



History and Development of the Education and the Environment Initiative (EEI) Curriculum

In 2003, then-California Assemblywoman Fran Pavley authored legislation that required the state to develop an environment-based curriculum to be offered to all California public schools. The bill (AB 1548 of 2003) was sponsored by Heal the Bay, a nonprofit organization, and was signed into law by then-Governor Gray Davis. The program it set in motion came to be known as the Education and the Environment Initiative (EEI).

Key Requirements of the EEI Law

- Develop a set of statewide Environmental Principles and Concepts (EP&C)
- Develop a K-12 model curriculum (later known as the EEI Curriculum) aligned to the EP&C and California's academic content standards
- Incorporate the EP&C into future textbook adoption criteria
- State Board of Education approval of the EEI Curriculum
- Coordination and collaboration between the California Environmental Protection Agency and the California Department of Education, the State Board of Education, and the California Natural Resources Agency
- Post the EEI Curriculum to the Internet for free use by California educators

Partnerships

CalEPA and the Office of Education and the Environment (OEE) managed development of the EEI Curriculum in close partnership and collaboration with the California Department of Education (CDE), the Natural Resources Agency and many, many others who share a common interest in environmental literacy and a commitment to youth education. Among the non-state organizations that played an important role in curriculum development were:

- **Heal the Bay** – a nonprofit organization based in Southern California, who sponsored the EEI-enabling legislation, and provided ongoing support throughout curriculum development and into implementation.

- **The National Geographic Society** – developed unique EEI maps for the curriculum and provided valuable assistance with photos, videos, and curriculum design.
- **State Education and Environment Roundtable (SEER)** – principal consultant, Dr. Gerald Lieberman, and his SEER team coordinated the many writers, editors, graphic designers, photo researchers, and others critical to EEI Curriculum development.
- **The David and Lucile Packard Foundation** – provided funding for critical strategic planning to identify the EEI's goals and objectives.

In addition, a diverse array of universities, businesses, environmental organizations, nonprofit organizations, and government agencies contributed to the development of the EP&C as members of a volunteer advisory group that provided periodic guidance on specific topics throughout the years of development.

Key supporters helped implement the EEI Curriculum by providing curriculum enhancements, outreach, teacher training, evaluation, and distribution. These key supporters include:

- Annenberg Foundation
- BagSpeak
- ecodads
- Fagen, Friedman & Fulfroost LLP
- First Republic Bank
- Gen7/American Modular Systems
- Green Technology
- Dr. Charles Munger, Jr.
- Pisces Foundation
- S.D. Bechtel, Jr. Foundation
- Sempra Energy Foundation
- SESLOC Federal Credit Union
- State Farm
- Ten Strands
- Thomas Properties Group
- Wells Fargo
- Whole Food Market – Sacramento

Development of the Environmental Principles and Concepts

The EEI legislation directed CalEPA to develop a set of overarching environmental principles and concepts that would complement (but not duplicate or conflict with) existing academic content standards. Officially approved by the State Board of Education, **California's Environmental Principles and Concepts (EP&C)** form the backbone of the EEI Curriculum.

Legislation further required that the EP&C include concepts relating to the following topics:

1. Air
2. Energy
3. Environmental Justice

4. Environmental Sustainability
5. Fish & Wildlife Resources
6. Forestry
7. Integrated Pest Management
8. Integrated Waste Management
9. Oceans
10. Pollution Prevention
11. Public Health & the Environment
12. Resource Conservation & Recycling
13. Toxics & Hazardous Waste
14. Water

NOTE - Climate Change was not included in the original legislation, but due to the critical importance of this environmental issue, was subsequently added as the 15th environmental topic to be included in the EEI Curriculum.

Per the law, CalEPA developed the EP&C in cooperation with the Natural Resources Agency, the State Department of Education, and the State Board of Education. CalEPA followed a collaborative and transparent process to ensure the participation of a wide range of interested parties through technical working groups (TWG). Initially, the EEI Planning Team collected, and reviewed examples of environmental principles from a wide variety of sources to identify common themes, identifying more than 100 "Overarching Environmental Principles" to use as an initial framework for developing the EP&C. Through a first round of TWG meetings, a diverse group of stakeholders prioritized a set of draft principles that addressed the 15 environmental topics, and aligned them to the overarching principles initially identified. The partners worked with over 100 representatives of state and federal agencies, universities, non-governmental organizations, and educators via more TWG meetings, resulting in the highest-priority concepts that connected with each topic-specific environmental principle. A broad online review of the draft EP&C followed, with field reviews and a series of school district focus groups. In 2005, the EP&C were approved by the Secretary for Environmental Protection.

