



CREATE A WETLAND

Objective: To have students use different materials to construct wetland models, with the goal of the models being to retain water and filter “toxins”

Age Group: any

Materials:

- ✓ Household sponges, non-scrub, cut into 1 inch cubes
- ✓ Toothpicks
- ✓ Mini marshmallows
- ✓ Sand
- ✓ Cotton balls
- ✓ 2-3 inch stones
- ✓ Soil
- ✓ 3 paper bowls per group, with 4 small holes (toothpick-sized) poked in the bottom of 2 bowls
- ✓ 1-2 quarts of water mixed with red drink powder like Kool-aid

Curriculum Connection:

EEn2.3: Explain the structures and processes within the hydrosphere

EEn2.4: Evaluate how humans benefit from wetlands during rain events

1.E.2: Understand the physical properties of earth materials that make them useful in different ways

3.E.2: Compare the structures of the Earth’s surface using models or 3D diagrams

8.E.1: Understand the hydrosphere and the impacts of humans on local systems

What you need to know:

Wetlands come in many different types and sizes. All of them filter and retain water to some extent, but some can perform those services, known as **ecosystem services**, better than others. The ability of a wetland to filter or retain water depends on the size and structure/composition of the wetland. Smaller wetlands like bogs or seeps may not filter or retain as much water as a large swamp forest does. Herbaceous wetlands may filter more pollution and sediments than wetlands with larger plants like trees, but those woody wetlands are good at retaining floodwaters because their large roots speed up the process of evapotranspiration. The diversity in function of wetlands creates a wide array of recreational activities for us, and habitat for all kinds of wildlife.

The activity:

In this activity, students will create their own wetland model by layering different materials together in a “wetland,” or paper bowl, and see whose wetland model can retain and filter water the best.

- ❖ Divide students into small groups or partners, depending on class size
- ❖ Display all available “wetland” items on a table in the front of the room
- ❖ Allow groups to come up one at a time to choose their building materials
- ❖ Students **MUST** use at least 3 different items in their model, but no more than 5
- ❖ Instruct students to use their materials to create two models of a wetland (one that filters water well and one that retains water well), using the bowls as their “floodplain.” The wetland items can be layered one on top of the other, or mixed together. Students can create their wetland the best way they see fit.
- ❖ After all students have completed their models, test to see whose wetland holds the most water, and whose wetland filters the best

- FOR RETENTION: Have one student from each group hold their retention wetland an equal distance above the third bowl; instruct another student from each group to slowly pour ½ cup of water onto the wetland; wait 1 minute; if there is any water in the third bowl, measure to see how much there is; whoever's wetland retained the most water reveals their secret
- **Discard the water from the third bowl**
- FOR FILTRATION: Have one student from each group hold their filtration wetland above the third bowl (now empty); instruct another student from each group to slowly pour ½ cup of colored water into the wetland; wait until the wetlands are done draining the water and see whose wetland filtered most of the drink mix; that group reveals their secret to success

Follow up:

Which materials do you think were the best at retention? Filtration?

What types of wetland materials do you think each item represented? Soil/plants/etc?

What types of pollutants do you think wetlands are filtering out?

What is an ecosystem service? What do you think are some other ecosystem services that wetlands provide, besides water retention and filtration? (8th grade or higher)