Connecticut's Environmental Literacy Plan

2020-2025

Working together to ensure that all of Connecticut's people are environmentally literate.

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What is the Environmental Literacy Plan?

The Connecticut Environmental Literacy Plan is a framework to foster partnerships in support of dynamic and resilient ecosystems and communities.

The plan unites multiple stakeholders in a common vision to encourage actions and behaviors for long term environmental change based on knowledge, communication, and decision-making.

Background: The Need for Environmental Literacy

Within the United States and in the state of Connecticut, the need for comprehensive environmental education has never been greater. The health of Connecticut's future depends on its people being environmentally literate and able to make informed choices about environmental issues.

Strong sustainability, focuses on systems, presenting the three themes as nested conferring different weightings to them. Ecological systems are weighted higher as they support the other theme, needed to reach sustainable solutions. This model was presented by Giddings in 2002

Climate change, consumption of natural resources, air and water pollution, invasive species, and land use are among the many complex challenges that threaten human health, economic development, and national security. Communities face the challenge of balancing the economy that provides our financial livelihoods and the natural resources on which we depend. Solving this critical challenge requires us to understand different points of view, analyze problems, balance competing needs, and take informed action.

Environmental education fosters learning that can transform how we think, make decisions, and lead our lives. The future depends on our collective ability to apply an integrated approach to teaching the interrelated elements of sustainable environmental systems from ecological, economic, and community perspectives. It is critical to understand how community, economy, and the environment are connected and mutually dependent. Environmental education prepares us with twenty-first century skills required to build healthier, environmentally sustainable, and prosperous communities.

However, environmental education does not stop after high school or higher education degrees, nor is it limited to a science or natural resource profession. We all have a shared responsibility to understand information on issues and evaluate that information with critical thinking skills. As plans and policy evolve, both the planners and public need to know that their actions will help us reach resilient goals that make Connecticut a resilient community. Communities work best when all people have access to the same information and pathways to voice concerns and support decisions with human equity and strong, environmental sustainability in mind. (See graphic)

" A resilient Connecticut starts with Environmental Literacy. This is more than understanding terms and reading content. Literacy encompasses understanding our role in addressing environmental impacts while holding the needs of natural systems in balance with society. Connecticut's Environmental Literacy Plan, (ELP) is a tool for everyone to use when planning for our collective future. I invite individuals, schools, organizations, agencies, and municipalities to proactively use this resource to identify common priorities and to implement actions that support all of Connecticut communities in becoming healthy and resilient. "

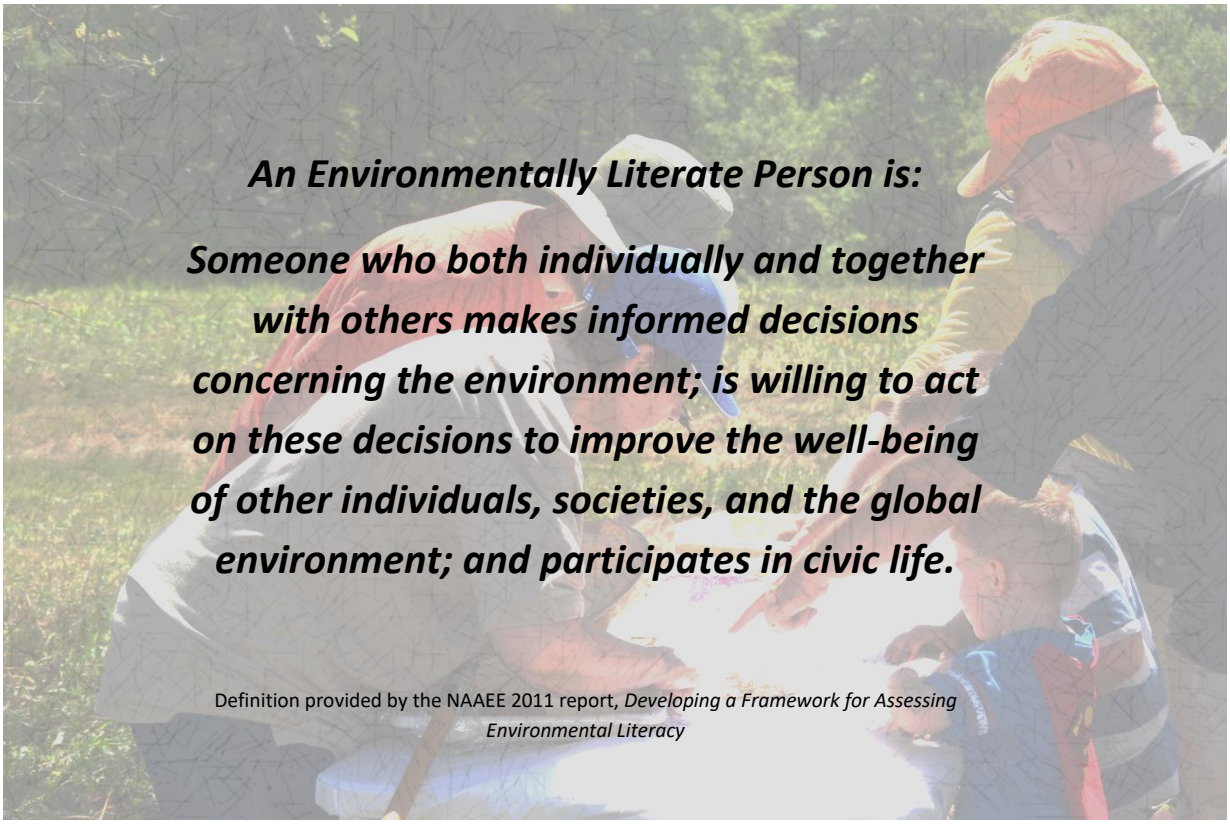
Katie Dykes, Commissioner
Connecticut Department of Energy and Environmental Protection

