

CALIFORNIA ENVIRONMENTAL LITERACY INITIATIVE Supported by Ten Strands





A Teacher Call to Action for Environmental Literacy

CREATED BY THE

California Environmental Literacy Initiative's County Office of Education Innovation Hub



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About the Authors

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Introduction to the Teacher Call to Action

Youth around the world are voicing their sense of urgency to protect the natural systems upon which all of our lives depend. As educators, it is our responsibility to empower students with the knowledge, support, and skills they need to face their future. All of California's students deserve equitable access to these learning experiences both inside and outside of the classroom. We must work to shift our educational system to promote the importance of access to clean air and water, healthy food, and safe schools in every community. Our schools must be models of sustainable and inclusive practices, and our educational programs must be action- and solution-oriented.

This three-part publication developed for educators by educators can be used either as stand-alone documents or together as an entire series. These are meant to be used by teachers of all grades and subjects either individually, with coaches, in small groups, or as part of larger professional learning programs.

Part 1: The Imperatives for Environmental Literacy

I. WHAT IS ENVIRONMENTAL LITERACY?

California's education system formally defines environmental literacy via **Environmental Principles and Concepts (EP&Cs)** that were approved by the CA State Board of Education in 2004. The EP&Cs help students deeply understand the interdependence of natural systems and human social systems. They are integrated into a number of our frameworks, e.g., science, history-social science, health, arts, and math.

"Environmental literacy is a key component in our children's education. By meeting our school communities where they're at, environmental literacy integrates the diversity of California's people and places with engaging, impactful learning that begins early and continues throughout a student's life. Interacting with their local environments, students experience learning across core subjects in a way that supports academic achievement, equity of access, cultural relevance, and the health of our students and communities."

Tony Thurmond, State Superintendent of Public Instruction

Additionally, there are a number of related terms that fall under the umbrella of environmental literacy. A few of these terms are included in the table below.



TERM	DEFINITION
Environmental Literacy in California	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. Through lived experiences and education programs that include classroom-based lessons, experiential education, and outdoor learning, students will become environmentally literate, developing the knowledge, skills, and dispositions to analyze environmental issues and make informed decisions. – CA Blueprint for Environmental Literacy (2015)
Environmental Sustainability Education	Environmental and sustainability education (E&SE) is about healthy relationships between humans and the Earth's living systems. It includes the many and varied forms of education that help us appreciate and maintain the integrity of the biosphere and the transmission, growth, and application of environmental knowledge across all sectors of society. – University of Toronto
Environmental Education	Environmental education is a process that helps individuals, communities, and organizations learn more about the environment, develop skills to investigate their environment and to make intelligent, informed decisions about how they can help take care of it. – North American Association for Environmental Education
Environmental Justice & Equity	Environmental equity describes a country, or world, in which no single group or community faces disadvantages in dealing with environmental hazards, disasters, or pollution. Therefore, environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. – U.S. Environmental Protection Agency
Climate Literacy	Climate literacy is an understanding of human impacts on climate and the impacts of climate on human systems. People are able to make informed and responsible decisions with regard to actions that will affect the climate. -The Essential Principles of Climate Literacy by NOAA
Outdoor Learning and Outdoor Education	Outdoor learning is a broad term that includes discovery, experimentation, learning about and connecting to the natural world, and engaging in adventure activities. This learning can happen on school campuses, in communities, or farther away in natural settings. The National Outdoor Learning Initiative provides a library of ideas and resources to accomplish this. Outdoor Education involves the transformation of knowledge, skills, attitudes, and behaviors through direct engagement with the outdoor environment for the personal and social benefit of individuals, families, society, and the planet. – Institute for Outdoor Learning
Solutionary Teaching and Learning	Solutionary teaching and learning involves the process of students analyzing "wicked" problems, identifying the inhumane and unsustainable systems that perpetuate them, and then developing solutions that do the most good and least harm for all. – Institute for Humane Education



II. WHY DO WE NEED ENVIRONMENTAL LITERACY?

Teachers are called to action on environmental literacy by a number of imperatives: a moral imperative; standards, frameworks, and curriculum requirements; connections to the California Multi-Tiered System of Support (CA-MTSS); and shifts in college and career readiness toward environmental sustainability. Perhaps most importantly, we must act because climate-related disasters, such as school closures due to wildfire, are increasingly disruptive to learning.

