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Your now decisions shape tomorrow's environment.

US Environmental Protection Agency, ca. 1972. Source: Library of Congress. https://www.loc.gov/item/2017646847/

Notes from a Recent Convert

by Nancy McTygue, Executive Director

In college I had to take one science class in order to get my undergraduate degree and I didn't want to do it. As a political science major, I waited until my senior year to take Botany 10, thinking that while I didn't love learning about plants and regularly killed any I had in my apartment, a class about plants and their place in the natural world would probably be the least awful option. I was too optimistic in that initial assessment. I hated the class because, well, it was about plants and not people. I didn't even like the field trips to local nature preserves. I ended up taking it pass / no pass in order to not blow up my GPA.

Things didn't get much better when I started to look for my first teaching job. As I went into interviews, I was prepared to offer to teach any subject - except science - in addition to history-social science in order to get the job. And when I became a parent of schoolaged children, nothing put fear into my heart like news of the annual science fair competition.

And so, when I first learned of California's environmental literacy initiative more than a decade ago, I initially kept my distance. Let me be clear - I'm not opposed to teaching students about the environment, I just never thought I could be of any help because it seemed to fit squarely into that sevenletter word I knew to avoid: SCIENCE.

But in the years since, I've come to learn, primarily through the work of my colleague Shelley Brooks and friends like Jerry Lieberman at the State Education and Environment Roundtable, and Karen Cowe and Will Parish from Ten Strands, that teaching kids how human actions have shaped (and are shaped by) the natural world remains firmly within our comfortable history-social science bailiwick. Moreover, through our continued collaboration with our Subject Matter Project colleagues, including Emily Schell (from the California Global Education Project) and Maria Simani (from the California Science Project), I've begun to

imagine how an environmental theme may provide a framework for working across disciplines in a way that can improve student engagement and critical thinking. And so, with my new-found appreciation for things environmental (and remembering that it is not all about the discipline that will not be heretofore named), I am sincerely pleased to introduce our readers to this environmentally literate (we hope) issue of The Source. Curated by our very own environmental historian (and longtime Source editor), Shelley Brooks, this issue offers our readers an exciting collection of essays, lessons, and articles detailing the interaction of human history with the natural world. These pieces are written by our friends and colleagues across the state. For example, Anne Campbell, former Superintendent of San Mateo County schools, recalls teachers' "kinetic energy" at a recent workshop focused on environmental literacy. Carlo Albano, a fourth-grade teacher from Santa Cruz, explains how his students studied the Spanish mission system through "the lens of land use." And Jose Flores, a government teacher from Brawley, and CGEP's Emily Schell, both argue that when students learn about the government's role in protecting the environment, it offers important and engaging opportunities to develop their ability and willingness to engage in our political process.

The ultimate goal of all of our work, of course, is to help students understand the past and develop the skills and habits of mind to successfully navigate the present (and their future). Understanding the complicated and reciprocal relationship between human action and the natural world will go a long way toward developing that understanding and their capacity because it adds yet another way to consider the world, the motivations of men and women, and the actions taken by individual governments. Adding environmental factors to the more commonly-cited economic, social, or political ones will provide students with a more comprehensive and nuanced view of the past and today – a goal I think even SCIENCE educators would support.

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Nearly every day we hear news that pertains to the environment,

whether it is a local, state, national, or global issue. Of course, this news is not isolated to a single moment in time, but is connected to a wide variety of choices made in the past, some of which were grounded in economics, others in politics, and others for reasons of expediency.

Pollution, flooding, scarce water supplies, endangered species, and so much more can be explained in large part by examining where populations have chosen to settle and develop, how industries have harnessed resources for production, and whether and what kind of government regulations evolved to address the relationship between people and the natural world. The history-social science classroom can therefore provide students with the context to understand the connections between human activities and environmental quality, as well as the opportunity to investigate the current political, economic, legal, and civic developments that shape and are shaped by the environment.

An Environmental Lens on the Past

Incorporating an environmental lens, alongside the social, economic, and political lenses in history, will provide students with a more comprehensive understanding of the motivations, possibilities, and constraints of different peoples throughout history and today. Students will ideally learn that throughout all of human history, including today, humans and the Earth are inextricably linked. A few broad examples include:

- Early civilizations relied upon natural advantages such as rivers for irrigation to grow surpluses that enabled part of the population to engage in governance, business, etc.; in some instances, soil salinization and exhaustion of nearby resources led to the decline of civilizations.
- Colonial development and western expansion in the United States relied upon navigable waterways, timber, fertile soil, and minerals; we continue to feel the long term consequences of many of these choices, such as the use of mercury in gold mining that remains in natural systems today.
- Imperial ventures were related to natural resources found across the globe, such as rubber, precious metals, tea, and opium (from poppies); colonial companies altered ecosystems and landscapes in search and production of these goods, changing the lives and possibilities of people native to these regions.
- The industrial revolution and subsequent technologies, including those in use today, rely upon natural resources that are harvested in large and perhaps unsustainable quantities, emit pollution and greenhouse gases that alter the climate, and demand regulations that challenge the countries of the world to find equitable, environmentally-sound, effective solutions that allow for economic growth.

The **Basics** of Environmental Literacy and History-Social Science

> by Shelley Brooks, Ph.D., California History-Social Science Project

How History-Social Science Can Deepen Students' **Environmental Literacy**

Environmental issues are complex and demand that we consider multiple stakeholders with diverse opinions and needs. Learning to assess perspective is therefore critical. Moreover, students need to understand the power of individual choices and civic participation to affect change. Good historysocial science instruction prepares students in these ways and more, for the discipline of history requires investigations of the past that are framed by questions, an examination of evidence, and an understanding of cause and effect, continuity and change, and perspective or point of view. Classroom investigations can lead students to ask how and why the world operates as it does, and how it came to be this way. If the goal of environmental literacy is to help students become decision makers who are prepared to build a "sustainable, healthy, prosperous, and equitable" society as the Blueprint for Environmental Literacy states, then students will need the skills, habits, and practices learned in a history class.





The End Goal

The California History-Social Science Project's goal with environmental literacy is for students to gain a more complete understanding of the past and today by investigating the ways in which our history, government, and economy have always been tied to natural systems and resources. Teaching with an environmental lens in the history-social science classroom helps students analyze how the environment presents possibilities and constraints that shape human societies. Ideally, in the course of learning about these connections, students will be better informed decision-makers and consumers, prepared to lead a society that attends to the wellbeing of all people and the environment.

California's Environmental Principles and Concepts

California's Environmental Principles and Concepts were developed in 2004 and are part of the state's education code.

Principle I

People Depend on Natural Systems

The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.

Concept A. The goods produced by natural systems are essential to human life and to the functioning of our economies and cultures.

Concept B. The ecosystem services provided by natural systems are essential to human life and to the functioning of our economies and cultures.

Concept C. That the quality, quantity, and reliability of the goods and ecosystem services provided by natural systems are directly affected by the health of those systems.

HSS Framework investigative questions that incorporate this principle:

Fourth Grade: How do climate and geography vary throughout California? How does climate, natural resources, and landforms affect how plants, animals, and people live?

Seventh Grade: How did the environment affect the expansion of agriculture, population, cities, and empires in Mesoamerica and the Andean region?

Principle II

People Influence Natural Systems

The long-term functioning and health of terrestrial, freshwater, coastal, and marine ecosystems are influenced by their relationships with human societies.

Concept A. Direct and indirect changes to natural systems due to the growth of human populations and their consumption rates influence the geographic extent, composition, biological diversity, and viability of natural systems.

Concept B. Methods used to extract, harvest, transport, and consume natural resources influence the geographic extent, composition, biological diversity, and viability of natural systems.

Concept C. The expansion and operation of human communities influences the geographic extent, composition, biological diversity, and viability of natural systems.

Concept D. The legal, economic, and political systems that govern the use and management of natural systems directly influence the geographic extent, composition, biological diversity, and viability of natural systems.

HSS Framework investigative questions that incorporate this principle:

Seventh Grade: What impact did human expansion in the voyages of exploration have on the environment, trade networks, and global interconnection?

Eleventh Grade: How did America's economy, industries, and population grow after the Civil War?

Principle III

Natural Systems Change in Ways that People Benefit From and Can Influence

Natural systems proceed through cycles that humans depend upon, benefit from, and can alter.

Concept A. Natural systems proceed through cycles and processes that are required for their functioning.

Concept B. Human practices depend upon and benefit from the cycles and processes that operate within natural systems.

Concept C. Human practices can alter the cycles and processes that operate within natural systems.

HSS Framework investigative questions that incorporate this principle:

Fourth Grade: How did California grow after it became a state? Why was water important to the growth of California? How did people shape their environments in the postwar era?

Sixth Grade: How did the environment influence the emergence and decline of the Indus civilization?

Principle I

There are no Permanent or Impermeable Boundaries that Prevent Matter from Flowing Between **Systems**

The exchange of matter between natural systems and human societies affects the long-term functioning of both.

Concept A. The effects of human activities on natural systems are directly related to the quantities of resources consumed and to the quantity and characteristics of the resulting byproducts.