An Environmental Literacy Plan (ELP) for Connecticut is an important stepping-stone for our state's future. It is imperative that we act now to develop tomorrow's policymakers - with the proper knowledge and skills to make critical decisions regarding our global and local resources and provide for environmental health.

What is Environmental Literacy?

Broadly defined, environmental literacy includes:

- A fundamental understanding of the systems of the natural world and the interactions between the living and non-living environments
- The understanding of interactions between natural systems and human actions and the impacts that result from such interactions.
- The ability to make responsible decisions based on science, economics, culture, and ethics
- The confidence and motivation to exercise rights and responsibilities as a member of a community



Photo, DEEP State Parks

Components of Environmental Literacy*

To be a fully environmentally literate citizen, the following needs to be addressed.

Awareness

Awareness means holding a general impression, or consciousness, about something. For example, an individual may be aware that climate change is an issue or that human life depends on a healthy environment without knowing the details of the issue. Environmental awareness can arise from many activities, such as education, and is a first step toward a deeper understanding of the issue.

Knowledge

Developing knowledge requires more than the acquisition of new information. It requires comprehension, application, analysis, synthesis, and evaluation of information as well as the intellectual framework within which new information can be placed and manipulated. Developing knowledge often requires a pedagogy (a formal methodology for constructing knowledge within the student), which is often absent in simple information transfer.

Attitudes

Developing attitudes of appreciation and concern for the environment is a subtle process that is difficult to deliberately teach. Many educators believe that attitudes change primarily from a variety of life experiences which can take place outside as well as inside the classroom. Thus, experiences in the environment, such as those provided by nature and environmental centers ("non-formal" education), are essential to gaining environmental literacy.

Skills

Most consider skill development to be a practical exercise, often with an orientation towards a future career, even though the line between knowledge development and skill development can be imprecise. Skill development is often an essential part of both formal and non-formal education programs.

Action

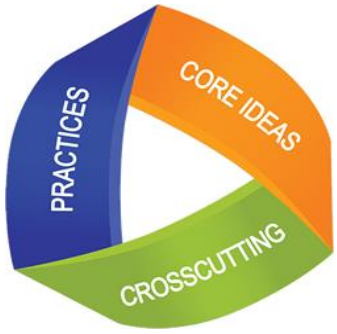
The ultimate (and perhaps most difficult) goal of environmental literacy programs is developing the capacity for action and participation. In the final step of action, environmental literacy is the capacity to act in daily life with a broad understanding of how people and societies relate to each other and to natural systems. Environmental education is the process of developing this capacity.

*Adapted from the *Campaign for Environmental Literacy* (www.fundee.org**)**

These skills represent a hierarchy of learning, building from simple to complex, which can lead to action on the part of the citizen. Providing for all levels can be done in unison based on the method of delivery, but all must be addressed to achieve sustainable goals toward Environmental Literacy.

How is Environmental Literacy Achieved?

Environmental education (EE) is the learning process through which citizens attain environmental understanding and integrate the knowledge into behavioral changes that improve conditions for themselves and others. Environmental educators provide hands-on, place-based activities that weave real-world experiences into the classroom. Environmental education is neither an addition to, nor a replacement for, standard classroom curricula. Environmental education supports the application of the three-dimensional pedagogy structured in the Next Generation Science Standards, NGSS, and provides direct application of STEM and Engineering methods. Finally, environmental education must include modeling and examples of how individuals can participate in corrective activities to create norms of behavior that will result in improved environmental decisions.



