycle and pollute the watershed.

Key Words:

Water cycle	Condensation	Evaporation
Precipitation	Infiltration	Transpiration
Groundwater	Storm drain	Point-source pollution
Non-point source pollution	Water vapor	Watershed

Background Information:

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Water moves in a complex cycle over earth every day. We tend to look at the movement of water as cyclic and there are certain components that are significant: condensation, evaporation, precipitation, infiltration (percolation), and transpiration. Each of these terms is defined below.

Condensation is when water vapor expands in the earth’s atmosphere and forms clouds. When the clouds become too heavy, precipitation falls from the sky, usually in the form of rain or snow, but sometimes as sleet or hail. Infiltration or percolation occurs when water from rain seeps into the ground and forms underground pools or aquifers. Transpiration occurs when water ascends out of the leaves of many plants. Evaporation is the form of water as a gas as it rises from land and sea back to the atmosphere.

This cycle is not just one large loop, though. It can be considered the hydrologic web rather than the hydrologic cycle. There are other components of the water cycle that contribute to the flow of water over the earth. Animals, as well as plants, take in water as they drink and give off water in their urine. Groundwater flows undetected until it reaches a major waterway such as a river, stream, lake, pond, or ocean.



Because water within a watershed always flows downstream, all water from inland and upstream containing point- and non-point source pollution has a detrimental effect on the entire water cycle. Debris, fertilizers, pesticides, oil, detergents, etc. that find their way to roadside storm drains will be lead downstream through underground pipelines into local waterways. In Ocean County, New Jersey, for example, there are now round discs placed on every storm drain, to indicate that it leads to the Barnegat Bay, deterring people pollution.

