

#13: Groundwater



HAMS students learn about groundwater using a groundwater model.

Goal:

The students will gain an appreciation of groundwater, why it is important and the positive and negative impact man has had on it.

Objectives:

1. The students will describe a water table.
2. The students will explain how a water table is related to water level in rivers, lakes, wells, and lands.
3. The students will describe where their drinking water comes from.
4. The students will describe where their wastewater goes once it leaves their home.
5. The students will state three things they can do at their home to help protect groundwater.
6. The students will explain the term "groundwater contamination".
7. The students will examine the hydrocycle to discovery how the polluted soil affects water.

8. The students will read about sources of pollution affecting the soil and thus groundwater.
9. The students will explain how the soil, air, and water interconnect to cause different types of pollution.
10. The students will ascertain and list common sources of groundwater pollution.
11. The students will participate in groups to explain how to reduce groundwater pollution.

Procedures:

Science and social studies instructors teach the topic of groundwater in the students' regular classes. Personnel from the Conservation Agency (or teachers) make a presentation using a groundwater model to demonstrate how water travels through soil. In social studies class, students learn the relationship of groundwater to pollution. Students also create their own groundwater models using a quart jar, gravel, and other materials.

Assessment:

Alternative Assessments, e.g., students 1) engage in a cooperative learning activity to list types and sources of groundwater pollution in the local watershed, 2) construct a groundwater model using a quart glass jar, gravel, and other materials; Teacher-Made Test

Resources to Implement:

Teacher handouts:

- Cooperative Groundwater Activity
- Groundwater Fact Sheet ([The WATER Sourcebook](#))
- Groundwater (adaptation from [Project WET](#))

Videos:

- Common Ground (PA Fish and Boat Commission)
- Into the Water, Into the Bay (CBF)
- The Ripple Effect (CBF)

Transparencies:

- Groundwater Pollution ([KARE Water Resources](#) in PA)

Literature:

- "Protecting Groundwater is Everyone's Business" (Bay fact sheet #8)
- Groundwater A Primer For Pennsylvanians (League of Women Voters of Pennsylvania Citizens Education Fund)
- Sandcastle Moats And Petunia Bed Holes A book about ground water, 1994, pp. 3-13. (DEP Commonwealth of PA)
- Groundwater Contamination (League of Women Voters of Pennsylvania Citizens Education Fund)
- The WATER Sourcebook, 1994, F-53-54
- Project WET, 1996, pp.136-137

Equipment:

- Groundwater Model (University of Wisconsin)
- Glass quart jar/rocks/gravel
- VCR/TV
- Overhead Projector/Screen

Field Study:

- Joller Mines (abandon coal mining town)
- Fouse's Crossing, Raystown Lake



HAMS students create a groundwater model in a jar to learn about groundwater.

PA Academic Standards for Environment and Ecology:

- 4.1. Watersheds & Wetlands
 - Identifying various types of water
 - Explain the role of the water cycle within a watershed
 - Understand the role of the watershed
- 4.2. Renewable and Non-Renewable Resources
 - Examine the renewability of the resources
- 4.3. Environmental Health
 - Know that plants, animals and humans are dependent on air and water
 - Identify how human actions affect environmental health, e.g., pollutants
 - Identify an environmental health issue
 - Describe how human actions affect the health of the environment
- 4.4. Agriculture and Society
 - Explain agricultural systems' use of natural and human resources
- 4.5. Integrated Pest Management
 - Explain how pest management affects the environment
- 4.6. Ecosystems and their Interactions
 - Understand the concept of cycles. e.g., water cycle
 - Explain the concept of cycles. e.g., water cycle
 - Identify how ecosystems change over time
 - Explain how ecosystems change over time
- 4.8. Humans and the Environment
 - Know that environmental conditions influence where and how people live
 - Explain how human activities may change the environment
 - Know the importance of natural resources in daily life
 - Explain how people use natural resources
 - Explain how human activities may affect local and regional environments