The Moral Imperative

Environmental degradation and the climate crisis disproportionately affect the health, economic opportunity, and fundamental rights of children and youth—especially Black and Latinx students and those from low-income families. This makes taking environmental action a generational justice and equity issue. Educators and school boards are uniquely positioned to address environmental injustices in their classrooms and in their communities as they are responsible for the well-being and education of children and youth. Furthermore, they are charged with preparing future leaders and decision-makers who are stepping into an increasingly volatile, uncertain, complex, and ambiguous world.

The Curricular Imperative

Over the past 20 years, there has been an increasing number of policies and guidelines for integrating environmental literacy into curriculum and instruction at all grade levels, and in multiple subject areas. California has created a supportive context for environmental literacy by incrementally infusing **California's Environmental Principles & Concepts** into its various curriculum frameworks. Currently, not everyone has access to environment-based learning opportunities. It

"I don't know how to balance out my emotions around the climate crisis and this chaotic unknown future with the everyday stress of homework and daily life. I really wish we were better prepared at school for understanding climate change and developing solutions for a more sustainable future. It is so hard to really know what is going on when none of our teachers are talking about it."

10th Grade Student, Mills High School, California

is critical that classroom teachers are a part of the process of providing every student equitable access to experiences that lead to environmental literacy. Highlights of California's environmental literacy policies are below.

CALIFORNIA ENVIRONMENTAL LITERACY INITIATIVE

2003 - 2010

Assembly Bill (AB) 1548 called for the creation of Environmental Principles and Concepts (EP&Cs) and a model curriculum designed to demonstrate how to integrate the EP&Cs into standards-based instruction in science and history-social science. The EP&Cs illustrate the interdependence of human social systems and natural systems.

2015

California's Blueprint for Environmental Literacy laid out a vision of expanding environmental literacy based on the guiding principles of:

- 1. Equity of Access;
- 2. Sustainability and Scalability of Systems;
- 3. Collaborative Solutions;
- 4. Commitment to Quality;
- 5. Cultural Relevance and Competence; and
- 6. Variety of Learning Experiences.

2016

The EP&Cs were integrated into California's Science Framework and the California History-Social Science Framework.

2016 - Present

California launched the California Environmental Literacy Initiative (CAELI), a statewide publicprivate partnership to advocate for and implement the ideas in the state's Blueprint for Environmental Literacy. CAELI has a three-pronged theory of action focused on continuing to provide a supportive context for environmental literacy in the state; incrementally infusing environmental literacy into initiatives focused on curriculum and instruction, professional learning, and assessment; and cultivating and highlighting leading-edge exemplars at different levels of the system of support for education—with a particular emphasis on school districts.

2018

Senate Bill (SB) 720 further codified the EP&Cs into California's Education Code, requiring their integration into frameworks, and instructional materials adoption criteria. It also added climate change and environmental justice to the list of topics to cover.

2019 - 2021

The EP&Cs were integrated into the California Health Framework, the Arts Education Framework, and drafts of the Math Framework.

The Student-Centered Instruction Imperative Connections to CA MTSS

California's Multi-Tiered System of Support (CA MTSS) is a framework that aligns academic, behavioral, and social-emotional learning to support the whole child. Environmental literacy provides researchbased practices that align with the core tenets of CA MTSS by supporting ALL students as a part of core instruction in all three domains. CA MTSS is a coordinated system that includes the supports such as Universal Design for Learning (UDL) and Culturally and Linguistically Responsive Teaching. In considering instruction for the whole child, the physical world that children live in needs to be considered as part of their context. School grounds have the potential to be an inclusive learning environment for all children. Learning in and about the environment applied to all students in the CA MTSS system allows for relevant learning experiences and culturally sustaining instruction for students. Outdoor learning can be an intervention strategy at moments when students need to manage their emotions. More information about this alignment can be found in Educating Every California Student In, About, and For the Environment: A Call to Action for County, District, and Educational Leaders.

The College and Career Readiness Imperative



Shifts in standards have focused on helping students to become college and career ready, and this mission has remained a core objective of the K-12 educational system. In the past decade, the existential threat of environmental degradation and the climate crisis has ushered in an era of transformation toward environmental sustainability in college and career pathways. The business case for sustainability has created a shift in the economy toward green operations and practices. This **green economy** effect is taking place in nearly every sector, which means students in the K-12 system today need environmental literacy built into their education to better prepare them for future careers. Furthermore, it is critical that green Career Technical Education (CTE) be further integrated into K-12 curricular offerings at every grade level.