The people of Connecticut must have ready access to diverse spaces that can serve as experiential learning environments including cities, forests, beaches, marine and freshwater ecosystems, parks, zoos, aquariums, nature centers, and farms. Environmental education, however, can take place anywhere people are interested in observing and investigating the world around them. Ants marching along a city sidewalk, schoolyard or community gardens, and classroom science experiments are all excellent opportunities to learn more about natural systems and environmental issues. Urban, rural, and suburban settings are vibrant places for ecological investigations and provide environmental opportunities for all inhabitants to engage with the natural world. Accessibility is key to providing for environmental literacy. Programs and public forums through environmental education centers and community partners like libraries and clubs provide access for adults so that they may continue to add to their understanding of systems and issues. Collaborating with state agencies on issue information and feedback sessions increases the understanding of issues in context. This in turn leads to mindful decisions so that plans are equitable for all people and reflect obtainable goals and involvement, such as increased recycling, better land ethic, effective recreational development, smarter climate change adaptation and mitigation, and improved air and water quality.

Teachers, schools, and parent organizations looking for creative ways to improve student learning while providing hands-on experience need to take advantage of environmental education programs and resources. Connecticut adopted the use of Common Core and NGSS as our educational standards in 2018. The use of environmental education as a tool to implement these standards and inspire investigations is facilitated by community and informal education centers. Environmental education offers real world opportunities to connect theory with practice using natural phenomena as a teaching method. However, time and financial constraints limit access to these community resources. The integration of these tools with new standards and new curriculum beginning in 2018 provides for the possibilities of new partnerships. The importance of combining the outdoor experience with educational goals emerged during 2020 quarantine activities. The connection and access to outdoor safe spaces suddenly became a focal point for emotional and physical wellbeing. This reinvigorated interest drives activity and lesson planning as well as access for all to learn from the natural world. The environmental literacy plan connects schools with community resources that support this pedagogy.

Connecticut has a broad network of community organizations, public agencies, and businesses committed to providing high quality environmental education experiences for teachers and students. These community-based groups offer lifelong learning programs beyond the K-12 settings. They reinforce actions available for family groups, higher education, and professional development thus offering avenues of integration and partnerships in support of education systems. They seek to foster naturalists of all ages to connect with local parks, camps, and outdoor settings. We must ensure access to all persons. Places for learning must be safe, inclusive, and reflective of our demographics. It is through the continued connection with the environment that we seek to responsibly protect the natural world.

Environmental education (EE) teaches children and adults how to learn about and investigate their environment, and to make intelligent, informed decisions about how they can take care of it. It takes many forms and can be implemented in traditional classrooms, communities, and in informal settings like nature centers, museums, parks, and zoos. For that reason, it is necessary to use accepted standards of measurement for achievement. In schools, integrated applications require knowledge and skills from many subjects and must reflect state curriculum standards through NGSS and Common Core. In our communities, environmental education takes a broader scale. Standards for informal education are evaluated using the **Guidelines of Excellence**, created, and maintained by the North American Association of Environmental Education, and correlated to formal educational standards. Parameters for quality communication to adults, young children, schools, and public and professional audiences are established and provided to the outreach professionals for use in developing quality educational products. Use of these standards seeks to elevate program development for the public through policy, public hearings, public service announcements and social media, and partnerships with local community groups. For effective advancement towards an environmentally literate public, stakeholders in education, community, and government must possess a cooperative definition of success and support each other through system thinking.

Environmental Education "Done Right"

Educator's role: "Guide on the Side" rather than "Sage on the Stage."

Learners: Are actively involved in studying their environment, often deciding which questions to explore and, with an educator's guidance, how to find answers to their questions.

Learning experiences: Often involve complex real-world projects such as exploring how to attract wildlife to a stormwater management pond, building a nature trail, or designing a sustainable community.

Learning Tools and Venues: Case studies, the Internet, community issues investigations, libraries, the outdoors, local community businesses and government offices, immersion experiences like residential camps, service learning projects.

Outcomes: Improved environmental literacy, higher academic achievement, and the skills to weigh different sides of an environmental issue to make responsible decisions about it.

Source: Environmental Education and Training Partnership (EETAP)

What are the Benefits of Environmental Education?

Educational mandates, including Connecticut's statewide assessment programs (including Smarter Balanced Assessments in English Language Arts at grades 3-8, Connecticut SAT School Day at Grade 11, and Next Generation Science Standards Assessments at Grade 5, 8 and 11), require students to demonstrate proficiency in diverse subject areas. Environmental education unites subject areas with real-world context that gives deeper meaning to academic content as well as art and music. Through active, hands-on learning about the environment, students develop the knowledge and skills to address challenges in their communities.

In addition, in 2018 Climate Change education in the K-12 science curriculum received support as it relates to NGSS, per Public Act No. 18-181 Sec. 8. Resources for the application of climate change education are to be provided via CT Department of Energy and Environmental Protection through the Department of Education to assist the state boards of education in providing the training and resources teachers need to make climate understanding attainable.

