

California Education and the Environment Initiative

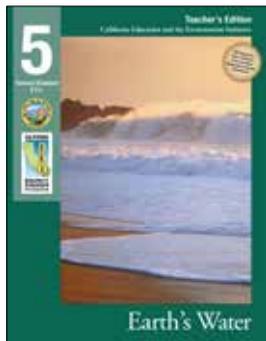
The EEI Curriculum cohesively integrates science and engineering practices (SEPs), content (disciplinary core ideas/DCIs), and crosscutting concepts (CCs) within its lesson procedures. This preliminary analysis intentionally teases apart the individual SEPs, DCIs, and CCs as a means of correlating the EEI unit with specific performance expectations; however, the EEI lessons weave these components back together to provide three-dimensional learning for students.



Grade 5

5.3.a. Earth's Water

“Earth’s Water” uses the relationship between the growth of cities and water as the basis for students gathering and analyzing information about the ways human communities use and manage their water supplies. The lessons give students the opportunity to explore the different types of water found on Earth’s surface and delve into issues related to the availability of fresh water for human consumption. They explore the pathways that freshwater follows from land to the ocean or underground aquifers while discovering the importance of watersheds. Analyzing the information they are presented, they learn how water management practices influence water quantity and quality in different ecosystems. Finally, they explore how water management practices can affect the overall water cycle.



Next Generation Science Standards* Correlation with the California Education and the Environment Initiative (EEI) Curriculum

The EEI Curriculum is a great choice for transitioning to NGSS and contributes toward achievement of the performance expectations for the standards reflected in the Summary Chart below: 5-ESS2 Earth’s Systems; 5-ESS3 Earth and Human Activity; and 3-5-ETS1 Engineering Design. Each EEI unit highlights a small number of performance expectations, science and engineering practices, disciplinary core ideas, and crosscutting concepts. Therefore, the EEI units contribute to students’ overall achievement of the performance expectations by the end of a school year, where they will have had multiple opportunities to engage in all appropriate science and engineering practices, disciplinary core ideas, and crosscutting concepts. While EEI was designed to teach the 1998 California science standards to mastery, it reflects the real world interconnections in science and already incorporates many of the paradigm shifts reflected in the NGSS. To learn more about how EEI supports NGSS, visit <http://californiaeei.org/NGSSGuides/>.



Correlation Chart Key

SEP (Science and Engineering Practices)
DCI (Disciplinary Core Ideas)
CC (Crosscutting Concepts)

	Next Generation Science Standards								
	5-ESS2			5-ESS3			3-5-ETS1		
	SEP	DCI	CC	SEP	DCI	CC	SEP	DCI	CC
California Connection		✓		✓	✓				
Lesson 1 - Read the history of water in Los Angeles and discuss the need for clean, fresh water.				✓	✓	✓			
Lesson 2 - Investigate global water sources by completing tasks at four stations.	✓	✓	✓			✓			
Lesson 3 -Use a watershed model to explore the pathways that fresh water flows from land to ocean.		✓		✓	✓	✓			
Lesson 4 -Learn how water management practices influence water quantity and quality.				✓	✓	✓	✓	✓	
Traditional Unit Assessment		✓			✓	✓	✓	✓	
Alternative Unit Assessment		✓		✓	✓			✓	

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Disciplinary Core Ideas Supported by this EEI Unit					
5-ESS2 Earth's Systems 5-ESS3 Earth and Human Activity 3-5-ETS1 Engineering Design					
Performance Expectations			Suggestions for Using the EEI Unit to Support NGSS		
5-ESS2-2: Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.			Use this unit to have students learn about the distribution of water on Earth and how the majority of all of Earth's water is saltwater that is not suitable for human use. Students consider the percentage of fresh and saltwater on Earth.		
5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.			Use the unit to have students study how water has historically been used, stored, and treated by humans. Have students analyze the effects human water needs have on freshwater, coastal, and marine ecosystems throughout California.		
3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.			Use this unit to have students study the engineered solutions to move water in California, such as levees, dams, and canals, and encourage students to explore how the needs and wants of humans can differ between stakeholders.		
Science and Engineering Practices (SEPs)	Suggestions for Using EEI to Support SEPs	Disciplinary Core Ideas (DCIs)	Suggestions for Using EEI to Support DCIs	Crosscutting Concepts (CCs)	Suggestions for Using EEI to Support CCs
Using mathematics and computational thinking (5-ESS2-2) Obtaining, evaluating and communicating information (5-ESS3-1)	Use this unit to have students analyze data and draw conclusions after reviewing a graph showing the percentages of available freshwater and saltwater on Earth (Lesson 2). Use this unit to have students read about and discuss information regarding human's essential need for freshwater, based on 12 visual aids (Lesson 1). Give students the opportunity to study multiple water systems and learn about the different types of water available on Earth (Lesson 3). Use this unit to have students review and discuss how humans and human engineering helps move, store, and clean freshwater to meet the needs of humans and provide protection to ecosystems (Lesson 4).	ESS2.C: The Roles of Water in Earth's Surface Processes: Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2-2)	Use this unit to have students study Earth's water sources and discover that nearly all of the Earth's available water is in the oceans, and that of the freshwater available, only a small fraction is surface water (Lesson 2). Have them explore watersheds that feed rivers and lakes and the structure of groundwater aquifers (Lesson 3).	Scale, proportion and quantity (5-ESS2-2) Systems and system models (5-ESS3-1)	Use this unit to have students consider the proportion of freshwater to saltwater on Earth (Lesson 2). Use this unit to have students study how water systems have been engineered since the Gold Rush to help bring clean, fresh water to our growing cities (Lesson 1). Based on this unit, have students examine the concept of a "closed system" as they learn that the total amount of water on Earth remains the same, but moves between different fresh and salt water systems (Lesson 2). Give students the opportunity to analyze how each system (freshwater, coastal, and marine) is important to people (Lesson 3) and learn about the man-made freshwater systems in California, and how each

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<p>Constructing explanations and designing solutions (3-5-ETS1-2)</p> <p>Planning and carrying out investigations <i>(Not associated with a specific performance expectation)</i></p>	<p>Use this unit to have students consider how humans have developed engineered solutions to society’s water management problems. Have them explore a variety of design solutions, including levees, dams, canals, reservoirs, and wastewater treatment systems as (Lesson 4).</p> <p>Use this unit to have students investigate how adding salt to freshwater changes the taste, and therefore, the usefulness of freshwater for human consumption (Lesson 2)</p>	<p>ESS3.C: Human Impacts on Earth’s Systems: Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments. (5-ESS3-1)</p> <p>ETS1.B: Developing possible solutions: At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2)</p>	<p>Use this unit to have students analyze how human’s need for freshwater has impacted land, vegetation, rivers, estuaries, and the ocean (Lessons 1, 3, and 4). This unit gives students the opportunity to learn about different decisions humans make in order to protect Earth’s resources and environments, such as constructing water collection systems and water treatment plants (Lesson 4).</p> <p>Use this unit to have students analyze and share their ideas as to the effectiveness of engineered solutions to move, store, and clean freshwater within California (Lesson 4).</p>	<p>Influence of engineering, technology, and science on society and the natural world (3-5-ETS1-2)</p>	<p>system has been engineered to meet human needs (Lesson 4).</p> <hr/> <p>Use this unit to have students evaluate the impact that engineered solutions have had on the people and ecosystems of California (Lessons 1, 3, and 4).</p>