Concept B. The byproducts of human activity are not readily prevented from entering natural systems and may be beneficial, neutral, or detrimental in their effect.

Concept C. The capacity of natural systems to adjust to human-caused alterations depends on the nature of the system as well as the scope, scale, and duration of the activity and the nature of its byproducts.

HSS Framework investigative questions that incorporate this principle:

Fifth Grade: Why did Europeans explore? What exchanges were established as a result of the age of exploration?

Tenth Grade: How was technology, and the environment transformed by industrialization?

Principle V

Decisions Affecting Resources and Natural Systems are Complex and **Involve Many Factors**

processes.

Concept A. There is a spectrum of what is considered in making decisions about resources and natural systems and how those factors influence decisions. **Concept B.** The process of making decisions about resources and natural systems, and how the assessment of social, economic, political, and environmental factors has changed over time.

HSS Framework investigative questions that incorporate this principle:

Eleventh Grade: In what ways have issues such as civil rights, economic policy, and the environment remained unchanged over time? In what ways have they changed?

Twelfth Grade: How should individual rights and liberties be balanced with the common good in matters related to land as well as water, air, and other natural resources?

California Education and the Environment Initiative

https://www.californiaeei.org/curriculum/history-social-science-units/

Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making

The EEI model curriculum contains 45 history-social science units that teach select standards to mastery while increasing knowledge of California's Environmental Principles and Concepts. The State Board of Education approved the EEI curriculum units for use in classrooms as an alternative to adopted instructional materials.





Learning **In and From** the Outdoors

by Carlo Albano, 4th grade teacher at Santa Cruz Gardens Elementary

Like my fellow public school teachers, I aim to promote critical thinking, inquiry-based analysis, and students' sharing and defending of ideas. Through these instructional practices, we can approach the scope of environmental literacy thematically throughout the subject matter. The History-Social Science Framework, Next Generation Science Standards, and Common Core State Standards allow instructors to take a student-centered approach that prepares students for the problem-solving required in the twenty-first century. The new curriculum frameworks that guide public education have given us permission and ownership to grow our work as coaches and facilitators of advanced student thinking.

Through a very friendly and inspiring group of partnerships with community-based organizations in the Santa Cruz region, and events like our Teacher Leadership Institute for Science and Environmental Literacy offered by the County Office of Education, local K-12 instructors have been able to bring history and science content to life using our surrounding environment as a lens for student-centered critical inquiry.



As a 4th grade instructor, I teach California's unique history and I look for ways to connect our social science curriculum to environmental literacy. An example of this is when I teach to the standard 4.2.6 "the role of the Franciscans in changing the economy of California from a hunter-gatherer economy to an agricultural economy." I use the Education and the Environment Initiative (EEI) curriculum as a foundation for studying the California

native peoples' use and acquisition of the plentiful natural resources found in the diverse environments of California. By placing emphasis on the lens of land use, students find opportunities for objective analysis and inquiry into the impact of the Spanish mission system. Fourth graders look for evidence of how the introduction of this missionstyle agricultural economy changed the land and the lives of the native peoples who had maintained centuries-old traditions of complex land management focused on ensuring that there were resources available throughout the year for all living things. The resulting shifts in land use set the course for a series of events and transitions to be studied in future units and epochs of California History.

Tapping into community partnerships

To engage students in connecting our lessons with their local context, community partnerships have allowed us to take this

work outside of our classroom. The Santa Cruz Museum of Natural

History leads fourth graders on a field trip to a local city-owned

open space preserve, Pogonip. Here, we are able to walk on one trail through three different natural communities of study--the

meadow, the redwood forest, and the mixed-evergreen forest.

The docents, as well as the instructor, ask them to reflect on the

landscape of Pogonip as a canvas rich with history. We learn about

natural resources used by native peoples, such as bay leaf, berries,

and the acorns of the oak trees. We also study the clues of other

kinds of land use. On a redwood tree stump we see ax marks that

allowed for a foothold for a logger from the 1850's, a practice that

helped to clear out 90% of our old-growth redwoods. On a hilltop

HSS Framework investigative questions for fourth grade Why did Spain establish missions? And how did they gain control? What impact did this missionaries and military the Spanish/Mexican

for a golf course and a polo field, and a portion of which is now being converted for the Homeless Garden Project. We ask the students to reflect on what this land could look like 50 years from now. Their responses have ranged from a natural wildfire started by lightning and overgrown brush, to natural sustained growth, to a bill that would allow for more development in an area the kids consider beautiful and unique. In this process, students explore their findings not only in relation to the unit's original inquiries, but also in relation to the world in which they live.



In elementary school, students...learn how the present is connected to the past, identifying both similarities and differences between the two, and how some things change over time and some in historical documents, eyewitness accounts, oral histories, letters, diaries, artifacts, photographs, maps, artwork, and architecture, differentiating between primary and secondary sources.

Students begin to understand perspective, how the place and time (context) affect perspective, why perspectives differ even during the same historical period, and how perspective shaped historical sources. Students explain probable causes and effects of events and developments. Finally, students make claims about the past -HSS Framework

meadow, we see evidence of a country club that used the meadow

Another important intersecting sphere is social and emotional health, which has a direct correlation to students' feelings of safety, security, and hope. As an educator with a stake in the sustainability of our planet, it is less a task or duty, and more of an intuitive responsibility, for me to instruct with connections to the inspirational and consequential impacts of human interaction with our environment and community. Students then build the understanding and skills needed to make sound decisions in and out of class. Thankfully, I am not alone in this vision; there are an abundance of caring individuals, companies, and organizations ready to support students. In addition to our Museum of Natural History partners, our County Office of Education has partnered with the bio-engineering lab Plantronics in its mission to prepare and empower the next generation to positively impact society. By connecting classroom projects and lessons to local business and government, students make direct connections to where their education and experiments could one day lead.

For example, we are fortunate to take part in the annual legacy project of the late Jack O'Neill (inventor of the surf wetsuit) - the O'Neill Sea Odyssey. Aside from many kids being on a boat for the first time, students learn how and why the National Marine Sanctuary system was established, and how it is used by a variety of government agencies. They learn about navigation, marine map-charting and triangulation, as well as taking measurements related to weather and ocean monitoring. We talk of the catalysts of human migration in social sciences and later connect it to a visit to the aviary hotel of the Elkhorn Slough National Estuarine Research Reserve, host to thousands of species of birds during annual migrations. A common thread throughout these field studies is the use of our student Field/Nature Journal. We have been using a student-centered approach to field journaling that focuses on deepening

Book Map Elkomslough

observations, developing habits of questioning and producing rich data. We give a theme, prompt, or template and the students are given creative reign over the product. These methods are inspired by the naturalist John Muir Laws and the BEETLES Program at Lawrence Hall of Science. These resources, found at https://johnmuirlaws.com/ journaling-curriculum/, provide tools and methods to support studentdriven inquiry and investigations of the natural environment.

"How do we keep sustainability as a part of our decision-making?"

These are examples of how we can take a question or phenomenon and turn it into a unit or a lens of analysis that puts students at the lead of their understanding of standards, their place in the world, and their power as informed global citizens. The goal is to inform and empower generations of youth leading the charge toward a future that carries both inspiration and critical problem-solving.

It is vital that students are making meaning from their lessons. In any given lesson, it is important that they are able to answer: What am I learning today? Why am I learning this? How will I know I have learned? I would take this a step further with history and environmental literacy and ask the question, how do we fit in the world, and how do we keep sustainability as a part of our decision-making?

connections to the discipline. Research shows many benefits to environmental increased engagement with History Social Science content.

environmentally literate society where people understand the interdependence making processes that ensure access to essential natural resources for all students on field experiences in local natural areas. Mr.Albano took part in our county's Teacher Leadership Institute for Science and Environmental Literacy field-based learning. In that process, he saw potential for integrating historysocial science as well. His community-based partners in this work are the

> - Amity Sandage, Environmental Literacy Coordinator, Santa Cruz County Office of Education

Carlo Albano is a teacher, writer, and musician who has been working in public education for 10 years. He is passionate about youth and community empowerment and loves surfing, basketball, and exploring the outdoors with his family.

EMPOWERING ECOLITERATE GLOBAL CITIZENS

Greta Thunberg was inspired by students in Parkland, Florida, who marched out of class to protest U.S. gun laws after the massacre at Marjory Stoneman Douglas High School. After a record heatwave in northern Europe and devastating fires in Sweden, 16-yearold Thunberg decided that she needed to speak up about climate change. Rather than attend school, she sat in front of parliament each day with signs and fliers that she made to raise awareness about climate change. She vowed to do this until the Swedish national elections with hopes to influence policymakers and voters. She spoke at the People's Climate March rally, encouraged people to record and share her words, and gained the attention of people around the world. Thunberg has vowed to continue her strike each Friday until the Swedish government's policies align with the Paris climate agreement.

Thunberg is not alone in her views, opinions, and activism related to the need to address climate change. An estimated 1.4 million students from 123 countries skipped school on March 15, 2019, to demand stronger environmental policies and practices. Capitalizing on the power of social media, these young global citizens voiced their concerns for the health of this planet, climate action, and their future.