Additionally, leaders in colleges and universities have embraced comprehensive sustainability initiatives in their institutions, with the **University** of California (UC) System and the California State University (CSU) System leading the way. The Environmental and Climate Change Literacy Projects (ECCLPs), a collaborative effort between UC and CSU, highlights the need to advance environmental literacy education for pre-service and in-service teachers and through curriculum development in K–12, higher education, and community partnerships.

The Emergency Preparedness and Disaster Imperative

The impact of climate change on California communities, such as heat waves, drought, fire, floods, and sea-level rise, is intensifying both in magnitude and frequency, which means today's students are facing a world that includes climaterelated disasters on a scale unimaginable to past generations. These disasters are disruptive to all aspects of school, from facilities and operations, to curriculum and instruction, to mental health and well-being. School facilities are unprepared for climate change in many ways, for example: lacking air conditioning on high-heat days, playgrounds without tree canopy and shade, air filtration systems unprepared for multiple days of wildfire smoke, systems unprepared for public power shut-off days, and insufficient understanding of vulnerability to flooding and sea-level rise. **Research** shows that all of these issues disrupt learning in the short-term and sometimes in the long-term, such as the effects of flood damage. Additionally, schools are unprepared for how these ongoing disasters impact student and staff mental health, and the challenges that this collective climate trauma has on the ability to teach and learn. The content we teach students, as well as the way we teach students, needs to undergo a significant transition in order to become more climate resilient.

III. WHAT DOES RESEARCH SAY ABOUT ENVIRONMENTAL LITERACY?

Public Opinion

The Yale program on Climate Communication has been surveying public opinion on climate change, and its **Global Warming's Six Americas report** in 2020 shows that nearly 60% of Americans are now "alarmed" or "concerned" about climate change. Furthermore, the doubtful and dismissive segments have both decreased since 2014. A **survey conducted by NPR** in 2019 shows the vast majority of parents





(over 80%) and teachers (over 86%) believe that climate change and environmental issues should be taught in schools. Furthermore, in September 2021, a global **study** was released that documented how when youth are surveyed about climate change, three-quarters said they thought the future was frightening. Over half (56%) say they think humanity is doomed. Many of those questioned feel betrayed, ignored, and abandoned by politicians and adults. The authors of the study say the young are confused by governments' [and other decision makers] failure to act. They say environmental fears are "profoundly affecting huge numbers of young people."

Environmental Education Research

There is also a significant amount of research that demonstrates the impact and value of environmental education. One important project, "eeWORKS" was a partnership with the North American Association for Environmental Education (NAAEE), Stanford University, University of California, Davis, and University of Florida. Studies in the review demonstrated that environmental education has led to a number of positive impacts, from improving academic performance, to enhancing critical thinking skills, to developing personal growth and life-building skills, including confidence, autonomy, and leadership. In addition, a number of the studies showed that environmental education increased civic engagement and positive environmental behaviors. The **Children and Nature Network** maintains a **Research Library** that contains a searchable database of studies organized by population, method, outcomes, barriers, and themes.

Reflection and Discussion Questions

Consider the following questions to identify next steps:

- 1. Which of these imperatives resonates with you most, given the needs, challenges, and assets of your students and their communities?
- 2. How far along are you in your journey toward integrating environmental literacy into your teaching practice—beginner, intermediate, advanced, ready to lead others?
- 3. How might you be able to connect environmental literacy to other change initiatives taking place in your school equity, social-emotional learning, community schools? How might you advocate for additional planning time to make this transformation?
- 4. What colleagues might be interested in joining you on this journey? Who are your allies, even if they are outside your department or grade level? Can you build a critical mass of support to help integrate environmental literacy into curriculum and instruction in your department or school? How can our familiarity with meeting virtually help?
- 5. What community-based partners are eager to help you? Are there regional or county programs, networks, or communities of practice you could join? Can your county office of education help?



PHOTO CREDIT | San Mateo County Office of Education

LAND. **Reflection and Discussion Questions** As you look at the case studies below, some questions to consider are:

Part 2: Voices from the Field

Introduction

This section is designed to help you engage with stories from the field, showing how teachers are responding to this imperative and integrating environmental literacy into their classrooms. These case studies demonstrate that there are many varied entry points to bring environmental literacy into curriculum and instruction and that teachers of all backgrounds and experience levels can be successful. The examples also show that environmental literacy can be achieved at every grade level and with every subject area.

