

Paper Wad-ershed

This activity demonstrates to youth (grades K-12) the basic geography of a watershed, how water moves through a watershed, and the impact people have on the quality of our water.

Connection to Curriculum:

Science, Social Studies, Ecology

Introduction: Discuss the definition of a watershed (a watershed is defined as nature’s boundary for water and includes all the land that drains water to a single stream, river, lake or body of water). If possible visit a watershed in your community or have a representative, such as your Watershed Basin Coordinator, visit to talk about a local watershed. Discuss the elements of a watershed (such as streams, ponds, lakes, farms, factories, homes, parking lots, etc.). Remember – we are always in a watershed. Discuss runoff and the effects runoff may have on the quality of water in your watershed.

Objectives:

1. Define a watershed
2. Identify the elements of a watershed
3. Understand the importance of a watershed in our lives
4. Identify sources of pollution in a watershed

Materials:

- 8 ½” by 11” white paper, one sheet per individual
- 3 different colors of water soluble markers
- Several spray bottles of water
- Paper towels

Instructions:

1. Crumble a piece of paper into a ball.
2. Gently open the paper, but don’t flatten it out completely. The highest points on the paper now represent mountain tops and the lowest wrinkles represent the valleys.
3. Choose one color of the water soluble markers to mark the highest points on the paper (or “map”). These are the mountain ridge lines.
4. Choose a second color to mark the places where different bodies of water might be, such as streams, rivers, ponds, lakes, etc.
5. Use the third marker to mark several places to represent human settlement, such as housing, factories, farms, schools, shopping centers, etc. Label each spot.
6. Use a spray bottle to gently mist each finished map. This represents rain falling onto the watershed.
7. Discuss any observations about how the water travels through the watershed area.

Discussion:

1. Ask youth the following questions:
 - a. What changes did you observe in your map?
 - b. Where does most of the “rain” fall?
 - c. What path does the water follow?

Discussion questions continued...

- d. Where would erosion occur?
- e. How are the human settlements affected?
- f. Are any buildings in the path of a raging river or crumbling hillside?
- g. How does the flow of water through the watershed affect your choice of building sites?
- h. How does the map demonstrate the idea of a watershed?

Evaluation Option:

1. Conduct a pre- and post- questionnaire or test with youth. Ask them the following questions before and after the activity to determine if youth's knowledge level changed.
 - a. What is a watershed?
 - b. What are some of the elements of a watershed?
 - c. What is runoff?
 - d. How does runoff affect the water in a watershed?
2. Develop a K-W-L Chart with youth. This chart demonstrates what students know about the subject before the activity, what students want to know about the subject during the activity, and what students learned about the subject after the activity. Before starting the activity ask youth as a group what they know about watersheds. Once they have told you what they already know, ask them what they want to know about watersheds. Record all answers/comments on large poster board or chalk board to refer back to. This section will help the leader know what areas of the activity to emphasize. Depending on these comments the leader may have to adapt the activity to ensure that the youth learn items that have specified in this section. After the activity discuss what the youth learned. Go back to the first and second questions of the chart and discuss what they knew (were their statements correct?, etc.) and make sure items that youth wanted to know were addressed.

Extensions:

- Look at a topographic map of your town or neighborhood. See if youth can locate ridge lines, streams, rivers, etc. that make up their watershed. Try to determine how a heavy rainfall and runoff might impact certain areas.
- Create an imaginary watershed. Map out the landscape, including creeks, rivers, and where you might place schools, businesses, and houses.
- Discuss the issues of land uses (agriculture, construction, etc.) and water quality. Play a simulation game that would illustrate different viewpoints on how we use water.
- Make an outdoor watershed map using a plastic sheet or large sheets of white butcher paper. Use tempura paint instead of markers and a water hose instead of a spray bottle.

Definitions:

Erosion - process in which the earth's surfaces (such as rocks and land) are loosened, dissolved or worn away. This can be a result of wind, water or glacier. *

Nonpoint Source Pollution - contamination that does not originate from one particular source. *

Point Source Pollution - pollution that enters the environment from a single source. This means that identification of the source of pollution is relatively easy; that may mean that mitigation of the pollution is less complex than for nonpoint sources. *

Runoff - water that runs off the surface of the land

Watershed - nature's boundary for water that includes all the land that drains water to a single stream, river, lake or body of water

*Definitions obtained at <http://www.ca.uky.edu/agripedia/glossary>.

This activity was adapted, with permission, from Rob Beadel, Arkansas Department of Environmental Quality.

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