Protest is part of our history, and environmental protests are not new. However, when young people protest, our attention is elevated. And, when youth connect with each other on a global scale like this, we cannot turn our attention away from their concerns. Stories and events like these inspire and inform our work in education.

As teachers seek ways to connect with their students, highlight the relevance of their studies, and prepare students for college, career, and civic life, it only makes sense to integrate environmental or climate literacy into the K-12 History-Social Science curriculum. For elementary grades and other interdisciplinary programs, environmental literacy lessons provide opportunities to integrate multiple disciplines. Here are some resources to consider for your instructional plans as you empower your students to be eco-literate, or equipped with the knowledge, empathy, and action required for practicing sustainable living (Goleman, 2012) and develop as global citizens who possess the knowledge and disposition to understand and act on issues of global significance (CCSSO & Asia Society, 2011):



United Nations Sustainable Development Goals:

The 2030 Agenda for Sustainable Development was adopted by all United Nations Member States in 2015. The agenda features 17 Sustainable Development Goals (SDGs) and serves as a universal call for action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity. While the 17 goals are all interconnected, these goals focus squarely on environmental issues: clean water and sanitation, affordable and clean energy, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land.

History-Social Science teachers can challenge students to explore contemporary connections to these issues as they arise in historical studies. For example, access to clean water and sanitation has been an enduring issue for humankind since the beginning of time. Settlement patterns in relation to water access, water transport and storage, and the impact of water-borne diseases are introduced across the grade levels in ancient, medieval, and modern times. Local and current case studies or news stories can help students study global

issues that connect to history. Further exploration of the targets, progress, and information about the goals on the United Nations website allow students to learn more about the current context for these global issues.

Key themes presented in the California History-Social Science Framework connect directly to SDGs. For example:

Haves and Have Nots: No poverty, Quality education, Gender equality, Decent work and economic growth, Reduced inequalities Science, Technology & Environment: Clean water and sanitation, Affordable and clean energy, Sustainable Cities and Communities, Climate Action, Life below water, Life on land

Information presented in the *framework* combined with information about SDGs provide ample opportunities to elevate standards-based instruction through inquiry, research, and perspective-taking methods.

For more information and teaching resources, go online to find United Nations Sustainable Development Goals Knowledge Platform, The World's Largest Lesson, and Teach SDGs.



Global Oneness Project: The Global **Oneness Project** features free online photo essays, short films, articles, and lesson plans that promote cultural stories from around the world. Explore the "Climate Change" collection, which includes an award-winning film called "Earthrise" about the 1968 Apollo 8 mission to space and how the first photo of Earth transformed the ways we view our planet. Other assets in this collection include stories about the effects of natural disasters, melting icebergs, drought in California,

climate refugees, and how environmental changes threaten cultural traditions tied to local ecosystems.

Local perspectives are presented in photo essays, such as "A Possible River." This black and white photo essay documents the Los Angeles River and its environment, which has held the attention of local activists for years. A recent plan by the city to revitalize the river to provide more public green space surfaces a variety of issues that relate to ecosystems, plant and animal ecology, commercial development, people who are homeless, and community. Consider investigating some of these issues through articles, such as "Efforts to Restore the Los Angeles River Collide With a Gentrifying City" published by Sierra or "How Frank Gehry's L.A. River make-over will change the city and why he took the job" published by the Los Angeles Times. The Global Oneness Project article "Rivers and Stories" provides additional perspectives for students

to consider in connection to the photo essay. The article's lesson plan guides students to examine the state of rivers around the world and explore ways to reclaim them today.

Global perspectives are also presented in short films, such as "Lost World." This film shows the complexities between two groups of people who rely on the land in different ways. The story moves between Cambodia, where people rely on and revere the mangroves that have sustained them economically and culturally for generations, and Singapore, where additional land is needed to support prosperity and growth. This film highlights the importance of understanding and addressing local environmental issues with global perspectives as the actions of one group directly impact the way of life of another.

Generation Global: The Tony Blair Institute for Global Change offers this free virtual exchange platform for middle and high school teachers to engage their students in lessons that relate to respectful dialogue, real-time facilitated videoconferences with peers around the world, and online group discussions related to topics of interest or study. New resources for teaching and learning about climate change are in a pilot phase now, but will soon be available to teachers through the Generation Global website.

Empatico: This <u>virtual exchange platform</u>

is designed to spark curiosity, kindness, and empathy as students explore their local and global communities. The program is available for elementary grades and offers lesson plans for teachers to use with students before, during, and after real-time videoconferences with a partner class. California classes can be matched with partner classes across the state, country, or world. The platform allows for students to exchange documents, videos, and images in a safe space in addition to scheduling live interactions. Empatico, supported by the Kind Foundation, has aligned their lessons to the California

Environmental Principles and Concepts to demonstrate alignment with such lessons as Everyday Energy, Weather Out the Window, Helping Hands, and Community Cartographer. (https://empatico.org)

Global Book Bags: The California Global Education Project has developed an elementary book list featuring stories with global themes aligned to the California Environmental Principles and Concepts. The book list can be found on the CGEP website with examples of teacher-created global book bag learning activities. These learning activities are designed to promote literacy, global competence, and environmental literacy in take-home bags that include the book, instructions, and activity materials. However, the learning activities can be adapted for use in the classroom. (https://CalGlobalEd.org)

Now is the time to look for additional resources and professional learning opportunities to develop the knowledge, voice, and practices necessary for all students to make informed decisions about their relationship to the environment. Using a lens on the environment, we can help students to recognize the value of literacy and computational skills, scientific knowledge, the arts, history, geography, economics, and civics/government. Our call for action is echoed in the words of Thunberg, "This movement had to happen. We didn't have a choice. We knew there was a climate crisis ... We knew, because everything we read and watched screamed out to us that something was very wrong."

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Boix Mansilla, V. & Jackson, A. (2011). Educating for Global Competence: Preparing our Youth to Engage the World. New York: Asia Society. Goleman, D., Bennett, L. & Barlow, Z. (2012). Eco-Literate: How Educators are Cultivating Emotional, Social, and Ecological Intelligence. San Francisco: Jossey-Bass.

The California Global Education Proj

ect (CGEP), formerly the California International Studies Project, is one of nine California Subject Matter Projects providing high-quality professional learning programs for K-12 educators. CGEP supports teachers to develop the knowledge, skills, resources, and leadership needed to foster global competence in all students. CGEP's statewide signature program is Teaching for Sustainable Communities: Empowering Eco-Literacy Global Citizens. This 5-day institute launches a year of networked support and a student exhibition showcasing student agency, global citizenship, and environmental literacy. CGEP also offers workshops, institutes, and programs to promote cross-cultural understanding, geographic perspectives, 21st century learning, and civic action to address local and global issues. CGEP's statewide office is at San Diego State University. Regional sites are at CSU Long Beach, CSU Fullerton, San Diego State University, and World Savvy in the Bay Area. Northern California educators are served through a new professional learning hub operated out of the statewide office.



Emily M. Schell, Ed.D., is Executive Director of the California Global Education Project and Co-Chair of the California Environ mental Literacy Initiative. She has served as teacher, principal, and Social Studies resource teacher in San Diego Unified, History-Social Science Coordinator at San Diego County Office of Education, liaison to National Geographic Education, and preservice educator at San Diego State University



Viewing American Westward Expansion through an Environmental Lens

by Shelley Brooks, Ph.D., California History-Social Science Project

Author's note: This article derives from a talk I gave to a group of textbook publishers in Sacramento, modeling for them how I would use an environmental lens to teach to the eighth-grade Framework question "How did Manifest Destiny contribute to American expansion?". Publishers attended this session because the state of California requires the inclusion of the Environmental Principles and Concepts in adopted instructional materials.

Studying the history of westward expansion in the United States necessarily connects to the environment. The national priorities and aspirations attached to incorporating new territory to the west had profound social, political and economic implications. It offered great hope and opportunity to some, and presented great hazards to others. The environment mediated all of this, its resources providing the impetus for expansion and its realities shaping opportunities while also imposing certain limitations.

Each of the traditional perspectives we use to evaluate western expansion ultimately relates to the natural systems and resources found across North America. Consider, for example, how ideas about productivity and wealth drove Americans of European descent further west where they clashed with Native Americans who held very different beliefs and ideas about land ownership and use. The

concept of manifest destiny drove this western expansion. Writing in 1845, John O'Sullivan coined the phrase as he argued in favor of the idea that the United States was destined to become a continental power: "Other nations have undertaken to intrude themselves...in a spirit of thwarting our policy and hampering our power, limiting our greatness and checking the fulfillment of our manifest destiny to overspread the continent allotted by Providence for the free development of our yearly multiplying millions."1

Widespread support for expansion helped lead to the Mexican-American War, which, like practically every war, was at its core centered on the ownership of land and natural resources. In this instance, and in countless others throughout history, political and social conflict was tied to who controlled and benefitted from particular geographic areas and the ecosystem resources they provided such as timber, mineral ores, water, and land. In the U.S. defeat of Mexico in 1848, the United States took control of vast new territory and established laws, citizenship rights, and practices that transformed the lives of the indigenous and Mexican-born peoples in the new American Southwest.

