

In the Gutter

About This Lesson

Time frame: 1-2 class periods

Grade level: 6-12

Academic question: How do wetlands affect water flow?

Objective(s):

- Demonstrate how wetlands slow down water velocity
- Demonstrate how wetlands absorb water and act as storm buffers
- Demonstrate how wetlands are necessary to buffer the effects of run-off

Background:

One of the many functions of wetlands is their ability to retain water and absorb excess amounts during storm events. By holding this water, wetlands allow chemical and biological processes to occur resulting in better water quality. Throughout the U.S., communities are dealing with extensive growth causing increased flooding due to the use of concrete. In this activity, students will design a wetland using various materials. A piece of plastic gutter will be used to hold their design. Pouring water into the gutter can then test the water absorption of the individual designs.

Getting Started

Materials:

- Two foot section of plastic gutter (available at hardware store)
- Modeling clay
- Tooth picks
- Several small sponges
- Small sections of “Astroturf” (outdoor carpet)
- Various containers for water
- 2X4 block of wood

Process (activities):

1. Develop an interrupted case study scenario appropriate to your region, based on the background information provided above. Present case study to students.
2. Begin by handing out the sections of gutter
3. Have students place one end on a ~2-inch block and the other end over a sink or end of table.
4. Pour 1 liter of water into high end of gutter.
5. Water should run easily into sink (if not over sink, collect water in bucket).

6. Next, allow students to use the various materials (clay, toothpicks, etc.) to construct a “water retaining” wetland in their gutter.
7. Repeat the water pouring procedure
8. Calculate and record how much water is retained/absorbed.

Assessment/Evaluation: Have students discuss their design and describe what worked best and what did not work. Have them relate the materials used in the experiment to “real” wetland plants and soils. Begin a discussion on channelization of storm water and the effectiveness of naturalized vs. concrete ditches.

Conclusion/ extension: Have students observe local ditches and make predictions on which ditches are more efficient at retaining or moving water. Observe a large local construction project and make predictions on water flow. Trace water flow from around school grounds. For an extension to this experiment, add a small amount of “black pepper” at the beginning of the students’ wetland before adding the water. See how effective the wetland is at removing contaminants.

This module was originally developed as part of the “Hurricane Recovery Workshops for Students”, held in Corpus Christi in 2017.