- 1. Where do you see your teaching or students in these case studies?
- 2. What local phenomena or action steps might be culturally relevant to your students?
- 3. How did these case studies bring in community-based partners or others in the community?
- 4. How might your students give back to the classroom, school, or community as seen in these case studies?
- 5. If you were to create a case study of your work, what unique characteristics of your students, school, or community would you want to highlight?



CASE STUDIES: Solutionary Teacher Fellowships

For the past seven years, San Mateo County Office of Education has hosted a series of teacher fellowships that build teacher capacity for designing and delivering learning experiences that are student-centered, project-based, solutions-oriented, and integrate real-world environmental justice issues. See stories from San Mateo County Teacher Changemakers as well as some of their case studies below:

GRADE BAND	DETAILS AND LINKS
K-2	 Kindergarten from Portola Valley School District: Kimber Trefero's Interview (including video) and case studies Energy and Food Kindergarten from San Mateo and Foster City School District: Jadelyn Chang's Interview (including video) and case study Energy 2nd Grade from Redwood City School District: Sarah Hartman's Interview (including video) and case studies Land Ecosystems and Transportation
3-5	 3rd Grade Librarian from Hillsborough School District: Sally James' interview (including video) case study Waste 4th Grade from San Mateo-Foster City: Jennifer Young's Interview (including video) and case study Energy 4th and 5th Grade Science: Sonia Myers' Teacher Changemaker Interview (including video) and case study Clean Energy
6-8	 Middle School Science from San Carlos School District: Charu Gulati's Interview (including video) and case study Land Based Ecosystem 7th Grade Science from South San Francisco USD: Corinna Low's Interview (including video) and Case Studies Energy and Food 8th Grade History from Ravenswood School District: Joshua Morse's case study Waste
9-12	 9-12th Grade from County Court School "Camp Kemp": Beth Kassler's Interview (including video) and case studies Energy and Food 12th Grade English from South San Francisco Unified School District: Matthew Clemens' Interview (including video) and case study Food 9-12th Grade Geography and History from South San Francisco Unified School District: Rhonda Clements' Interview (including video) 9-12th Grade from San Mateo Union High School District: Heather Johnson's case study Land Based Ecosystems



CASE STUDIES: Citizen and Community Science

Since 2013, the **UC Davis Center for Community and Citizen Science** (part of the UC Davis School of Education) has been studying **Youth-focused Citizen and Community Science** (YCCS) in a variety of contexts to generate and share knowledge of when and how YCCS works best for learning, identity, and agency. Case studies from the YCCS focus on three key practices for youth and educators:

- 1. Deepening understanding of environmental science content and practice.
- 2. Identifying an area of their own expertise in environmental science.
- 3. Using experiences in community and citizen science (CCS) as a foundation for change.

GRADE BAND	DETAILS AND LINKS		
K-2	School Garden: Lost Ladybug Project Students in 3rd grade participate in the Lost Ladybug Project, working in their classroom, school garden, and science lab to: (1) collect and identify ladybug species on their school campus in Northern California; and (2) modify their school garden to attract more ladybugs.		
3-5	Bird Monitoring: Community Engagement and Advocacy This year-long bird monitoring project engages a class of 4th graders in the collection, analysis, and submission of local bird species data. In so doing, the project connects them to their local government and to a global dataset and community of contributors.		
6-8	Hillview Creek Project: East Bay Academy for Young Scientists Creek Monitoring In the Hillview Creek project, organized by the East Bay Academy for Young Scientists (EBAYS), students meet daily during the summer to monitor water quality at a local urban creek.		
9-12	Museum Internship: Crab Monitoring As part of a multi-year museum internship, high school interns meet weekly during the summer at their local beach to monitor the abundance and distribution of sand crabs.		



Aerial Mapping: Youth Participatory Action Research Supported by CCS Engagement

9–12 High school students at a rural school use low-cost aerial mapping tools to answer questions about their school and the surrounding area to develop questions, identify research sites, and assemble balloon-mounted cameras using open-source plans available at the Public Laboratory for Open Technology and Science (Public Lab).

In the Field and Online: Tracking Sage Grouse

This sage-grouse monitoring project engages Eastern Sierra high school-aged youth to collect and analyze camera trap data documenting greater sage-grouse breeding season behavior.