The federal government actively encouraged development of this new territory through the Homestead Act and the Pacific Railway

Act, both in 1862. This image painted by John Gast in 1872, just three years after the completion of the Transcontinental Railroad, is a visual representation of the concept of manifest destiny. Entitled "American Progress," Gast applauded western expansion as he portrayed the technologies, the transportation, and the processes that made it possible. Even a cursory look at the painting tells us how crucial the western environment and its resources were to American expansion. The wide spaces of the West provided the hope of wealth and stability to Americans moving from the East, people who inevitably changed the landscape they found. They received support from the federal government through

the land made available by the Homestead Act and by the business opportunities created by the extension of rail lines into the West.

In the settling of the West, these newcomers rendered difficult - if not impossible - the continuation of a way of life that had sustained indigenous peoples for thousands of years. The following account from a Cheyenne woman of the northern plains, Iron Teeth, reveals how the American quest for more and richer resources caused the repeated dislocation of native peoples: "We were promised that all white people would be kept away from us there. But after we had been there a few years, General Custer and his soldiers came there and found gold. Many white people crowded in, wanting to get the gold.



Our young men wanted to fight these whites, but there were too many of them coming. Soldiers came and told us we would have to move to another part of the country and let the white people have this land where the gold was. This action of the soldiers made bad hearts in many of the Cheyennes and Sioux."² In some instances, such conflicts led to battles between native peoples and the U.S. military, such as when Cheyenne and Lakota Sioux warriors successfully repelled a military advance at the Battle of the Little Bighorn in 1876. In most cases, the U.S. military used military force and extreme pressure to drive native people from their tribal homelands.

It was more than military and civilian aggression that limited the options available to native peoples, however. In the plains region, settlers introduced livestock that competed with native bison for pasture, while excessive hunting (shooting from a passing train became sport) also contributed to the wild animal's decline. The Cheyenne, Arapaho, Pawnee, and other Plains Indians - who had long relied upon the bison for



"Group of Siksika (Blackfeet) men and one woman singing in front of tipi," Library of Congress image https://www.loc.gov/resource/cph.3c13212/ Note the tipi made of bison hide

"The far west - shooting buffalo on the line of the Kansas-Pacific Railroad" Library of Congress image https://www.loc.gov/resource/cph.3c33890

food, shelter, clothing, tools, and more - soon found their way of life circumscribed by the arrival of new people and animals. The newcomers and their animals also contributed to the spread of cholera and other diseases related to polluted water. By the last decade of the nineteenth century, the U.S. census indicated that the frontier had "closed" as settlers, and their farms, ranches, fences, rail lines, telegraphs, towns and cities, spread across the land in increasing density. This settlement, and the displacement of so many non-Anglo Americans, continues to shape current-day social, political, economic, and environmental realities.

Ecosystems, natural resources, climate, and geography, not just in the American West but

throughout history, are driving forces that shape human cultures, societies, and civilizations. These are not one-time static events, but ever-evolving relationships comprised of interactions and influences between people and the environment. As the HSS Framework and California's Environmental Principles and Concepts reach classrooms across the state, students will look to the natural world with a greater understanding of the role the environment has played in shaping societies of the past, and its influence today. Ideally, students will take from this that the decisions they make regarding natural resources will shape their futures as well.

1 O'Sullivan, John L. "Annexation." United States Magazine and Democratic Review, Volume 17, Issue 85 (July - August 1845): 5-10.

2 Cott, Nancy F. et al, eds. Root of Bitterness: Documents of the Social History of American Women. University Press of New England 1996, 224.





The Environment as Historical Actor

by Emily Pabarcus, Encinal High School, Alameda

I have always been interested in the environment, particularly in working on ways to help protect the environment for the future. In my personal life, I try in every way possible to minimize my negative impact on the environment by not eating meat, using reusable straws, bags, and cups - everything you might expect. But the place that I can actually have the most impact is in teaching young people to value and protect their world. And, as a history teacher, to create learning opportunities where they can explore the human relationship to the environment in the past and present.

When the UC Berkeley History-Social Science Project (UCBHSSP) approached me about piloting the integration of environmental literacy materials into my instruction, I realized that I didn't want to plan for isolated discussions on the environment. I wanted students to engage in thinking about the environment more regularly. In this way, over time, they would come to see asking questions about the human relationship to the environment during the various periods we studied as automatic - an important part of the past to consider. Consequently, I saw my collaboration with UCBHSSP - and the graduate student they were working with -- as an opportunity to inspire my students to think about the past in new ways as they grapple with big questions in our contemporary context.

The idea of integrating the environment as an additional actor in history was also intellectually appealing. I often organize my units according to how different groups of people experienced a specific historical period. After talking with UCBHSSSP, I asked myself, "Why not add the environment as another lens for analysis?" We began this collaboration last Spring when I was planning for an upcoming unit on Vietnam War. UCBHSSP developed a series of materials to mirror those I would use for the social groups my students would study. They provided me with excerpts from secondary texts and a timeline. I further excerpted the materials, providing

students with a one page timeline and a two-sided "fact sheet", which included information about the use of Agent Orange, the environmental cost of transporting war materials to Southeast Asia, the increasing dependence on fossil fuels, and the rising environmental movement. This year, we added materials for the 1920s, the Great Depression and New Deal, and World War II. In

our most recent unit, when talking about the World War II Home Front, students looked at the impact of the war on Japanese-Americans, African-Americans, consumers, women, and now, the environment. During this historical period, students learned about the increase in materials for war production, the environmental consequences of war, and the rising environmental consciousness of Americans in addition to the Double V campaign, Japanese American incarceration, and the recruitment of women to the wartime workforce. In this way, I was able to integrate the environment as a point of study without substantially reworking my assignments or my learning goals. And students, three quarters of the way through the year, are asking, "What about the environment?"



Once I started including the environment in my thinking about how to teach U.S. History, it became easy to envision additional places where it made sense to include this discussion and inquiry in my lessons. It is interesting to see how incorporating the environment has deepened our collective exploration of the past and has opened up new lines of thinking, questioning, and discussion. Students love exploring the environmental impacts of historical events. Now, when provided an option of which historical lens to focus their inquiry on, students always select the environment first. This grounding in events of the past helps my students better understand and formulate questions about our current relationship to the environment.





In the Spring of 2018, Emily Pabarcus, who teaches history and English Language *Development classes, began working with* the UC Berkeley History-Social Science *Project on integrating the environment into* her instruction. Sophie Fitzmaurice, a UC Berkeley graduate student in history, assisted in developing materials, which Emily refined for her purposes. Over the course of the year-long collaboration, Emily shared these materials with her students at four points during the year – units on the 1920s, the Great Depression, World War II (examples noted here) and the Vietnam War.

The Environment During WWII

Materials developed for the classroom

Chemicals and Nuclear Energy

During World War II, chemicals were produced on a far greater scale than before the war. Chemicals such as white phosphorous and napalm were used in incendiary warfare, while the fertilizer DDT was deployed to delouse soldiers and civilians coming from POW camps and concentration camps.

"Nuclear fallout was a major issue, resulting from atomic bomb tests conducted in the atmosphere in the 1950s, and the idea that radiation could appear in the food chain at vast distances from test sites became a public concern." (Merchant, 177-178).

Mechanization and Industrial Pollution

"During the Second World War, [Los Angeles] became a major industrial center. Between 1940 and 1941, investments in large scale industrial plants increased from \$4.4 million to \$38.5 million, while the number of workers employed in manufacturing grew from 152,000 in 1940 to 446,000 in 1943. In 1942, the city was awarded more than \$3 billion in military contracts, an amount that tripled the following year. Many of the industries involved in this war production - including the manufacture and processing of rubber, nonferrous metals, petroleum machinery, and chemicals - were substantial contributors to air pollution." (Vogel, 157-158).

When the Los Angeles City Council tried to shut down a synthetic butadiene plant owned by the Southern California Gas Company, in response to the 'smog attacks,' it was prevented from doing so by the federal government because the plant was producing "a petroleum derivative that was critical to the war effort. This episode marked the first conflict between state and federal officials over the control of air pollution in California." (Vogel, 158).

Rise of Environmental Consciousness

Propaganda campaigns that encouraged housewives to reduce waste helped to make recycling a public duty rather than a private way to cut costs.

A huge amount of scientific research - for example in the fields of aeronautics, engineering, and space - was undertaken during the war, for military purposes. After the war, many scientific institutions were repurposed for peacetime use, leading to greater scientific understanding of the Earth's atmosphere and climates.

Suggested reading:

--Carolyn Merchant, The Columbia Guide to American Environmental History (New York: Columbia University Press, 2005). --J. R. McNeill, Something New Under the Sun: An Environmental History of the Twentieth- Century World (New York: W. W. Norton & Company, 2000). --David Vogel, California Greenin': How the Golden State Became an Environmental Leader (New Jersey: Princeton

University Press, 2018).



