
Conjunction Function

Activity Overview

A warm-up activity using observational, critical thinking and scientific skills to introduce rain gardens and how they function to improve the health of a watershed.

Objectives

Students will:

1. Use their observational skills
2. Learn how rain gardens contribute to a healthy watershed
3. Increase their understanding of the hydrologic cycle
4. Understand human impact on the landscape

Subjects Covered

Science, Language Arts and Social Studies

Grades

1 through 12

Activity Time

30-45 minutes

Season

Any

Materials

Sets of props/objects that may include sponges, band aids, funnels or pitchers, coffee filters, small bags of bird seed, before and after pictures of rain gardens, watering cans, small fans, Monopoly houses, “certified organic” labels on boxes and flat bottomed bowls.

State Standards

Science

Decide which questions to ask (A.4.1)

Develop themes for questions (A.8.1)

Apply themes to develop future visions (A.12.1)

Background

In urbanized areas, fallen rainwater picks up dirt, leaves and pollutants and flows directly to lakes and streams as dirty storm water. We have learned ways to keep water clean so our waterways are healthy for fish, wildlife, and people. One way is by building rain gardens at schools, homes, and businesses. A rain garden is placed where runoff is coming off roofs, driveways, sidewalks, parking lots, and other hard (i.e., impervious) surfaces. The principle of a rain garden is to keep rainwater close to where it falls. A rain garden simply models a natural system, and as a result manages storm water to allow for natural functions and to restore natural hydrology. Such hydraulic cycles include infiltration, evaporation, plant uptake of water, transpiration, and groundwater recharge. This activity provides students with an opportunity to become familiar with how rain gardens restore the natural water cycle, reduce pollution to lakes and rivers, and provide a native landscape with food and nectar for wildlife. “Conjunction Function” uses everyday items to demonstrate ecological and environmental functions of a rain garden.

Activity Description

1. Prepare sets of objects/props representing the functions and benefits of a rain garden. The number of sets and number of props in each set depends on group size. For example, a group of 28 students may divide into 7 groups of four. Each group will need one set of four objects or props. A total of seven sets of props or objects are needed.
2. Have the props well mixed, and pass out one item to each person.
3. Allow everyone to find others who have the same prop, and form a small group. If participants do not know one another, ask them to introduce themselves to the other members in their small group.
4. Ask groups to come up with a description of what function and benefit the object symbolizes.
5. At this point, have representatives from each group present their item and what it symbolizes in regard to function in the rain garden.
6. Once a small group has shared their descriptions, ask the entire group why they think the function is important for the health of their watershed.

Activity objects and the function/benefit they represent:

1. Sponge: Absorbs water
2. Band aid: Protects and heals the land surface and mends short cuts in the water cycle
3. Funnel or pitcher: Recharges the aquifer and replenishes ground water
4. Coffee filter: Traps, treats and cleans pollutants from surface water
5. Bag of bird seed: Provides food sources for birds, butterflies and other insects

Conjunction Function (cont.)

Science (cont.)

Reexamine evidence & reasoning (A.12.7)

Describe changes in models (B.8.2)

Describe reasoning to make conclusions (B.8.4)

Explain how science is shared (B.8.5)

Show cultural & individual contributions to science (B.12.1)

Identify major scientific themes & progress (B.12.3)

Project how human trends influence the environment (F.8.10)

Investigate local problem & propose scientific or technological solution (G.8.5)

Analyze scientific or technological innovation (G.12.3)

Choose a problem & identify scientific or technological solution (G.12.5)

Identify how science and technology help or hinder a local or state problem (H.4.2)

Evaluate policy recommendations (H.12.2)

Analyze resource management (H.12.1)

Social Studies

Describe examples of land use, communities, shelters (A.4.4)

Identify community connections (A.4.7)

Describe short-term and long-term environmental changes (A.8.6)

Give examples of current global issues (A.8.11)

Analyze effects of population changes on environment (A.12.4)

6. Before and after pictures of a rain garden: Offers landscape beauty (aesthetics)

7. Certified organic label: Improves soil and increases water absorption by adding organic matter to the soil. (The plant's roots slough off organic matter in the soil.)

8. Small fan: Aerates the soil and increases air and water movement (The long and fibrous root masses create channels for oxygen and water movement.)

9. Flat bottomed bowl: Temporarily holds and stores water (Water drains within 6 -12 hours after a rain.)

Extensions

- Brainstorm other objects that could symbolize functions and benefits of rain gardens.
- Build a model of a rain garden to demonstrate how rain gardens collect, filter and move water into the ground.

Additional Resources

- Kesselheim, A.S., Slattery, B.E. (1995). *WOW! The wonders of wetlands*. St Michaels, MD: Environmental Concern Inc.
- Mitsch, William J., and J.G. Gosselink. (1993). *Wetlands*. New York: Van Nostrand Reinhold.
- Nadeau, Isaac. (2003). *The water cycle: water underground*. New York: Rosen Publishing Group, Inc.
- Nadeau, Isaac. (2003). *The water cycle: Water in lakes and rivers*. New York: Rosen Publishing Group, Inc.

Assessments

- Describe why objects in the activity were chosen to represent the different functions of a rain garden.
- Provide three reasons why rain gardens are important for contributing to a healthy watershed.

Conjunction Function (cont.)

Social Studies (cont.)

Analyze cultural factors that influence design of places (A.12.9)

Assess land use policies (A.12.12)

Language Arts

Listen & comprehend oral communications (C.4.2, C.8.2, C.12.2)

Participate in discussion (C.4.3, C.8.3, 12.3)

Orally communicate (C.12.1)

Develop vocabulary (D.4.1, D.8.1, D.12.1)

Interpret uses of languages (D.8.2, D.12.2)

Conduct then communicate research (F.4.1, F.8.1, F.12.1)



Before and after photos of a rain garden planting at Edgewood College, Madison, WI.

Photos: Jim Lorman