Career and Technical Education

Summer Internship: The Monitoring Milkweed-Monarch Interactions for Learning and Conservation Project

The Monitoring Milkweed-Monarch Interactions for Learning and Conservation Project is a long-term ecological monitoring research project run out of UC Davis.



ADDITIONAL VOICES FROM THE FIELD

For more first-hand accounts from educators and partners across California, check out these blogs:

- California Environmental Literacy Initiative's Stories
- Ten Strands News
- Green Guardians Blog

PHOTO CREDIT | Crystal Starr Howe



Part 3: Roadmap for Environmental Literacy Instruction

Introduction

Every student deserves access to instruction that builds their environmental literacy. This roadmap is a way for any teacher to get started or to deepen their integration of environmental literacy into their classrooms no matter the grade or subject. It includes resources for teachers to evolve their practice along with reflection questions for use individually or in collaboration with colleagues.

STEP 1: IDENTIFY YOUR COMFORT ZONE

Integrating environmental literacy or environmental sustainability education (ESE) can be done through a variety of pathways that range from enhancing the education experience to empowering students through knowledge-to-action environmental education opportunities. This continuum of environmental literacy integration (below) shows that there is no right or wrong entry point for teachers to get started, just levels of depth, knowledge, and skills.

The degree to which a teacher integrates environmental literacy into their curriculum will often depend on a number of variables, for example: subject area, school culture, grading policies, instructional materials, etc. For some teachers, these variables will be viewed more as constraints, but in other situations, they might be opportunities, in particular when these variables already integrate or align with environmental sustainability issues in a school or community.

Below is an example of how the San Mateo County Office of Education describes a range of approaches to environmental literacy that it supports through its **Environmental Solutionary Teacher Fellowship.**



Environmental Literacy Integration Continuum

Inspired by the SAMR Model, which was popularized by Dr. Ruben Puentedura



Step 1: Reflection and Discussion Questions

- 1. Where do you self-identify on the Environmental Literacy Integration Continuum?
- 2. What are some of the constraints and opportunities in your current role?
- 3. What are your goals regarding integrating Environmental Literacy into your curriculum or programs?

STEP 2: IDENTIFY CONNECTIONS AND GET INSPIRED

Another important consideration for teachers is determining which environmental topics and issues are most relevant and important to their students. There are a number of ways for teachers to make these decisions, including: subject area and grade level, content standards and frameworks (see example **California Curriculum Framework Connections**), adopted instructional materials, local environmental phenomena, or valuable communitybased partner relationships.

An essential resource is **California's Environmental Principles and Concepts** (EP&Cs). The EP&Cs highlight the interdependence between human social systems and natural systems. These big environment-based ideas are intended to be integrated into standards-based instruction and drive student inquiry across all disciplines.

SB 720 delineates 14 environmental topics that students are expected to explore through the EP&Cs. These might serve as an entry point for lessons and units: air, climate change, energy, environmental justice, environmental sustainability, fish and wildlife resources, forestry, integrated pest management, oceans, pollution prevention, public health and the environment, resource conservation, waste reduction and recycling, toxics and hazardous waste, and water.

California's EP&Cs have been integrated into California's curriculum frameworks in **Science**, **History-Social Science**, **Health**, and **Arts**. They will also be integrated into the upcoming Mathematics and English Language Arts & English Language Development frameworks. Each framework provides guidance and vignettes that illustrate how environmental literacy can be integrated into standards-based instruction. The table below highlights how many of the frameworks outline pedagogical shifts toward instructional approaches focused on student inquiry and action. Environmental phenomena and issues can provide the perfect context for this type of teaching and learning.



California's Environmental Principles and Concepts

California Content Frameworks Instructional Approaches to Support Environmental Literacy

Adapted from Dr. Gerald Lieberman, State Education and Environment Roundtable

INSTRUCTIONAL APPROACH	STUDENT INQUIRY	STUDENT ACTION
	Students investigate the communities where they live.	Students collaborate to resolve problems and issues in their local communities.
SCIENCE FRAMEWORK	Phenomenon-based science inquiries based on the interests and needs of students and their communities.	Students engage in exploring societal and environmental challenges and contribute to designing and implementing solutions to these problems.
HISTORY- SOCIAL SCIENCE FRAMEWORK	Students develop inquiry-based critical thinking skills to improve their ability to make reasoned decisions based on evidence. Students explore their local community to make contact with the past and with the people whose activities have left their mark behind on the land.	Promote civic engagement and deepen student understanding and the rights and responsibilities of citizenship. Supports students taking informed action on issues after applying lenses of geography, history, economics, and political science to analyze sources.
HEALTH FRAMEWORK	Analyze internal and external influences that affect health in students' communities, e.g., environmental justice issues.	Students use what they have learned to enhance individual and community health and resolve local health and environmental justice problems.