Environmental Literacy-What Is It, and How **Did It Become Part of California's Education?**

by Gerald A. Lieberman, Ph.D. Director, State Education and Environment Roundtable

An environmentally literate person has the capacity to act individually and with others to support ecologically sound, economically prosperous, and equitable communities for present and future generations... developing the knowledge, skills, and understanding of environmental principles to analyze environmental issues and make informed decisions. <u>A Report</u> by State Superintendent of Public Instruction Tom Torlakson's Environmental Literacy Task Force – 2015

The signing of Assembly Bill 1548 in 2003 began a cascade of events that continues to this day-strengthening the connections in K-12 education between history-social science, science, health, and environmental literacy for all of California's students. Over the past sixteen years, the legislative process, as well as the collaborative efforts of a variety of state education and environmental agencies and growing public understanding of the significance of changes to the environment, have led us to a new era for environmental literacy.

statewide effort to identify the "big" ideas about the environment that educators and the environmental community all agreed were understandings that every student in California should come away with. The result was California's

Environmental Principles and the

fifteen concepts that examine the

interactions and interdependence of human societies and natural systems (see pages eight and nine). After their development in 2004 they were formally adopted by the State Board of Education (SBE) and California's environmental and natural resources agencies including the California Environmental Protection Agency (CalEPA), CalRecycle (formerly the California Integrated Waste Management Board), and the California Natural Resources Agency.

Senate Bill 720, signed by the Governor in Implementation of this new law began with a 2018, significantly enhanced the importance



of environmental literacy in the K-12 education system when it added the EP&Cs to California's education code. This new law identifies the EP&Cs as, "fundamental to the definition of environmental literacy in California." The law directs the Instructional Quality Commission to ensure that the EP&Cs "are integrated into the content standards and curriculum frameworks in the subjects of English language arts, science, history-social science, health, and, to the extent practicable, mathematics whenever those standards and frameworks are revised."

Even before this legislation was passed, the State Board of Education's guidelines called for the full integration of the EP&Cs into the 2016 revision of the History-Social Science Framework. The California History-Social Science Project (CHSSP), which served as the primary writer of the revised *Framework*, has been a critical partner in the efforts to connect environmental literacy to standards-based instruction from the earliest days of this endeavor.

Not surprisingly, because of the focus of the EP&Cs, the *Framework* explores a wide variety of interconnections and interdependences between human lives, communities, and societies and the natural systems upon which we depend for essential goods and ecosystem services. The *Framework* examines these connections through: Key Theme 6: Science, Technology, and the Environment; connections

curriculum materials from the Education and the Environment Initiative (EEI). The EEI Model Curriculum, https:// history-social science units that teaches select standards to mastery while increasing knowledge of the EP&Cs The State Board of Education approved classrooms as an alternative to adopted instructional materials. The *Framework* therefore describes a wide array of connections between the HSS standards and the EP&Cs, and teachers can use the EEI curriculum units to effectively teach them concurrently. See the EEI sidebar for some examples of these connections found in the Framework.

Using the environment as a context

for teaching history-social science also provides vital and vibrant opportunities for engaging students and teachers in the It is essential to continue this work based on the interconnections instructional shifts of the new Framework. Connecting HSS and and interdependence between human communities and societies and a healthy natural environment in order to environmental literacy provides excellent opportunities around which to build "Discipline-Specific Inquiry" and "Citizenship." achieve environmental literacy for all California students. Inquiries centered on the historical, social, geographic, and The groundwork for this endeavor has been laid through the legislative process, curriculum development, the History-Social economic context of local environmental topics, problems, and issues effectively engage students in opportunities that Science Framework, and professional learning communities, are relevant and meaningful to their daily lives. This type of including the vital network of educators represented by the instruction has been a consistent part of teaching at Brawley California History-Social Science Project.

among the EP&Cs and the HSS standards; and identifying model

High School, where Jose Flores, a now retired civics teacher, provided his students with multiple opportunities to participate in programs like the U.S. Environmental Protection Agency's air quality monitoring efforts. Student inquiries focused on a vitally important local health issue (air pollution resulting from dust blowing off the Salton Sea) and the related political and historical causes. As active participants in the EPA's Indoor Air Quality Tools for Schools Action Kit, Salton Sea Now!, the students engaged in a "real-world" civics program. They did much more than collect air quality data; students reported to and engaged with local community

Using the environment as a context for teaching history-social science also provides vital and vibrant opportunities for engaging students and teachers in the instructional shifts of the new Framework.

leaders to change policies about this local environmental health problem.

This approach connected Flores' instruction with another major pillar elucidated in the Framework: a focus on developing citizenship through active civic engagement. As the Framework describes it: "Students need to know their rights and responsibilities as American citizens and have both the capacity and willingness to participate in a democratic system of government... Students need to take an active role as citizens and know how to work for change in a democratic society." This emphasis parallels many of the goals represented in the 2016 Science Framework, which encourages teachers to engage their students in developing "engineering design solutions" to problems and issues relevant to their communities and students' interests.

GRADE 3 - Focusing on a California natural regions map and reader, students can research the ecosystems found near them, the resources provided by these ecosystems, and the ways people use them. They investigate the goods and services provided by these ecosystems and how they are used to support human communities (for EP&C I; EEI unit "The Geography of Where We Live," 3.1.1-3.1.2).

GRADE 4 - In their study of indigenous peoples, students can consider the complex relationship of humans with the natural environment. A question for students to consider may be derived from EP&C I:What natural resources are necessary to sustain human life? Contemporary cities and densely settled areas frequently are located in the same areas as these early American Indian settlements, especially on the coasts where rivers meet the sea. (EEI unit "Ca a Indian Peoples and Management of Natural Resources," 4.2.1.)

GRADE 6 - Students first examine maps to identify the environmental factors, such as climate, topography, and flood patterns, that caused these civilizations to rise up along rivers. The teacher might use either the EEI unit "River Systems and oples," 6.2.1, or "Advances in Ancient Civilizations," 6.2.2. These lessons emphasize environmental causes and effects and the influence that the rise of civilization along these rivers had on the organization, economies, and belief systems of Mesopotamia and Egypt.

GRADE 7 - In the EEI unit "Broken lade and Tarnished Gold," 7.7.3, students learn that the Spanish needed the natural resources of the region, with a goal of sustaining their own economic and political systems in the "Old World." They explore many human social factors, including greed, religious fervor, and disease, that left the Spanish in control of vast lands in Central and South America, eventually propelling the empire to expand into the lands to the north, including California.

GRADE 12 - Allowing students to explore the connections between individual property rights and societal decision making helps them recognize the wide spectrum of social, econom political, and environmental factors related to the use and conservation of natural resources (EP&CV). Students recognize that many of these factors are considered when governments and communities make decisions about private property rights and the balance between an individual's self-interest and society as a whole (EEI unit "Private Property and Resource Conservation Economics," 12.1.4).

Framework Appendix G identifies many more connections between the HSS standards and the EEI curriculum units and provides descriptions of how those units can be used to teach both the standards and the "big ideas" represented by California's Environmental Principles and Concepts.

Dr. Gerald A. Lieberman is founder and director of the *State Education and Environment Roundtable, and is an* internationally-recognized authority on school improvement. *He was a major contributor to California's history-social* science, science, and health frameworks. Previously, he served as the principal consultant for the State of California's











After years of teaching do we consistently settle into repeating similar lessons, or do we see each year as an opportunity to improve our craft? My colleagues and I at Brawley Union High School made it a priority to regularly fine tune our lessons to include current local civic and environmental issues. We did this with two goals in mind: to provide students with a voice in issues of concern to them, and to enhance learning through real-life examples. I believe this lofty goal is in no way in conflict with every district's goal of doing well in high stakes ELA/ELD, Math and Science testing. It is a matter of teaching such content or skills in context by applying local phenomena. With administrative support, proper planning, and some teacher ingenuity, I found this could be done well throughout the grade levels.

The tools to embark on such a journey are already available. Tools like blueprints, standards and frameworks can help lead to cross-curricular work. I have seen firsthand how it is possible to collaborate across the disciplines. Below are a few examples of lessons that have proven effective even in my extreme rural setting with a high English Learner population near the Mexican border. I believe such lessons can easily be employed with our more than six million students in California.

I used an environmental lens in my 12th grade Civics and Economics classes, and placed strong emphasis on:

- 1- ELA/ELD with plenty of reading, writing, listening and speaking
- 2- Math with graphs, ratios, percentages, equations, geometry and measurements
- 3- Science with disciplinary core ideas, cross-cutting concepts and science and engineering practices

We did cover history-social science standards, but often within the context of another subject. I welcomed experts from the community into the classroom, and gave students time to meet and collaborate throughout the school day. I saw myself as a facilitator to strengthen the lesson. The purpose of this approach was for students to acquire mentors; to network to enrich their college-career-civic readiness; and to begin their community service.