The EP&C examine the interactions and interdependence of human societies and natural systems. They are the foundation of the environmental content taught in the EEI Curriculum and they "spiral" throughout the curriculum, from kindergarten to twelfth grade, leading students to an ever deeper and more complex understanding of the relationship between humans and the environment.

To further ensure that all California students become environmentally literate, the law requires the State Board of Education to incorporate the EP&C in future textbook adoptions.

EEI Curriculum and State Standards Alignment

The Model Curriculum Plan and Alignment to Academic Standards

Following approval of the EP&C, CalEPA embarked on developing what was termed in legislation a "model Curriculum" for teaching the EP&C to mastery, now known as the EEI Curriculum. The effort started with the legislatively required action of aligning the EP&C to

California's academic content standards. This meant determining which standards naturally lent themselves to be well-taught and mastered through the context of any one or more EP&C. Since mastering the academic content standards in grades K-12 is the primary goal of the State Board of Education and California Department of Education, the purpose of this alignment mapping was to ensure that the EEI Curriculum would fit with California's already ambitious academic efforts. Through this mapping, the EEI planning team identified those Science and History/Social Science standards that could be taught through an environmental context to help students master and deepen their understanding of the standards.

Following the standards alignment, the EEI leadership created a [Model Curriculum Plan \(MCP\)](#) (PDF) that outlined the proposed methodology, scope, and sequence for the EEI Curriculum pursuant to the law's requirements. The MCP detailed the design to develop an EEI Curriculum that provides kindergarten through twelfth grade teachers, schools, and districts with standards-based curricular materials, one that would be approved by the State Board of Education to teach California's Environmental Principles and Concepts (EP&C). The MCP incorporates a scope and sequence for teaching the EP&C through a learning continuum from kindergarten through twelfth grade, with clearly defined learning objectives aligned to California's academic content standards, targeted at helping students master those standards at each grade level.

During MCP development, input was solicited from state agencies, education organizations, business groups, universities, and environmental organizations. In addition, an Educator Needs Assessment was sent to 10,000 teachers, and numerous focus group meetings and discussion sessions were conducted to gather suggested design elements for the EEI Curriculum. The Assessment results indicated that teachers would indeed require the EEI Curriculum to address grade and discipline-specific standards if it was going to get taught during regular class time as intended. In response, the EEI Curriculum was designed to fit with teachers' existing lesson plans without increasing instructional content. Each EEI Curriculum unit may stand alone or be used in combination with other EEI Curriculum units.

The MCP specified that the EEI Curriculum would take advantage of existing instructional materials adopted by the State Board of Education, as well as the educational resources offered by the providers of California's diverse environmental curricula and education programs. The California Environmental Education Interagency Network (CEEIN) assisted the EEI Planning Team by soliciting both state and national providers of environmental education materials to collect websites related to grade-level coverage, connections to academic content standards, field-testing efforts, and external reviews of existing environmental education materials.

The EEI Planning Team also gathered information about program attributes that teachers and administrators regard as critical to implementing the ultimate EEI Curriculum in districts, schools, and individual classrooms. This input revealed that success would depend on:

- Clear connections to the State's efforts to improve student learning through standards-based instruction.
- Ease of implementation by teachers who themselves have varying levels of knowledge and expertise related to the environment.

- Seamless incorporation into instructional plans in order to avoid placing extra burdens on teachers.
- Connections to State-adopted instructional materials.
- Relevance to the State's assessment practices.
- Cost-effectiveness of implementation.

Custom Learning Objectives

The EEI Curriculum integrates California's existing Science and History/Social Science academic content standards and the Environmental Principles & Concepts (EP&C). These two elements combined are the basis for EEI's custom Learning Objectives. Developed by the EEI Planning team, the Learning Objectives define the essential knowledge and skills needed to teach each academic content standard through the context of an EP&C. The result is that when the Learning Objectives are taught, the academic content standard has also been taught to a breadth and depth for student mastery. These Learning Objectives were needed as an integral part of the MCP to show exactly how students would not just enjoy the material and become environmentally literate, but how they would more comfortably master academic content standards along the way.

Each set of custom Learning Objectives is specific to the academic standard(s) taught in the corresponding EEI Curriculum unit and are presented sequentially, beginning with knowledge and comprehension, and where appropriate, moving toward application, analysis, synthesis, and ultimately, evaluation. These Learning Objectives ultimately guided the content that writing teams delivered, and ensured students are provided with opportunities to master the content standards while building environmental literacy. This tri-integrated design presents the environmental content knowledge in the EP&C as an integral part of standards-based instruction, not as a time-consuming "add-on," or supplemental curriculum.