Another resource is the set of **17** Sustainable Development Goals (

Sustainable Development Goals (SDGs). These goals were developed and adopted by world leaders at the UN Sustainable Development Summit in September 2015. The goals call on all countries to mobilize efforts over the next 15 years to end all forms of poverty, fight inequalities, tackle climate change, and ensure that no one is left behind.

There are a wide variety of resources to support teachers with integrating environmental literacy. These resources have been developed by supplemental curriculum partners and include model units, lessons, and activities. To see a list of curriculum partners visit the **Resource Center for Sustainable and Climate Resilient Schools Changemakers**.



United Nations Sustainable Development Goals



Step 2: Reflection and Discussion Questions

- 1. In general, what topics and themes are you (and your students) passionate about teaching (and learning)?
- 2. How do you see issues relevant to your community represented in the environmental topics and content frameworks?
- 3. Do any of the curriculum resources connect to a unit you teach or an ecosystem in your community?
- 4. How can you select or adapt curriculum to allow for student choice, voice, and empowerment?
- 5. How might principles and practices related to culturally sustaining pedagogy show up in the topics selected, as well as how students learn about the content?

STEP 3: IDENTIFY PARTNERSHIPS

Environmental literacy extends beyond the classroom; there are partners in every community for teachers and students to work with. High-quality environmental education experiences can include field trips (in-person and virtual), guest speakers, residential outdoor education, and other similar activities. Partners in your area may include:

- Non-profit Environmental Education Organizations
- Museums, Aquariums, and Zoos
- Residential Outdoor Science Schools
- Municipal, County, and District Natural Resource Management Agencies
- Open Spaces, Parks, and Recreation
- Youth Development and Expanded Learning Programs
- Higher Education
- Industry and Business
- Environmental Justice Community Organizers

To find more resources for identifying local community-based partners, visit the **CAELI Community Based Partner Hub**. This is an online platform for connecting the K-12 school system with communitybased partners and their grade-level programs. Through this platform, county offices of education and other backbone agencies establish network microsites that help identify and promote communitybased partners and programs. Teachers visit the platform and network microsites to identify and connect with partners and programs that meet their needs based on location, environmental topics covered,

standards addressed, and more.

The California Regional Environmental Education Community (CREEC) Network is a program of the California Department of Education. The **CREEC Network** website for each of the 11 regions provides professional learning opportunities and resources to educators; it also fosters communications among schools and organizations interested in supporting the environmental literacy of California's teachers and students.

Step 3: Reflection and Discussion Questions

- 1. Which community-based partners have you worked with in your region?
- 2. How can you expand your relationship with the community-based partners in your region?
- 3. What are some common goals that you share with community partners?







STEP 4: IDENTIFY TRAUMA INFORMED PRACTICES AND SOCIAL AND EMOTIONAL LEARNING

When integrating environmental topics and issues, it is critical that educators understand, recognize, and respond to the impact of content and situations that might cause **trauma for students**. Educators can anticipate this and plan activities that will reduce **trauma** and support social-emotional learning for students. Family, community, and global trauma (such as a pandemic or climate change) may impact student responses to these topics. It is important to approach these topics with a focus on **building resilience**. To explore how environmental issues and climate change connect to social and emotional health, and how to develop resilient practices in your classroom, review the following **Environmental Literacy and Trauma** guide.

Sample strategies include mindfulness practices, interacting with nature, journaling and reflection, and processing emotions through visual and performing arts. Grow Outside's **SEL Competencies - Outdoor Environment Considerations** connects outdoor learning with **California's Social-Emotional Learning** frameworks.

STEP 5: IDENTIFY THE CAMPUS AS A LABORATORY FOR LEARNING

Step 4: Reflection and Discussion Questions

- 1. How might environmental literacy connect with social-emotional learning initiatives at your school?
- 2. How can you support students in discussing and planning for action with regard to community-level environmental topics and systemic issues that have led to environmental threats and injustices?
- 3. What tools do you already have or need to support the development of student agency and resilience?