It is incumbent upon educators to broaden the scope of education, not to limit it. We have to accept that we alone don't have all the answers to help students. Likewise, I am not the only authority to judge their writing and presentations. Instead of assigning only essays, my students

Initiative (EEI) curriculum: also wrote to the local school board, city council, county supervisors, state and federal representatives, environmental non-profits, and even the head Straightforward lessons that proved effective of the Environmental Protection Agency. They built their knowledge for my students included planting bean, and capacity for this work by attending all school board, city council flowers, vegetables and trees and then and some county supervisor meetings during their 12th grade year. learning about urban forests; examining Wearing "Civics Journalism" badges, students gained practice in academic the impact of pesticides, since many language by asking questions of their community leaders and engaging in students' parents work in the fields; and conversations in these public settings. tracking utility usage throughout the Here are some other examples that year. Data from utilities like water and



deepened student learning and prepared them to participate in the democratic process:

- Voting registration for themselves and/or family members
- Voting drives and campaigning for local, state and federal candidates
- Supporting family members' campaigns for local offices
- Running for local office after graduation
- Working with local courts, California Supreme Court and the 4th District Court of Appeals

These activities provided first generation students with the support they need to become active participants in society. Moreover, these activities helped to level the playing field by giving students networking opportunities and the potential for letters of recommendations for work and/or college.

As a community of HSS educators, we need to continue to improve 12th grade opportunities beyond mock trial teams or Associated Student Body that ultimately engage just a small percentage of students. While many affluent students have access to broader networks, a great majority of California students need their schools and teachers to narrow that opportunity gap.

I have come to realize that whether locally or globally, a student cannot be truly environmentally literate without engaging civically, and not truly civically literate without engaging with environmental issues. I not only believe that different subjects can co-exist, but that they can support each other. This is not to say it is always easy. Environmental science colleagues of mine have balked at losing time for their important material to make room for other subjects. My response was if the material is really that important, why not take the next step and empower students to engage civically to actually do something about these issues? Such opportunities give students the chance to really internalize the material and not just learn enables the student to do in society.

Jose Flores was an educator for 25 years, a member of the California it in the short term for a test. I believe knowledge is important for what it Department of Education Instructional Quality Commission and a K-12 Civic/ Environment Advisor. Today, he is an advisor for the California Environmental Some recommended Civic/Environmental instructional materials for Literacy Initiative, UC—CSU Environmental and Climate Change Literacy K-12 classrooms in addition to the Education and the Environment Project and Summit Committee, and Comite Civico del Valle.

by Jose Flores, retired teacher, Brawley Union High School

electricity gave students the opportunity to monitor usage patterns and

seek improvement in conservation. A side-note: during the drought a few years ago - when California cities had to meet certain water conservation goals - our city was the only city in our county to reach that goal. I believe our 200 12th graders made a difference as they educated family and fellow community members.

With the use of donated materials from local and state agencies my students used air-quality monitors to track indoor and outdoor air quality

throughout our city and county. Students stored that information online and referred to it when reaching out to local, state and federal policy makers to enact change. Again, with free resources and guidance, my students learned to make their own solar powered cell phone chargers. Talk about a captive audience with high interest to learn about alternative energy!

This flow chart explains the depth and breadth of my course:

Bridging the **Opportunity Gap**

Via Promoting Student Leadership, Voice and Public Speaking



ACCESS-EQUITY-INCLUSION





Environmental Justicewhat is it and how does it relate to the history-social science classroom?

by Shelley Brooks, Ph.D., California History-Social Science Project

political, economic and cultural

liberation that has been denied

for over 500 years of colonization

and oppression, resulting in the

poisoning of our communities

and land and the genocide of our

peoples, do affirm and adopt

these Principles of

Environmental Justice...

-First National People of

Color Environmental

Leadership Summit

(to read the seventeen principles,

see: <u>http://www.ejnet.org/ej/</u>

principles.html)

When communities like Paradise, California face environmental disasters they make headline news; less often do we hear stories of the communities suffering from slowly-evolving environmental hazards like toxic air and water. Though fires and floods can exacerbate existing hardships (as we saw in New Orleans' Lower Ninth Ward during Hurricane Katrina), an unhealthy local environment often results from structural inequalities that concentrate freeways and

industrial plants adjacent to poor and often nonwhite neighborhoods. The environmental justice movement - which is premised on the right of every person to a healthy environment - demands a fair distribution of the environmental hazards related to pollution, automobile exhaust, and other unhealthy byproducts of our modern society. This movement therefore combines a focus on environmental quality with a commitment to social justice.

Given its focus on the intersections of people, power, and the environment, it is not surprising to find the roots of these environmental justice concerns in the Civil Rights Movement of the mid twentieth century. James Farmer, co-founder of the civil rights organization Congress of Racial Equality (CORE), served as the federal assistant secretary of health, education and welfare from 1969-1970. On April 22, 1970, the nation's first Earth Day, Farmer spoke in Washington, D.C. and articulated the linkage between poverty, race, and environmental degradation. He argued: "the garbage, the trash, the carbon monoxide, the junk; who suffers most from it if it is not the poor? And so the poor, especially the ghettoized poor - the black and the brown and the red – stand to benefit first from any successes in cleaning up the environment."

Farmer did not use the term "environmental justice," but such issues continued to be of great concern to many community leaders and, eventually, to scholars and government agencies. In October, 1991, delegates to the First National People of Color Environmental Leadership Summit in Washington, D.C. defined the principles of environmental justice and leveled their demand "that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination or bias." Their preamble makes clear the importance of understanding the legacies of historical injustices in order to address contemporary realities (see sidebar).

Environmental Justice in the HSS Classroom

One way to approach teaching for environmental justice in the historysocial science classroom is to investigate the relationship between the economy, environmental regulations and policies, and the health and well-being of communities - both today and in the past. Sadly, many students in California will be able to relate to the negative impact of toxins in their local environment. Despite decades of clean air and water

measures by the state and federal government (and considerable successes), pollution continues WE, THE PEOPLE OF COLOR, to be a pressing problem and young people suffer disproportionately. Children are most vulnerable *gathered together...to begin* to air pollution because their lungs and immune to build a national and system are still developing and because they tend international movement of to spend significant periods of time exercising all peoples of color to fight the outdoors. Asthma and other respiratory illnesses destruction and taking of our are much more common among children living lands and communities, do in communities with poor air quality. It is this hereby re-establish our spiritual fact that mobilizes some community activists. In Wilmington, just south of L.A., a few young interdependence to the sacredness adults have taken it upon themselves to inform of our Mother Earth; to respect their families and neighbors about the dangers and celebrate each of our of polluted air caused by the local oil refineries, cultures, languages and beliefs freeways, and the Port of Los Angeles. Not only do *about the natural world and* young people in this region of Los Angeles have our roles in healing ourselves; to high asthma rates, but they also contend with ensure environmental justice; to *promote economic alternatives* which would contribute to the *development of environmentally* safe livelihoods; and, to secure our

decrease air pollution.

childhood cancers that appear to be related to the toxins in the local environment. Some schools in the Los Angeles region and elsewhere around the state and country are using <u>air quality monitors</u> to help students track and understand the specific pollution levels in their local communities. Such classroom activities not only build science content knowledge, but also prepare students to engage in local and regional policy-making decisions to

When it comes to the water they drink, bathe, and play in, children are especially vulnerable when exposed to poor quality water. Elevated levels of lead negatively affect children's brain development, as stories from Flint, Michigan highlight. Flint is not the only community struggling with access to safe water. Hinkley, an unincorporated farming community in the Mojave Desert 120 miles northeast of L.A., has long suffered from toxic water caused by chromium 6 released by the nearby PG&E plant. The movie Erin Brockovich portrayed the health consequences associated with toxic levels of this heavy metal. East Orosi and Seville are two of many other places in California - primarily Central Valley communities with water tainted by arsenic and chemical fertilizers - where the public water system does not provide residents with safe water. This guide developed by University of Michigan recommends investigative questions for the classroom that help students dig deeper to understand the social, economic, and political factors that can inhibit access to clean water. Students can investigate the areas of their own state where environmental degradation and socio-economic factors similar to Flint have denied one million Californians access to clean water. Helping students understand that pollution results from specific commercial and consumer choices, city planning measures, and government policies, may provide students with the necessary knowledge to effect change through civic engagement. Society will move closer toward just environmental conditions through such informed action.



Justice in the Era of Climate Change

In the past decade or so there has been a new sense of urgency in the environmental justice movement. Climate change (including sea level rise and an increase in extreme storms and wildfires) threatens communities here in the United States and throughout the world, communities that often lack resources to adapt, move or rebuild. Students may be inspired by the news of their peers who have chosen to call attention to the problems they anticipate with climate change. For example, twenty-one young Americans, ranging in ages from 10-21 years old, filed a lawsuit against the federal government to press for progress on addressing climate change. The lawsuit argues that the federal government violates this generation's constitutional rights by choosing not to set policies to protect the Earth from the negative impacts of climate change. Two former surgeons general have weighed in with their support for this lawsuit based on children's unique health vulnerabilities related to a changing climate. As one student - Journey, a Sioux Indian - explained: "I am suing the Federal Government because it's the right thing to do. Our future survival depends on our leaders taking dramatic action on climate change NOW, for the sake of future generations and all life on Earth." The government, economics, geography and history classrooms provide students with the necessary context and content to understand today's most pressing global and community-level issues, issues that our students recognize will be theirs to solve in the coming decades.