EEI Curriculum Development and Field Testing

Development of EEI Curriculum

Following completion of the Model Curriculum Plan in June 2005, the actual EEI Curriculum development began. It took years of dedicated collaboration by many people to complete the EEI Curriculum. In concert with OEE, our primary consultant Dr. Gerald Lieberman (State Education and Environment Roundtable Director) directed the efforts of professional Curriculum writers, graphic artists, photographers, editors, reviewers, and content specialists. Component materials such as visual aids, teacher's masters, and student materials were designed by teachers for ease of use in complementary and consistent formats. From the outset, the EEI Curriculum units were designed to be interactive, colorful, engaging, and easy to use by both teachers and students. Writing teams incorporated in-depth examples and case studies related to specific environmental topics. Interactive, special mini-sections called "California Connections" provided current real-life examples of the content taught in each unit.

The first drafts of the EEI Curriculum units were reviewed and field-tested in classrooms throughout California (the review and field-test processes and involved parties are further described in the section below). Edits to address reviewers' comments and teacher input were incorporated, and final draft versions were developed. The final drafts went to the California Department of Education's Curriculum

and Supplemental Review Commission for their essential review and input. During this review, CDE also sought public comment through online access to the final draft Curriculum units. While the Curriculum Commission completed their arduous review of all 85 units, additional technical content reviews were provided by stakeholders and state agency partners. Ultimately, the Curriculum Commission recommended all 85 units for approval by the State Board of Education (SBE). The SBE's approval directed further edits and formatting of all components, including the Student Editions, Student Workbooks, Dictionaries, Word Wall Cards, Information Cards, and more. A thorough quality assurance/quality control process was also implemented during the final round of edits. It took a year to complete the 85 beautiful, engaging EEI Curriculum units that are available today, free and online. All 85 units can be downloaded at <http://www.californiaeei.org/Curriculum/>

Field Testing Details

As mentioned above, the draft EEI Curriculum units underwent extensive field and pilot testing in 19 school districts, with more than 190 teachers and 4750 students participating. School districts were recruited with assistance from the California Regional Environmental Education Community (CREEC) coordinators. Field tests involved the teaching of individual Curriculum units, whereas pilot-testing involved teaching multiple related units in a single classroom. Workshops were held in person and through "Go To Meetings" to prepare teachers for the testing and the importance of their review. Many teachers were also asked to edit and comment directly in the draft units provided for the testing.

The teachers and students involved in the field- and pilot-testing process offered valuable feedback regarding the Curriculum content, layout, and potential classroom use. Teacher feedback led to edits in the Curriculum units and provided input into the final layout and component design. The initial evaluation of the EEI Curriculum units provided by teachers during the field-test process was consistently positive, with 94% of surveyed teachers stating that the draft EEI Curriculum taught the academic content standard to mastery, 89% finding that the EEI Curriculum kept students engaged, and 89% indicated that they would use the EEI Curriculum in their classroom again. Testing school districts' demographics spanned all socio-economic levels, and represented a large geographic distribution of California locations.

Curriculum Review and Approval

The EEI Curriculum, which was approved by the State Board of Education in early 2010, was developed and vetted in a lengthy and highly transparent public process. The quality of the EEI Curriculum was assured through multiple layers of peer and expert review that included the following:

1. Expert reviews of each curriculum unit
2. Field and pilot testing by teachers
3. An independent review by the Curriculum Development & Supplemental Materials Commission and State Board of Education in 2009 (which mirrored the textbook adoption review process)
4. Professional peer review by associations of education professionals at various conferences and meetings (throughout the process)

5. A nine-month public comment period during which the Curriculum was posted on the web (and of which well over a thousand individuals and organizations were notified by both Cal/EPA and CDE)
6. Additional review by subject matter experts of select, high profile units
7. Approval by the Secretaries of the California Environmental Protection Agency and California Natural Resources Agency to ensure scientific and environmental content
8. SBE review (required by law), and subsequent approval, contingent upon incorporation of necessary edits and corrections
9. Final review and approval by CDE of all edits and corrections at the direction of SBE

The EEI Curriculum received final unanimous approval by the State Board of Education on January 7th, 2010. This action is unprecedented and positioned California at the forefront of environment-based education nationally, with a state-approved curriculum ready for use in the classroom.

For further information specific to the Department of Education review and the State Board of Education Approval of the EEI Curriculum, please refer to:
<http://www.cde.ca.gov/ci/sc/ee/>.