



WATER FROM HERE TO YONDER

GRADE LEVEL: 6-8

SUBJECT: Science

NATIONAL STANDARD(S):
(6-8) SC: 1.4, 1.8, 1.9,

THEME: water cycle

FOOD AND FIBER TOPIC: III-D

LEARNER OBJECTIVE:

Students will identify local watersheds and drainage areas by using maps and other resources.

VOCABULARY

drainage area—A catchment area of a watershed.

groundwater—Water within the earth that supplies wells and springs.

run-off—The total stream discharge of water, including both surface and subsurface flow, usually expressed in acre feet.

watershed—The area draining into a stream, lake, or discrete sewer.

BACKGROUND

Much of our precipitation evaporates back into the atmosphere before any flow into streams or lakes is possible.

The rest of the rain and snow falls into a watershed or drainage area and finds its way into lakes and streams and eventually to the ocean. Water may run over the surface of the land and into small creeks or rivers that feed a lake. However, most of the water soaks into the soil to become part of the groundwater under the earth's surface.

The water table is the upper level of the groundwater. When the water table or groundwater level lowers, the lake level also lowers. The major factors influencing lake levels are the amount of precipitation and the balance between the inflow and outflow of water.

This water cycle can be severely altered, especially in urban areas, by any change in land use. Changes include removing vegetation, construction of buildings and houses, as well as construction of highways, roads and driveways. All of these reduce the soil's ability to soak up and hold water.

Because these structures do not allow water to soak into the ground, the water runs off into sewers or streams and may cause flooding and eventually decreases available groundwater. This could affect homes that get their water from groundwater wells.

Run-off also can pick up pollutants such as oil and garbage from streets, and contaminate groundwater through infiltration and seepage. Thus, water pollution in one site or a general area can affect water quality in a distant location. Not only people are affected, but also fish, wildlife, and many other areas of nature.

STEP-BY-STEP INSTRUCTIONS

1. Distribute copies of the water cycle. Discuss the movement of water in the environment.
2. Tell students that they are to discover where water exists, comes from and goes. Students are to observe, record and transfer information to a large mural map to illustrate the water movement of their community.
3. Using a map of the United States illustrating major watersheds, have students locate the watershed nearest to where they live. (A good source of watershed map information is the Environmental Protection Agency website: <http://www.epa.gov/surf/>)
4. Examine a map of your county and relate it to your state. Find important rivers and determine to which watershed they belong, which direction they flow, and the location of cities.
5. Tape large sheets of paper together into the approximate proportion of your county. Using maps, have students draw in highways, roads, lakes, rivers, streams and marshes. First, draw in highways and roads. This will make it easier to draw in odd shaped bodies of water.
6. Have students write their name on separate stickers. Then have students place the stickers on the mural to represent where they live. Divide the map into four equal parts and divide the students into groups of four determined by where they live.
7. Give each team two to three days to observe, describe, and sketch any water bodies, streams, drainage ditches, ponds or marshes to small to be located on county maps. Transfer the new data onto the mural map until it is complete.
8. Discuss with the class the following questions: What direction does the water move in the community? How can you tell that water moves through a lake or a marsh? What is your evidence? Do you have a place in the community to back up the evidence? How fast does the water move? What are the sizes of the waterways?

RELATED ACTIVITIES

1. Have students write a story about the journey of water across a watershed to a major river.
2. Plan a trip to the County Historical Museum to view earlier county maps. The maps would show changes in many kinds of waterways and wetlands. Discuss the changes and hypothesize the sources of pollution in your watershed. Are these sources necessary for society to gain some other benefit? What would farming be like without fertilizers, pesticides and irrigation? What would urban life be like without streets and sewers?
3. View a topographic map provided by the United States Geological Service. A topographic map would provide a more precise understanding of directions and speed of waterflow in their part of the watershed.
4. Have students observe one watershed area on a regular basis and record their observations during the school year.
5. Have students study a school building as if it was a watershed. The best time to observe is after a rain. Look at the roof from the ground. Ask students to walk around the building and find the rain gutters and locate the downspouts. Trace the route from the roof to the rain gutters, to the downspouts, to the streets, and to the storm sewers. Students can also observe the schoolyard for low spots where water collects after rain, evidence of erosion, ice spots, snowmelt and puddling.

6. Plan a field trip to a number of nearby sites where the natural water table is readily observable. For assistance in locating a variety of such sites, contact your local county extension office.

RESOURCES

Student Books

George, J. C. (1991). Who Really Killed Cock Robin: An Ecological Mystery, Harper Collins.

Pollock, S. (1993). Ecology. Eyewitness Science, Dorling Kindersley.

Teacher Resources

Natural Resource Conservation Service, USDA PO Box 2890, Washington, DC 20013.

Related Internet Websites

Environmental Protection Agency—website with searchable index of watersheds in the United States: <http://www.epa.gov/surf/>

EVALUATION

Students will draw a mural indicating where local watersheds and drainage areas are located.

ACKNOWLEDGMENT

This lesson was adapted from Minnesota Ag in the Classroom, Minnesota Department of Agriculture, 90 West Plato Blvd, St. Paul, MN 55107.

Name: _____

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