What is Water Pollution?

Lesson Focus: Water pollution

Learning objectives:

- Students will learn what water pollution is and how we contribute to it.
- Students will learn why they should respect their environment.
- Students will learn that science involves collecting data.

Enduring Understandings for the lesson:

- How we live directly affects our environment.
- We can make a big impact on our environment by respecting it.
- We can all be scientists.

Georgia Performance Standards Addressed:

- S1L1 Students will investigate the characteristics and basic needs of plants and animals.
- S1CS3. Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.
  b. Make something that can actually be used to perform a task, using paper, cardboard, wood, plastic, metal, or existing objects.
- S1CS6. Students will be familiar with the character of scientific knowledge and how it is achieved.
  b. Science involves collecting data and testing hypotheses.
  d. All different kinds of people can be and are scientists.

Grade level: 1st

Materials:

- Book: The Three R's: Reuse, Reduce, Recycle by Nuria Roca
- Slip and slide
- Water hose
- Miscellaneous trash
- Paper
- A pencil for each student
- Cup of sand/soil
- Cup of rocks
- Cup of powder cocoa or chocolate syrup
- Cup of soap
- Food coloring or powder jello
- Pitcher of water from any local water source.

Time needed: 45 minutes – on or leading up to Earth Day

Background information:

Earth Day is a holiday on which we discuss the need to care for our planet. It was started because our planet was becoming more and more polluted. We need to take care of our planet before it becomes too unbearable to live on. Pollution comes in many forms and affects our land, water and air.

Water falls from the sky and forms streams, rivers, lakes and oceans. When the water falls from the sky it is good and clear. It is what we do to our environment that changes it and causes it to become polluted. We pollute our water in many ways. It can become polluted from the oil that seeps out of our car, pesticides on our grass, trash thrown out instead of away and much more. This pollution also affects the plants and animals around us. They have basic needs, including water, in order to grow and pollution can prevent them from getting their basic needs met by making the water and their shelter unusable.

Learning Procedure:

1. Make a **KWL** chart for the word "water pollution". **K**-What do you know?, **W**-What do you want to know/learn? and **L**-What did you learn?
2. Read The Three R's: Reuse, Reduce, Recycle and compare what we have read to our KWL chart.
3. Show them a map of Lake Lanier (or your local water source) and ask them if they have ever been swimming in the lake. Ask them what color the water is and how it smelled. Then show them a pitcher of water from Lake Lanier (or your local water source) and ask them why it is that color and how it smells.
4. Discuss ways that people pollute water and make a list.
5. Explain to students that we are going to be scientists and "build" a river and small lake on school grounds to do an experiment on water pollution. Explain that scientists have to study and conduct experiments to learn new things.
6. Using a slip and slide, lay it on a hill with the "lake" at the bottom of the hill. Make sure to add rocks or dirt under the slip and slide to show that rivers have many dips and bumps in them too.
7. Slowly add water until the "lake" fills up. While this is happening, discuss how the hose is just like the small streams that feed into the river and lake. Ask them where the water in the stream came from.
8. Then ask the students what might be ways we pollute our water? Begin adding items they name such as sand/dirt for soil, cocoa or chocolate syrup for oil, trash, rocks, food coloring/jello for chemicals, soap for detergents, etc. As each item is added, discuss what changes they see and whether the water became "polluted" once added.
9. Ask the children if there is anything we can do to reduce the pollution? Picking up after pets, not throwing trash on the ground, washing the car on the lawn instead of the driveway, mulching around garden so the soil does not wash away are some examples.

Evaluation:

1. Finish the KWL chart with what they have learned about water pollution.

2. Have the students list the items that were added to our "river and lake" and then explain whether it was a pollutant.
3. Have the students list ways that they can help protect their environment and then tell me who the scientist was in this lesson.

Extensions:

1. Read the book: Let's Save Water by Sara E. Nelson.
2. Have the students make posters for Earth Day to help educate fellow students, faculty and staff on water pollution.
3. Have students write a story as if they were a drop of water falling from a cloud that lands on the top of a mountain and then flows through various waterways to the ocean only to evaporate back up into the sky to become a cloud again.
4. Have students locate their school on a map and identify all the sources of water that are close to it. Ask them to assess the quality of the water based on what is close to it. (e.g. farms, interstate, roads, factories, neighborhoods, etc.)

Resources:

1. Earth Day by Amy Margaret
2. http://www.teach-nology.com/web_tools/graphic_org/kwl/ is a great website to create your own KWL chart.
3. Georgia Performance Standards website for first grade science and social studies standards. https://www.georgiastandards.org/Pages/default.aspx .

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This activity is a product of the Rivers to Reef Teacher Workshop sponsored by the Georgia Aquarium and NOAA Gray's Reef National Marine Sanctuary, in which the authors participated. For more information about this workshop, Georgia Aquarium, or Gray's Reef National Marine Sanctuary, please visit our websites at www.georgiaaquarium.org or http://graysreef.noaa.gov/