Perhaps most importantly, these programs foster student agency so students do not feel overwhelmed with the current issues. California's **State Seal of Civic Engagement** recognizes students for completing projects that address real-world problems and require students to identify and inquire into civic needs or problems, consider varied responses, take action, and reflect on their efforts.

Global issues such as climate change and environmental degradation can often be best understood through a local, place-based lens. It is recommended that educators integrate the school's campus—grounds, facilities, and operations—into lessons and units about the environment. This brings the campus to life as a real-world setting for learning and allows students to explore everyday systems that play an important role in student health and well-being. Research shows that the specific location of learning is important and can produce more engaged students (**Place-Based Education David Sobel – 2004**).



One critical asset for using the campus as a laboratory for learning is having a living schoolyard with outdoor classrooms. The National Outdoor **Learning Initiative** has a comprehensive library of free resources for teachers and administrators focused on designing outdoors spaces, teaching and learning in them, and student health and well-being. Students can participate in instruction across the curricula in outdoor spaces. This might include literature circles, authentic tasks in mathematics, management, and history of the land, an area for free expression, or an exploration of local phenomena. Living schoolyards are also an environmental justice strategy, as they support environmental sustainability and climate mitigation by creating ecologically beneficial spaces, and they help with climate resiliency efforts related to urban heat island effect, stormwater, etc. The U.S. Green Building Council's Green Strides website provides resources integrating buildings and school grounds into curriculum.

California's **Green Ribbon Schools** award program provides a framework for school and district recognition based on its interrelated criteria:

Pillar I: Reduce environmental impact and costs Pillar II: Improve the health and wellness of schools, students, and staff

Pillar III: Provide effective environmental education, which teaches many disciplines, and is especially good at effectively incorporating STEM, civic skills, and green career pathways

Step 5: Reflection and Discussion Questions

- 1. What spaces does your school
 - campus or neighborhood have that you could use for instruction?
- 2. What is the history of your school site? How can exploring community history with your students infuse cultural relevance and culturally sustaining pedagogy into your curriculum?
- 3. How have human and natural systems evolved over time? What evidence can you find through observation and mapping?
- 4. What relevant phenomena might students observe on campus?
- 5. How might students take action in a positive way on campus?

Environmental Literacy Curriculum Connections

from the Lawrence Hall of Science identifies Next Generation Science Standards curriculum units from FOSS, Amplify, and others, that emphasize environmental concepts and add outdoor learning experiences to classroom routines.



STEP 6: IDENTIFY WAYS TO GET INVOLVED BEYOND THE CLASSROOM

Integrating environmental topics and issues into curriculum and instruction usually involves a certain level of changemaking. This might include supporting co-curricular activities, such as environmental or green clubs, garden clubs, service-learning projects, or leading local participation in national or international movements. It also might include a pathway to awards that recognize the efforts of students and schools alike.



Examples of Co-curricular Activities

Eco Calendar: This **Eco Calendar** provides a sample of different times of year when environmental and social justice efforts can be included into ongoing awareness efforts and activities.

Garden Clubs: The UC Davis Center for Community and Citizen Science runs a program called the **Citizen Science on the Student Farm** which connects school gardens and student interns.



Step 6: Reflection and Discussion Questions

- How are you currently engaged in environmental literacy activities beyond the classroom?
- 2. How might working toward the common goals for an award support the growth of environmental literacy in your community?
- 3. How might you leverage your school or community-based partners to support co-curricular activities?

Examples of Awards

The **California Green Ribbon Schools** recognition program awards schools, districts, and institutes of higher education for reduced environmental impacts and costs, health and wellness for students and staff (including outdoor learning), and interdisciplinary, civically engaged curricula.

The **California State Seal of Civic Engagement** is awarded to students who demonstrate excellence in civics education, an understanding of the United States and California Constitutions, and the democratic system of government. Students must document how they lead or participate in civic engagement projects in their schools or communities, as well as reflect on their learning and impact.

ADDITIONAL INFORMATION AND SUPPORT

- California Associations of Science Educators (CASE)
- California Environmental Literacy Initiative
- History-Social Science CLIC Project
- North American Association of Environmental Education
- UC California Naturalist Program
- Contact your local County Office of Education