Science Lesson Plan: Watersheds and Land Use

Main Aim:

To understand the relationship between land use and water quality.

Subsidiary Aim:

To understand what watersheds are.

To understand how different land uses within a watershed may affect the quality of the water moving within that watershed.

To learn what indicates good and bad water quality.

Performance Indicators

Knowing: Student understands movement of pollutants in the environment.

Doing: Student asks peers, teachers, community members, etc., questions to learn more.

Being: Student identifies sources of pollution in their community, in classroom discussion, or at home.

Learning to learn: Students discuss the lesson in small groups.

Assumed Knowledge

It is assumed that students have an understanding of the water cycle and basic human-environment relationships resulting from agriculture, mining, and industry practices.

Anticipated Problems/Solutions

Reluctance to participate: Mpl   tude   le

Activities

<u>Part 1: The Watershed</u>

The watershed model will be used to demonstrate point source and non-point sources of pollution. Regional examples of point-source pollution may be wastewater discharge pipes or textile factory discharge pipes. Non-point source pollution may come from ranching and agriculture operations such as coffee plantations or mining waste that is deposited in multiple locations, on land and in water.

Procedure:

1. Ask students where they think water would travel over the watershed model. After some discussion, point out the route the water is expected to take. Mist water over the model to demonstrate its path.

2. Choose three locations for the food coloring and add some drops to the model. The yellow food coloring will represent industry waste, blue will represent agricultural runoff, and red will represent residential area waste, like household trash.

3. Make sure the collection tray is placed under the water runoff opening.

4. Using a spray bottle, spray water in a mist across the model until the water starts to run. Use a small amount of water to simulate a light rain, and larger amounts of water to simulate heavy storms.

5. Show students how the different pollutants come together to pollute the main water source.

Ask: What kind of pollutants can the water pick up along the way? Can you think of anything in your community that may end up in the water? Would it be point-source or non-point source pollution? Discuss as a class for 5-10 minutes.
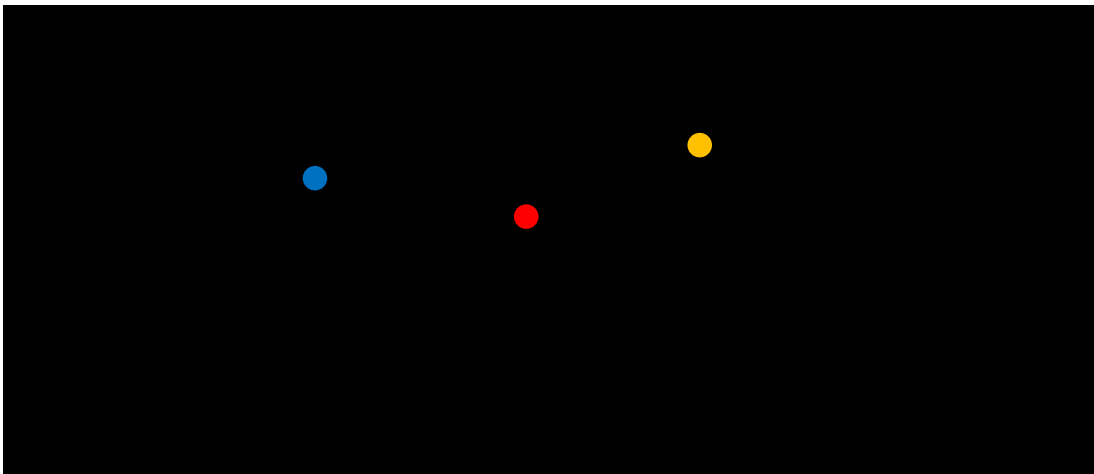
Example food coloring placement

Water Quality Scoring

Directions: Observe the body of water and record observations. Use the provided keys to make inferences about each parameter and assign point values to develop an overall idea of the water quality by adding them together. Once everyone has recorded their observations, compare your results with other classmates.

Total Points:

0-6: Poor Water Quality

7-12: Fair Water Quality

13-18: Good Water Quality

19-24: Excellent Water Quality

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Additional Instructor Guidance