



6th Grade

SCIENCE BASIC: Hitting the Mark - The students will distinguish between accuracy and precision, investigate the relationship between accuracy and precision as it relates to water quality data collection, write clear procedures, and recognize the limitations of those procedures. Students work in small groups to create a structure and/or method to make the clay ball hit the target. Then they write the procedure out step by step. The groups then rotate and have to use the other group's procedure to get the same results. This is a fun hands-on interactive way to teach accuracy and precision!

A Drop in the Bucket - This is a great Earth Science activity that covers salt water, fresh water, and consumptive use. A Drop in the Bucket utilizes the skills of gathering information (observing, calculating), Organizing, and Interpreting (drawing conclusions). Students may know the Earth is covered with water but they may not realize that only a small amount is available for human consumption. Learning that water is a limited resource helps students appreciate the need to use water conservatively. A short "icebreaker" is used to show students how much of the Earth is land and how much is water. This discussion leads to the realization of how much of that water is actually usable. **Standards: S6E3, S6E6**

The Incredible Journey - This is a great Earth Science activity that covers condensation, evaporation, and electromagnetic forces. The Incredible Journey utilizes the skills of organizing (mapping), analyzing (identifying components and relationships), and interpreting (describing). When children think of the water cycle, they often imagine a circle of water flowing from stream to ocean, evaporating into clouds, and raining down. In this activity, students will role-play a water molecule as it travels through the water cycle. This activity helps students to conceptualize the water cycle as more than a predictable two-dimension path. As students move through the water cycle, they will collect beads that map the route of water. The incredible meets the standards for Earth Science and Ecology and aims to get the students to describe the movement of water within the water cycle and identify the states of water. A short "icebreaker" is used to show students how much of the Earth is land and how much is water. **Standards: S6E3, S6E6**

Enviroscape –The flexibility of the Enviroscape makes it possible to address human impact issues such as erosion, litter, animal waste, fertilizers, pesticides, pharmaceuticals, and other non-point source pollutants or the process involved with bringing clean water to the home and the removal of it safely back into the environment. This interactive model is a strong visual lesson that does an excellent job of portraying somewhat abstract concepts in an easy-to-understand format. **Standards: S6E5, S6E6**

All the Way to the Ocean and the Fatal Food Relay-The students are read (or it can be acted out as a play) the book "All the Way to the Ocean" The book explains how important it is to not put trash in storm drains because the trash goes all the way to the ocean. Then the students participate in a relay where they are an animal looking for "good" food like a fish, frog, or a snake. They may get good food or they may get "fatal" food such as fishing wire, a plastic bag, balloons, or get stuck in a bottle or 6-pack holder. We explain the dangers of plastic pollution on the environment. * We will need an open space (larger than the classroom) inside or outside. **Standards: S6E6**

Just Pipe Up! – In this activity, students will learn where their water source comes from and the path it takes through the water treatment and wastewater treatment process. When the proper order is established, the students hold labeled tubes representing the locations along the way. Marbles and bouncy balls are then added at the water source (beginning) and students have to negotiate them through the system using elevation changes. There are discussions about water and wastewater line breaks and the consequences. It is a fun, hands-on approach to learning about the water and wastewater process. **Standards: S6E6**

F.O.G. Relay –Students learn about fats, oils, and grease and how it affects wastewater pipes which can result in a “spill” (sewage in our streams, rivers, and lakes). Students learn about the importance of crapping the food and grease off the plate into the trash and put the plate in the sink. In a relay style, students race to the trash can and kitchen sink to scrape the plate clean and race back. It is a fun way to learn about F.O.G. There needs to be a big open space inside or outside. **Standards: S6E6**

Water Quality - Students will learn about some water quality measures such as temperature, pH, turbidity, conductivity, alkalinity, and dissolved oxygen. The students will work together with field kits to test a water sample. Students will get an understanding of what background levels are normal and what excess is created by human point and non-point source pollution.

*If an outside water source (i.e. pond or stream) is available and assessable the water can be collected and tested onsite or brought back to the classroom. **Standards: S6E6**

Poison Pump- This lesson does an excellent job of incorporating history into a science lesson. Based on the real-life epidemic that plagued London in 1854, students are given a series of clues to discover the source of the disease named Cholera. Students are asked to label information on a map provided in the clues to form a supported hypothesis as to the origin of the outbreak. This lesson provides an excellent introduction to water quality, human impacts, and even epidemiology. **Standards: S6E6**

There is no Point to this Pollution: This exercise allows students to analyze data to solve a mystery, interpret a topographic map, and analyze and compare water quality data to learn about the cumulative impacts of nonpoint source pollution. Students will identify point and nonpoint sources of pollution, demonstrate the cumulative impact of nonpoint source pollution, learn to read and interpret a contour map while identifying important map clues about watersheds and water quality, graph, analyze, and interpret data sets to draw conclusions about pollution sources, compare local household and community nonpoint sources of pollution to surface water quality standards, and list ways to reduce or eliminate nonpoint source pollution. **Standards: S6E6**