Listed below are some resources for examining issues related to environmental justice in the classroom:

• The Public Health Alliance of Southern California's California Healthy Places Index measures housing, transportation, education and other factors that contribute to community conditions. https://healthyplacesindex.org/







- The California EPA's CalEnviroScreen allows users to view the pollution burden of individual census tracts. https://oehha.ca.gov/ calenviroscreen/report/calenviroscreen-30
- The Center for Regional Change at UC Davis has developed mapping tools to track youth well-being throughout the state. https://interact.regionalchange.ucdavis.edu/youth/webmap/ webmap.html

To learn more about environmental justice and how it relates to California, see:

- California Environmental Justice Alliance https://caleja.org/
- Center for Community Action and Environmental Justice http:// ccaej.org/
- Environmental Protection Agency's environmental justice page https://www.epa.gov/environmentaljustice
- California Environmental Protection Agency's environmental justice page https://calepa.ca.gov/envjustice/
- California SB 1000 on land use and environmental justice https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill id=201520160SB1000

Read more



Integrating the **Environment** into K-I2 HSS Instruction

by Charley Gilmore, Curriculum Specialist, History-Social Science, Sacramento County Office of Education

History-social science teachers

seek to tell the story of people long ago and today. Indelibly intertwined in that story is the way in which the environment has shaped the development of societies and culture and how the people of those societies have, in turn, changed the environment around them. The 2016 California History-Social Science Framework recognizes this by integrating environmental literacy through each of the grade-level chapters, explicitly highlighting the curriculum developed as part of the Education and Environment Initiative (EEI), and identifying Science, Technology, and the Environment as one of seven key historical themes. The HSS Framework states, "The world's population could never have reached its current level of nearly 7.4 billion without the mastery of nature that human knowledge and skill have afforded....However, history shows that these systems might be more fragile than believed. Therefore the history of humankind's changing relationship to the natural and physical world cannot be ignored." The question then is, how do we empower teachers with the knowledge and tools to effectively integrate this vital instruction into the history-social science classroom?

Through a contract with the California Department of Education, the Sacramento County Office of Education (SCOE) is leading a statewide network of nearly 1000 teachers, administrators, and paraprofessionals with the singular goal of furthering implementation of the HSS Framework, called the Content, Literacy, Inquiry, and Citizenship Project, or CLIC. As part of this work, SCOE has partnered with the San Joaquin County Office of Education (SJCOE) to infuse environmental literacy into this professional learning.

SCOE is currently working to develop a compendium that pairs language from the Framework alongside suggestions for integrating environmental instruction, identifying the relevant environmental principles and concepts, and, where appropriate, making connections to the Next Generation Science Standards. In addition, the CLIC Project will launch a website this fall at californiahss.org to house resources for a number of framework-related topics, including environmental literacy. The end result will be a place for teachers to gain quality and concrete support for integrating environmental instruction in their classroom.

The compendium models the inquiry structure laid out in the HSS Framework. For example, in first grade students are asked the question, "What is our community like?" In this lesson students are asked to make a map of their neighborhood to improve their spatial awareness and use of symbols. A teacher implementing this lesson can integrate Principle I of the EP&Cs, "People Depend on Natural Systems," by tasking students with identifying key natural features within their community such as trees, parks, and waterways. The teacher will work with the students to develop appropriate symbols for these features, plot them on a map, and recognize key aspects of these natural systems. The teacher can guide student inquiry by asking questions such as: "Which way does the water in a waterway flow and why?"; "What do we find alongside the river?"; and, "Why is it important for a community to maintain the natural environment around and within it?" The teacher does not need to step outside of his usual lesson on community mapping in order to integrate environmental instruction, but can infuse it naturally into what he is already doing.

The same is true as students move from social studies to history instruction. In fifth grade, students are asked, "How did geography, climate, or proximity to water affect the lives of indigenous North Americans?" This prompt allows students to explore how one's teacher can separate students into small groups and provide each group with a profile of one indigenous region of North America. After students read and discuss the key features of their assigned region the teacher asks the students to predict what type of shelter, food, clothing, and tools would be needed to live there. Students assigned the Northwest Coast, for example, might predict the indigenous population would create shelters made from the trees in the area, warm clothing to withstand the cooler climate, and tools that would help them catch fish, their primary food source. This would contrast with that which indigenous peoples of the Plains region would create, where following the bison herd caused tribes to develop housing that could be moved easily and invent tools, such as the bow and arrow, that would help them hunt a moving target. By framing the lesson with the environmental factors, the teacher emphasizes the effect nature has on a society's development without creating an entirely new unit outside her normal scope and sequence.

Environmental literacy is a key theme in history-social science and one that readily integrates into existing instruction. In April, several dozen teachers in Sacramento participated in a run through of the fifth grade lesson described above. Working through the steps of the lesson, teachers saw application to their own instruction, with grade-level teams discussing how they could adapt the lesson's pedagogical structure to their own standards. For example, seventh grade teachers collaborated on ways to convert the lesson to an end-of-year project encompassing the several cultures covered in their curriculum, such as the Mayans, Persians, Japanese and others from 300-1400s C.E.. Once exposed to methods to integrate environmental instruction into history-social science, the relevance becomes clear. Through the CLIC Project and SCOE's partnership with SJCOE, teachers throughout California will gain the training and resources necessary to successfully integrate environmental literacy into K-12 HSS instruction.

Charley Gilmore works as a History-Social Science Curriculum Specialist for the Sacramento County Office of Education where he is leading the CLIC Project in Region 3. Prior to coming to SCOE, Charley spent ten years with Folsom-Cordova USD.



A Superintendent's Environmental **Literacy Journey**

by Anne E. Campbell, San Mateo County Superintendent of Schools, 2010 – 2018

My environmental literacy journey

began several years ago when I was invited to give words of welcome to the first annual San Mateo Environmental Literacy Collaborative (SMELC), offered by the San Mateo County Office of Education (SMCOE) in partnership with Ten Strands, a state leader in environmental literacy advocacy. At the time I had never heard the term "Environmental Literacy," but I was a new grandmother and as I listened to NPR while commuting back and forth to work, I found myself becoming increasingly concerned about the impact of climate change on our planet's future generations. Coincidentally, the new History-Social Science



Framework and the Next Generation Science Standards (NGSS) were on everyone's radar screens and California's Blueprint for Environmental Literacy had just been adopted. So, the time was right to learn more about Environmental Literacy!

On that sunny June morning, I walked into a room filled with classroom teachers embarking on a three-day professional development journey whose focus was developing environmental literacy units for classroom implementation that fall. All around the room's periphery a variety of environmental organizations were onhand to provide additional support and partnership opportunities to the participating teachers and their schools. As San Mateo County Superintendent, I offered words of welcome and quickly became intrigued by the mix of teachers who were spending part of their summer learning about Environmental Literacy. Many were elementary teachers who were exploring ways to integrate NGSS with History-Social Science and the Common Core by using environmental literacy as a unifying theme.

I returned to my office, but as the workshop progressed, I found myself drawn back several times a day to see how things were going. The energy in the room was kinetic – a special synergy was developing as everyone learned about Environmental Literacy from Dr. Gerald Lieberman, one of California's pre-eminent environmental literacy experts. Partnerships developed and curriculum emerged. The teachers were excited to return to their classrooms in the fall to launch their new units. They came back together the following January for a capstone event where they shared their experience with transforming their summer units into rich and engaging classroom experiences for their students.

Because SMELC generated such enthusiasm, energy, and engagement, I concluded our county office needed to do much more to expand



student and teacher access to environmental literacy curriculum and activities. Coincidentally, SMCOE was in the midst of developing a new strategic plan, so the timing was perfect for incorporating environmental literacy as a vital strategic goal. Although our initial efforts focused on the Next Generation Science Standards, we quickly realized that environmental literacy actually works best when it's integrated across the curriculum. History-Social Science and the Common Core are ripe with opportunities for such integration.

Our strategic plan also focused on equity. San Mateo County has 23 school districts, from well-financed basic aid districts with plentiful resources to financially-challenged districts who serve the county's most economically-challenged students. Through discussions with the Board of Education, SMCOE curriculum/instruction staff, and the Environmental Education Advisory Committee (composed of teachers, community representatives and environmental education experts), we concluded environmental literacy would provide a great way to help bridge the opportunity gaps existing in our county. We felt that teaching with the environment would increase engagement and learning and therefore support all San Mateo County students. To increase equity and to foster cross-content collaboration, we allocated funding to hire Ms. Andra Yeghoian, who came on board in the summer of 2017 as our first Environmental Literacy Coordinator. She quickly began growing environmental literacy in classrooms and campuses throughout San Mateo County.

During the 2017-18 school year, Ms. Yeghoian launched the SMCOE Environmental Literacy Initiative. This initiative provides teachers skills and for helping create the next generation of environmentally and schools with many ways to incorporate environmental literacy literate citizens. into history-social science classrooms. For example, the History-Social Science Framework's citizenship goals specify providing Anne Campbell served as the San Mateo County Superintendent of student access to opportunities for participating in civic discourse Schools from 2010 - 2018. Prior to that, she was the Superintendent and public service. Students at every grade level can learn how to of Belmont-Redwood Shores and Portola Valley School Districts advocate effectively for environmental change. They can promote and a middle school language arts/social studies teacher, counselor environmental sustainability at the school site and district levels by and principal.

developing environmentally-friendly strategies and advocating in front of school site councils, school boards, locally elected officials, and community groups.

