Whatcom Conservation District presents

Make Your Own Watershed Lesson: Grades K-5

Learning Objective:

- Students will explain what a watershed is and identify different parts of a watershed.
- Student will be able to describe the transition of precipitation to runoff.
- Student will connect how activities outside of the river system can negatively and positively affect the water quality.
- Students will explore and compare possible solutions to improve their community's watershed.

Materials:

- 1 tarp or plastic table cover
- 1 spray bottle, watering can, or hose
- 2-5 different colored water soluble markers (brown and blue preferred)
- 5-10 small toys (cars, animals, people, trees, farm equipment, dogs, houses, etc.)
- Cocoa powder, sprinkles, or chocolate chips (optional)

Warm Up Activity:
Students learn that wherever they are on earth, they are in a watershed. *For more information see background information document.*

a) Water flows from high to low in a watershed. Ask students if they know what a watershed is. Define watershed with them.
A watershed is the area of land where all of the water flows or drains into the same location such as a river, lake, wetland or ocean.

b) Look at the watershed drawings (page 4). Ask students to identify the main stem, the streams that flow into the main stem (primary tributaries), the secondary tributaries, and where the streams originate (the headwaters).

c) Ask students where water flows when it rains on onto the land.

d) Ask the participants to cup their hands. Explain that they have created a basin and a model watershed. If water is sprayed into their hands it will drain to the same place (i.e. the lowest part of their hands). Explain that their watershed boundary is defined by the highest parts of their hands (i.e. top of their thumb and fingers). In a landscape this is the ridgeline.

Lesson Directions: (See associated video for demonstration)

1. **Setup:**
    a. Lay tarp or table cover flat on ground. Grass is preferred.
    b. All participants step around the edges of the tarp.
    c. All participants shuffle their feet forward, moving the tarp with them, until the group is almost meeting in the middle.
    d. All participants take a big jump backwards, off the tarp.
    e. Pull out or fluff up tarp to exaggerate the elements of the watershed.

2. **Inquiry**: *Questions to guide student observations and questions.*

    a. Ask participants to identify a "watershed" on the tarp. How many watersheds do they observe?

    b. Ask the participants where they predict water will accumulate on the tarp. If a drop of water falls on the tarp where would it land? Would it stay in one place or move?

    c. Ask students to identify the peaks, hills or ridgeline that defines that watershed.

    d. Choose one color of water-soluble marker and have all students mark the highest points on their watershed (tarp). Have students think of the "high points" or higher elevation areas in their community.

    e. Discuss with students that most bodies of water are in lower elevations. Choose a second color (preferably blue) and mark the places where different bodies of water might be: valleys, creeks, rivers, lakes, ocean, etc.

    f. Have students think of creeks, rivers, and lakes that they have visited and describe the land around these water features.

3. **Exploration:** *Students will use toys and markers to creatively model their community on the tarp!*
    a. Where would people live?
    b. Where would roads be built?
    c. Where would you walk your dog?
    d. Where would food be grown?
    e. Where would a forest grow?
    f. Where would farm animals live?
    g. What about salmon, shellfish, and other wildlife?
    h. Where would you like to spend your time? (recreation)

4. **Engagement:**
    a. Now that you have built your watershed think about what pollution sources might exist in your community? Help students brainstorm possible pollutions sources including trash, pet waste, farm animal waste, fertilizer, soap/detergents, oil from cars, loose dirt, etc.
    b. Have all participants use markers to draw pollution sources. Alternative idea: add chocolate chips, sprinkles or cocoa powder to demonstrate the different types of pollution.
    c. Here comes the rain! Using the watering can, spray bottle, or hose, carefully pour water on the tarp. Start pouring over the highest point on the tarp and work your way down. Have the students make observations. Ask participants to identify the bodies of the water they see on the tarp as streams, wetlands, lakes, rivers, etc. in their community.

5. **Reflection:** *Discuss student observations using the prompts below.*
    a. How many different watersheds did you identify in the model?
    b. Did the streams, lakes, and wetlands form where you predicted they would?
    c. Ask participants to describe what happened to the pollution once water was added to the tarp. *Any pollutants from streets, fields and lawns will eventually drain into those streams, lakes or wetlands when rain falls or snow melts, and those pollutants can be identified as nonpoint source pollutants.*

6. **Action:** *Discuss actions we can all do to prevent pollution and be a community stewards.*
    a. Pick up dog waste with a bag and put it in the trash.
    b. Plant tree saplings, shrubs or ground cover in areas where there is exposed soil to prevent erosion.
    c. Apply fertilizer according to application directions or try organic gardening.
    d. Keep your car maintained and watch for oil spots on your garage floor or driveway.
    e. Wash your car at a carwash facility.
    f. Keep farm animals out of waterways (fences).
    g. Pick up trash and place in a proper bin.
    h. Volunteer—sign up to help with a river or beach cleanup, tree planting work party or Adopt-a-road program in your community.

Cleanup:

a) Pick up markers, toys and place in a bucket with soap and water.

b) Carefully pick up the four corners and the middle of each side of tarp, making sure wastewater pools to the middle. Pour wastewater into a bucket, then down the sink or toilet. The tarp can be rinsed off and reused.

Watershed Diagrams for Warm Up