

Title of Lesson:

Introduction to Water Quality

Discipline Focus:

Environmental Science, Biology, Chemistry

Grad/Age Level:

9-10 Grade

Project 2061 Benchmarks NAS Science Standards or NCTM Standards supported by this activity:

Content Standard A – Science Inquiry

- Identify questions and concepts that guide scientific investigations
- Design and conduct scientific investigations
- Use technology and mathematics to improve investigations and communications
- Formulate and revise scientific explanations and models using logic and evidence
- Recognize and analyze alternative explanations and models
- Communicate and defend a scientific argument
- Understands about scientific inquiry

Content Standard E – Science and Technology

- Abilities of Technological Design
 - Identify a problem or design an opportunity
 - Evaluate the solution and its consequences
 - Communicate the problem, process and solution

Content Standard F – Science in Personal and Social Perspectives

- Personal and community health
- Population growth
- Natural resources
- Environmental quality
- Natural and human-induced hazards
- Science and technology in local, national, and global challenges

Purpose:

Students will be able to:

- Determine where the origin of their drinking water
- Determine the effects on human beings if contaminants such as, *E. coli* were found in drinking water
- Identify the parameters of water quality
- Describe how abnormal amounts of each parameter affects the organisms found in a particular body of water

Context (Background information for teachers):

Many students have no idea where their water comes from, or how human activities can affect the quality of the water source that they rely on for drinking and everyday use. The teachers should have an understanding of where the city water comes from, as well as many of the local pollution and water quality issues. You should be able to explain to the students where their water comes from, describe the watershed, and many of the human activities that take place in that area.

Planning Ahead

Supplies:

Laptop Computers and possibly local maps

Assignment description handouts

Water Quality Packets (There should be 1 sheet for each water quality parameter assigned)

Describe Lesson:

Students will be paired and assigned a water quality parameter to investigate and present to their classmates.

Day 1 - Students will be asked probing questions to determine their prior knowledge about:

- the characteristics of water
- the parameters that determine water quality
- the origins of their drinking water
- possible water pollutants, and
- the impact of pollutants in water on aquatic organisms and human beings.
- Lecture will contain information on the above mentioned topics.

Days 2-6 - Lecture will continue today if time is needed.

Students will be divided into pairs. Each pair will be assigned a water quality parameter to research. They will be given four days to do their research and to prepare a power point presentation.

Days 7 & 8 - Students will present their research via power points. Each student will be given a packet of blank water quality parameter and contaminant pages to fill in as they listen to their classmates' presentations. This packet can later be used as a water quality reference.

Assessment:

PowerPoint presentations on an assigned water quality parameter and the completion of their packet.

Extensions:

Do water quality sampling to see what is in the local watersheds.