Middle and high school students from Pescadero/La Honda School District successfully campaigned against single use plastic. They attended the International Marine Debris Conference, decided to work on banning single use plastic straws, developed an action plan, and ultimately convinced their school booster group and a local country club to eliminate plastic straws. Elementary students have developed strategies for reducing campus waste and learned how to protect and advocate for endangered species. Even preschoolers can begin to become environmentally literate citizens. Students at Belle Air Preschool in the San Bruno Park School District have learned about the importance of recycling. Together with their families they raised funds from recycling and then donated those funds to the local 4-H Club for animal care.

Such experiences demonstrate environmental literacy's great potential for assisting students as they learn to be active and engaged citizens who can make a difference in their local communities and on a larger scale. California's Blueprint for Environmental Literacy establishes the goal of helping students develop "the capacity to act individually and with others to support ecologically sound, economically prosperous, and equitable communities for present and future generations." California's history-social science classrooms provide the perfect milieu for developing these vital life

Seeking Classroom Solutions to Global Challenges

around issues related to climate change. In

2019, we developed a framework for what

that positions classrooms as a key driver

for finding solutions to some of the world's

science, history-social science instruction is

critical for teaching the complexities of the

issues that have led to climate change, and

civic engagement provides an important

outlet for channeling student action and

Overview of the SMC Framework

The San Mateo County Framework for

Solutionary Units of Study was developed

for use in the San Mateo Environmental

advocacy for a sustainable future.

for Solutionary Units of Study

Learning Collaborative

(SMELC), a professional

launched in San Mateo

development program first

County in the summer of

2015 by Jerry Lieberman,

Roundtable, and Karen

Education and Environment

Cowe, CEO of the NGO Ten

Teacher Fellowship programs

Strands. SMELC has since

developed into a series of

that build teacher capacity

for designing and delivering

learning experiences that are

student centered, problem-

founder of the State

greatest current problems. While climate

change is often targeted as a topic for

By: Andra Yeghoian - Environmental Literacy Coordinator at SMCOE

"Education is the most powerful weapon which you can use to change the world." - Nelson Mandela

This generation of students knows they will need to tackle climate change and the many daunting environmental sustainability and social justice problems that plague our future. Yet few teachers and schools have an effective strategy for preparing students to deal with these complex problems. As a cornerstone of our culture, our education system must be leveraged as an instrument for moving society beyond the status quo and toward a better and more sustainable existence.

Many students are already calling for change on their own. In the fall of 2018, frustrated vouth joined the International Youth Climate Movement. This movement involves thousands of students across the world who are demanding change from leaders who have often failed to take action to secure a viable and healthy future for all.



Photo credit: https://commons.wikimedia.org/wiki/File:San_ Francisco Youth Climate Strike - March 15, 2019 - 34.jpg

and project-based, solutions-oriented, and integrate real-world environmental and In San Mateo County, educators are social issues. working to incorporate classroom learning

The foundations for this initiative stems from Zoe Weil's groundbreaking book, The World Becomes What We Teach (2016) and the we call "Solutionary Teaching and Learning" Institute for Human Education (IHE), which she co-founded in 1996. The IHE defines solutionary teaching as, "a type of teaching that gives students a stake in their future and helps them develop vital skills in areas such as compassion and empathy; effective researching, writing, and public speaking; critical and systems thinking; creative problem-solving; and action-planning."

> The San Mateo County (SMC) Solutionary Unit of Study Framework combines the ideas of solutionary teaching and learning with the foundations of the PBLs (projectbased, problem-based, place-based, and phenomenon-based learning), inquiry based learning, and Systems Thinking.

SMC FRAMEWORK FOR SOLUTIONARY UNITS OF STUDY

UNIT OF STUDY ELEMENTS & FLOW



A core component of a Solutionary Unit of Study is the idea that the unit unfolds like a story. In this case, the problems build a sense of urgency in students that calls them to action (climax). They then design and implement their solution and have a sense of how they fit into the larger narrative that individual and collective action matters, and that humans have agency over creating a sustainable future.

Solutionary units call for teaching strategies that are student-centered, hands-on, and facilitate learning that is connected to the real world (i.e. case studies, design challenges, discussions, simulations, field experiences, etc.). In order for students to be successful in a solutionary unit, certain skills need to be leveraged, such as: critical thinking, collaboration, creativity, communication skills, emotional intelligence, working in high performing teams, design and engineering, etc. Because solutionary units of study are grounded in real-world problems and issues (i.e. climate change, environmental degradation, racism, poverty, homelessness, etc.), trauma informed instruction may be helpful for guiding students through these difficult topics.

For a full description of the SMC Solutionary Unit of Study Framework, and to learn more about the phases and teacher toolkit, visit: tinyurl.com/ SMCSolutionaryUnit.

Connections to History-Social Science

While the Framework for Solutionary Units of Study can be applied broadly to a number of problems, the SMELC Teacher Fellowship Program focuses on topics and issues related to local and global environmental

concerns such as clean energy, sustainable water, zero waste, biodiversity loss, land management, climate change, food systems, transportation, and more. Understanding how problems associated with these topics and issues have developed over time relate directly to core elements of any social science curriculum, for example: human settlement patterns, the agricultural and industrial revolutions, the rise and fall of empires, development of economic systems, intergovernmental relations, and others.

These topics and issues are at the intersection of scientific and social phenomenon and relate directly to many of the seven major themes in Appendix B of the History-Social Science Framework.

Another key connection to History-Social Science stems from how the practices of the Solutionary Unit of Study Framework echo the priorities of the History-Social Science Framework:

- Communicating conclusions.

Solutionary Units of Study provide students a meaningful opportunity to drive environmentally sustainable transformation through advocacy and action within their school community and beyond. We hope that the SMC Framework for Solutionary Units of Study piloted by teachers in San Mateo County will provide a roadmap for History-Social Science teachers across the state of California and beyond to respond to this call to action through high quality standards-based instruction.

• Developing questions and planning inquiries, • Applying disciplinary tools and concepts, • Evaluating sources and using evidence, and

"Humanity cannot wait for students to graduate and get started on doing things that contribute to a better world. We need to give students in every school, at every age, real agency and authentic opportunities to make a difference in this volatile, unpredictable, complex, and ambiguous world" (2015). – David B. Hawley, Chief Academic Officer of International Baccalaureate (IB)



Andra Yeghoian is the Environmental Literacy Coordinator at the San Mateo County Office of Education. Her passion centers around personal and organizational learning, and facilitating the *journey for others in becoming change makers* for a sustainable future. She currently provides visionary leadership in implementing a broad Environmental Literacy Initiative that calls for whole-school sustainability integration across all facets of an institution: campus and operations, curriculum and instruction, community engagement, and organizational culture.

With the generous support of the Leonardo DiCaprio Foundation, Ten Strands, and ss, the CHSSP hosted three teacher institutes this summer that the incorporated California's environmental principles. Read below for descriptions of these programs and recommended classroom resources.

The Environment in the Elementary Classroom

The History Project at CSU Dominguez-Hills hosted a three-day teacher institute modeling the integration of environmental principles into history-social science AND science instruction. Teachers had hands-on time with NGSS-aligned lessons about soil and soil conservation while applying information from children's books about Dr. George Washington Carver's traveling agricultural school and innovative farming in Honduras. Teachers also studied the history of the L.A. River and conducted an NGSS-aligned lesson on water filtration while reviewing the book A River Ran Wild. Teachers used collaboration time to consider how to integrate their history-social science and science material to reinforce learning in both subjects. At the end of the institute, teachers went home with multiple books of their choosing. Listed below are some of the titles, all elementary-aged books:

- A River Ran Wild, by Lynn Cherry
- Voices of the Dust Bowl, by Sherry Garland
- In the Garden with Dr. Carver, by Susan Grigsby
- The Good Garden: How One Family Went from Hunger to Having Enough, by Katie Smith Milway
- The Little House, by Virginia Lee Burton
- No Monkeys, No Chocolate, by Melissa Stewart and Allen Young
- Up in the Garden and Down in the Dirt, by Kate Messner









Landscapes in History: A Teaching with Primary Sources Workshop

The History and Civics Project at UC Santa Cruz and the History Project at UC Davis both hosted four-day institutes for K-12 teachers this summer. Teachers developed lessons using the inquiry model recommended in the HSS Framework and primary sources from the Library of Congress that prepare students to investigate U.S. and World history with an environmental lens. Each institute included an Indigenous California speaker who discussed native land use in the past and present; presentations from World and U.S. historians; teacher-led classroom activities; and a field trip to a local landscape. Teachers will convene again in the fall to share complete lessons and student work, and to continue the conversations about how to integrate environmental literacy into their history-social science classroom. As one 7th grade teacher remarked: "If we're teaching good history, the environment is not something additional, but integral to teaching about the past."



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