



Stream Lab Post-visit

Classroom Activity

Brief Synopsis:

Students will witness the spread of a pollutant through water using food coloring and celery.

Background:

Water is necessary for all life on earth. Clean water is essential for healthy survival. Humans need water to drink, to grow our food, to clean our clothes, dishes, and just about everything. Without water there would be not plants, trees or other animals either. And without other plants and animals there would be no habitats or ecosystems for us to live in. If our water is polluted or contaminated, it can make us sick and kill plants and animals. This activity illustrates how one source of pollution can impact large areas of water and how that pollution could move through an ecosystem and cause harm to everything living around it.

Ages: Designed for 4th–8th grade

Time Considerations:

Materials: A clear glass, tap water, red or blue food coloring, a knife, a stalk of fresh celery with the leaves still on it

Vocabulary:

Outcomes:

1. Students will be able to list the characteristics of all amphibians.
2. Students will describe the life cycle of a toad using props.
3. Students will use sounds to re-create frog behavior.
4. Students will use careful observations to identify different species of local amphibians.
5. Students will understand how counting amphibians can be a good way to measure the health of our environment.

Minnesota Academic Standards:

Science: 4. IV. B. 1 & 4.V.B.1

Math: 4.V.B.1

Language Arts: 4.I.A.1, 4.I.B.1&2, 4.III.A.1&2, 5.I.A.1, 5.I.B.1, 5.III.A.1&2, 6.I.B.4, 6.III.A.1&3, 7.I.A.1, 7.I.B.1&5, 7.III.A.1

Revised Jan 2005

Procedures:

Set out your supplies on a table at the front of the room or on the floor on one side of a circle. Fill the glass with water from a pitcher, telling the class you got the water from the faucet or drinking fountain. Hold the glass up in front of something white, like a sheet of paper, so the whole class can see it. Add 2-3 drops of food coloring to the glass so the class can see how the food color spreads through the water. This is similar to how pollutants can spread in natural bodies of water like rivers, lakes and aquifers. Use the knife to cut off the bottom portion for the celery stalk (make sure the stalk is clean and still has its leaves). Place the freshly cut celery stalk into the glass of colored water and set it off to the side for at least 3-4 hours or overnight. After this time, use the knife to cut 1/4 inch slices off starting from the bottom. Hand out slices to your students for them to examine.

Assessment:

- What did your students notice when they examined the celery slices? Could they see any evidence of the food coloring inside the celery?
- If the food coloring was a pollution that got into the groundwater and the celery was a tree, what might happen to the tree that absorbed the polluted water?
- What does this tell you about polluted water?
- What does this mean for us as people?

Extensions:

Your students have learned about the importance of clean water. They may already know about how to conserve the water they use at



school and at home, but what can they do to improve the water quality in their immediate surroundings?

The Minnesota Department of Natural Resources' (MNDNR) Trails and Waterways Division sponsors an Adopt-a-River program, with the goal of supporting Minnesotans to “adopt” a section of a lake, river, wetland or ravine to help maintain the health of those natural spaces through annual clean-up events.

Participating in a project such as this will give your students a chance to plan and organize a community event, feel a greater connection to the natural waterways in their own area, and experience what it means to take action to make a difference in their own community.

Your school can choose a site that has not yet been adopted either near your school (perhaps an area many of your students see every day) or an area prominent in your town or city. The Adopt-a-River program will supply your class with a cleanup/organizing kit and other logistical support as well as, bags and gloves. You will even get recognition after your clean up results have been reported. The pounds of garbage, volunteer hours, and descriptions of the trash found are all tracked as part of the report. As a member of the Adopt-a-River program you will also receive a members' newsletter and related stewardship information.

This project is something you could do as a class, as a school or as a community (although the MNDNR does not recommend this program to children under 3rd grade). Make it as large or small as will fit your schedule and resources.

For more information log on to:

<http://www.dnr.state.mn.us/adoptriver/index.html>

Teacher Tips

- This project can be as simple or involved as you would like it to be. Feel free to adapt it to your needs.
- If your school allows, find library or hallway space to display your students' reports and maps, so each of your students can help educate the entire school.
- You can also use the displays to help teach the rest of your class. Give your students time to read through each display and include some basic information on a test to complete a unit about birds in Minnesota.

Additional Resources

http://www.oznet.ksu.edu/fieldday/kids/rain_sim/water_quality.htm

Water quality is tied into bare soil vs. soil with crop residue cover—it illustrates soil loss, runoff increase and turbidity. Developed by Kansas State University to teach kids about agronomy.

<http://ga.water.usgs.gov/edu/waterquality.html>
A website explaining lots of vocabulary surrounding water quality run by the US Geologic Survey.

