

EnviroScape Watershed Model Presentation

Lesson Title: EnviroScape Watershed Model Presentation

Ohio Standards Connection:

Standard(s): Life Science

Benchmark(s): (grades 3-5)C. Compare changes in an organism's ecosystem/habitat that affect its survival.

Indicator(s):

Grade(3) 6. Describe how changes in an organism's habitat are sometimes beneficial and sometimes harmful.

Grade(4)

Grade(5) 4. Summarize that organisms can survive only in ecosystems in which their needs can be met (e.g., food, water, shelter, air, carrying capacity and waste disposal). The world has different ecosystems and distinct ecosystems support the lives of different types of organisms.

5. Support how an organism's patterns of behavior are related to the nature of that organism's ecosystem, including the kinds and numbers of other organisms present, the availability of food and resources, and the changing physical characteristics of the ecosystem. 6. Analyze how all organisms, including humans, cause changes in their ecosystems and how these changes can be beneficial, neutral or detrimental (e.g., beaver ponds, earthworm burrows, grasshoppers eating all plants, people planting and cutting trees, and people introducing a new species).

Benchmark(s): (grades 6-8) C. Explain how energy entering the ecosystem as sunlight supports the life of organisms through photosynthesis and transfer of energy through the interactions of organisms and the environment.

Indicator(s):

Grade(6) 8. Describe how organisms may interact with one another.

Grade(7) 3. Explain how the number of organisms an ecosystem can support depends on adequate biotic (living) resources (e.g., plants, animals) and abiotic (non-living) resources (e.g., light, water, soil). 6. Summarize the ways that natural occurrences and human activity affect the transfer of energy in Earth's ecosystems (e.g., fire, hurricanes, roads, oil spills).

Lesson Summary: Learners develop understandings of the difference between point and non-point pollution and things that they do everyday that can affect water and the environment.

Estimated Duration: 1 class period

Instructional Procedures:

1. Ask participants to name places where we might find water. Remind them that water is in the clouds, soil, air, even in our bodies. Have them put their hands over their mouth and blow hard three times—then feel the moisture on their hands.
2. Have a volunteer explain the water cycle. Remind them that the water we use today is the same water that the dinosaurs drank and George Washington used to brush his wooden teeth.
3. Brainstorm ways that we use water—include animals and plants, recreation activities, etc.
4. Discuss “pollution” to get a sense of their understanding. Clarify differences between point and non-point source pollution. Discuss things that we do everyday that can affect water and the environment. (ride in a car or bus-oil and salt; walking the dog- animal waste down the storm sewers; lawn/garden-erosion, fertilizer and or pesticides; picnics-litter; painting the house-chemicals; washing the car-detergents; home, household cleaners.
5. Discuss some of the less obvious pollutants like soil. Make sure they understand the connection between storm sewers and streams/lakes.
6. Introduce the EnviroScape model, let group name the lake and discuss the concept of a watershed- clarify that all rain that falls on this “watershed” will run off into the streams and lake, soak into the ground or evaporate.
7. Have students identify land uses (farm, lake, factory, residential area, construction site, forested area, wastewater treatment plant, golf course, and roads).
8. Have students identify potential land areas, allow them to apply the following pollutants to those areas:
 - a. Green Kool-Aid for fertilizer
 - b. Cocoa for soil
 - c. Molasses or syrup for used motor oil and automotive fluids
 - d. Laundry soap for detergent
 - e. Table salt for road salt
 - f. Cocoa and water mixture for manure or pet waste
 - g. Paper dots for litter
9. Have students “make rain” using spray bottles filled with water. As pollutants enter the lake, ask students if they would like to fish or water ski in the lake now? Discuss whether the fish and turtles would do well in the polluted water.
10. Discuss things that we can do to prevent pollution (e.g. wash cars on the lawn instead of the driveway, test soil for nutrient needs, maintain cars, cleanup pet waste, seed bare areas, clean up litter)

Materials and Resources:

Enviroscape (or a shower curtain with areas drawn on with a permanent marker)
Spray bottle

Water
Green Kool-Aid
Cocoa
Molasses or syrup
Laundry soap
Table salt
Paper dots

Vocabulary:

Pollution
Non-point source pollution