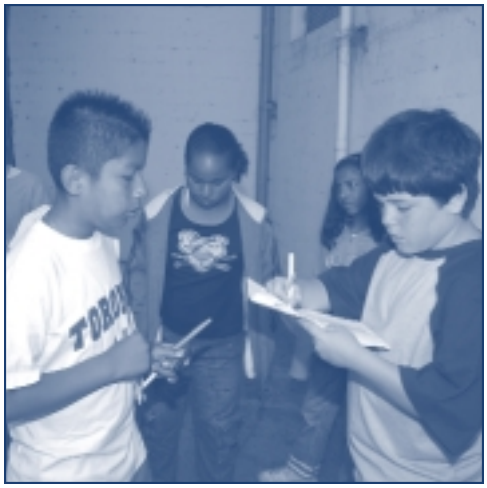
OVERVIEW



At the beginning of the Water Quality Unit, students are asked to observe their school grounds – mapping where water comes from, where it goes, any pollution left on the ground, and more. Based on their observations, discussions, and their review of the one-page information sheet focused on water quality, students develop ideas about what might be happening on their campus and what they want to investigate further. Student groups come up with a testable question, and set up an investigation that includes data collection and relates to water quality.

While collecting data, students continue to build content knowledge and context with more readings relating to water, including where the water in their community comes from, where it goes, and how water flowing across their campus is part of the water cycle. After making observations and collecting data, students present their findings and their evidence-based conclusions to the class. Students demonstrate what they have learned by creating a diagram of the water cycle that includes their campus, some form of land pollution and demonstrates their understanding of water, how it moves between oceans and land, and how human activities affect its health and usefulness. Then, students reflect on what they have learned and share their thoughts through the writing of a news article.

In the final step of the Water Quality Unit, students use their reflections to make informed choices and develop a service project to help their school and community. As a class, or in student groups, the Water Quality Project workbook is used to guide students through project development and follow through.

California Grade 5 Standards

The unit lessons are designed to help students master the following standards:

Learning Objectives

Learning objectives in the context of the Environmental Principles and concepts.

Earth Science Strand	**Students will:**
3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation.	
a. Students know most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface.	• Identity that humans are living things and clean fresh water is essential to their survival. • Recognize that because most of Earth's water is salt water located in the oceans, the vast majority of water is not available for human consumption. • Provide examples of the goods that are produced by freshwater, coastal, and marine ecosystems (e.g., clean fresh water, oxygen, food, energy resources).
b. Students know when liquid water evaporates, it turns into water vapor in the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water.	• Describe the roles of evaporation, liquefaction, and freezing in the water cycle. • Describe the role of the water cycle, evaporation, liquefaction, and freezing in the functioning of natural systems. • Provide examples of the roles these cycles and processes play in human life and human communities.

California Grade 5 Standards	Learning Objectives
c. Students know water vapor in the air moves from one place to another and can form fog or clouds, which are tiny droplets of water or ice, and can fall to Earth as rain, hail, sleet, or snow.	• Identify the role of precipitation (rain, hail, sleet, or snow) in terrestrial, freshwater, coastal, and marine ecosystems. • Provide examples of how humans and human communities directly and indirectly depend on precipitation (rain, hail, sleet, or snow) and the water cycle (e.g., agricultural systems, water delivery systems). • Provide examples of how human activities can influence the quantity, distribution, and chemical characteristics of precipitation.
d. Students know that the amount of fresh water located in rivers, lakes, underground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water.	• Identify sources of fresh water and describe the reservoirs of Earth's water. • Recognize that water moves from one reservoir to another over time. • Describe the ways in which humans, human communities, and their practices use water. • Recognize that the supply of fresh water is limited at any given time and discuss how some resources within an ecosystem are finite in supply while others are less limited. • Explain potential consequences when the quantity, distribution, or chemical characteristics of water are changes (e.g., contamination of an aquafier can compromise the use of the groundwater supply by humans and other organisms). • Describe how changes to the quantity, distribution, and chemical characteristics of water in natural systems can influence the functioning of terrestrial, freshwater, coastal, and marine ecosystems (e.g., acid precipitation affecting the growth of trees).
e. Students know the origin of the water used by their local communities.	• Identify sources of fresh water in their local community. • Describe the process by which water is supplied to students' homes and their community. • Describe the ways in which humans use water in their local community. • Provide examples of how human activities can influence the quantity, quality, and reliability of water supplies. • Explain how changes to the quantity, quality, and reliability of water supplies can influence humans, human communities, and their practices.

Investigation and Experimentation

6. Scientific progress is made by asking meaningful questions and conducting careful investigations.

a. Classify objects in accordance with appropriate criteria.

b. Develop a testable question.

c. Plan and conduct a simple investigation based on a student-developed question and write instructions others can follow to carryout the procedure.

f. Select appropriate tools and make quantitative observations.

g. Record data by using appropriate graphic representations and make inferences based on those data.

h. Draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion.

i. Write a report.

UNIT IMPLEMENTATION IDEAS

Work with another grade level (4th – 6th) or classroom to complete parts of the Unit.

- Choose specific areas of the school to conduct the Schoolyard Review. Get together and compare data and maps.
- Have students partner across grade levels to conduct the Schoolyard Review.
- Have classrooms share their observations for increased data collection and to check validity.
- Have groups partner with groups from another class to conduct their investigations, sharing the time in gathering data. Combine data for their conclusions.
- Create or share a service learning project.