Environmental education contributes to overall academic achievement. Quantitative and qualitative studies highlight the immense benefits of an integrated environmental education framework. In Lieberman and Hoody's 1998 study of 39 schools, 92% of the students who were taught using the environment as the integrating context, "academically outperform[ed] their peers in traditional programs" (Lieberman and Hoody, 1998).

Evidence gathered from this study and others like it indicate that students learn more effectively within an environment-based context than within a traditional educational framework. Observed benefits include:

- Better performance on standardized measures of academic achievement in reading, writing, math, science, and social studies
- Reduced discipline and classroom management problems
- Increased engagement and enthusiasm for learning
- Greater pride and ownership in accomplishments

Similarly, a report issued in 2000 by the National Environmental Education and Training Foundation followed up on the review of schools that adopted environmental education as the central focus in academic areas. The report concluded, "The results in all of the schools studied are impressive and heartening, as the nation searches for effective ways to improve the quality of education our children receive in public and private schools" (Glenn, 2000, p. 3). The report specifically identified that:

- Reading and mathematics scores improved.
- Students performed better in science and social studies.
- Students developed the ability to transfer their knowledge from familiar to unfamiliar contexts.
- Students learned to "do science" rather than just "learn about science."
- Classroom discipline problems declined.
- All students can learn at a higher level.

Specific information and resources on this assessment and details for the report are summarized in **Advancing Academics through Environmental Education,** by Michele Archie of the Harbinger Institute. The publication is available through the Association for Supervision and Curriculum Development.

Research has also found that involvement in environmental planning and stewardship programs for students during middle and high school resulted in adults who were four times more likely to have belonged to volunteer groups and twice as likely to have been officers in civic and service organizations when compared to similar students who did not have such service-based project opportunities. (Beane et al, 1981, Long-term effects of community service programs. Curriculum Inquiry.) Recent work supports this finding through investigations with undergraduates and their connection to actions based on values. (Liu and Lin, 2014).

Therefore, in designing methods to support EE for all citizens, it is necessary for partnerships to evolve and be supported beyond the educational arena.

Benefits of Environmental Education

Environmental Education can support all of these educational goals:

Constructivism: Building on what students know.

Cooperative Learning: Working in groups to solve problems, promote cooperation, build relationships among students, and get a taste of how the real world works.

Multidisciplinary and Interdisciplinary Teaching: Helping students to understand the interconnectedness of knowledge, and to use knowledge from several disciplines to examine individual and societal problems.

Problem-Solving and Critical Thinking: Exploring issues to give students experience investigating and defining problems, identifying solutions, implementing action plans, and designing ways to measure success.

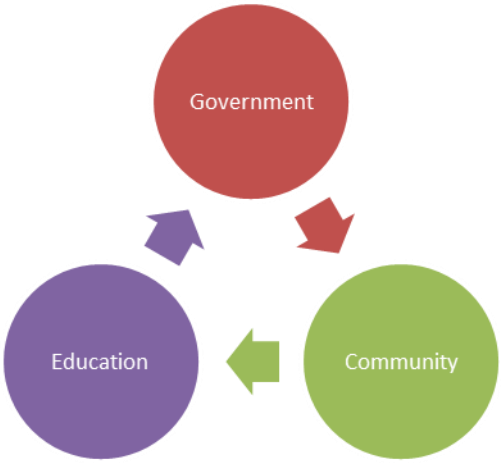
Community Learning: Using the community to explore real issues that promote learning and, at the same time, benefit the community.

Values and Ethics: Examining and reflecting on the underlying values that influence individual and societal actions with regard to issues, and building a personal ethical framework that helps distinguish right from wrong.

Source: Powerful Pedagogy – Using EE to Achieve Your Education Goals by Judy Braus

Kennedy Center Residents Art Show 2018
Kellogg Environmental Center, Derby, CT

Key Partners Working Together: Education, Community, and Government



"A knowledgeable, skilled and active citizenry is a key to resolving the environmental issues that promise to become increasingly important into the next century. While our schools play a major role, cultivating environmental literacy is a task that neither begins nor ends with formal education. Many parts of our society shape attitude toward and knowledge about the environment – family, peers, religion, community, interest groups, government, the media, etc."
From NAAEE Environmental Education Materials: Guidelines for Excellence

Connecticut's Environmental Literacy Plan includes three key partner groups that must work collaboratively and support each other to achieve the goal of an environmentally literate citizenry. The development of partnerships requires equitable access to resources and a seat at the table when making decisions and for community action planning. Including diverse groups in partnerships expands potential reach of messages. It increases communication with the public through trusted resources and builds social capacity, increasing the positive outcomes of the environmental actions being addressed. The creation of norms within a community builds self-efficacy on the part of individuals leading to improved behaviors and environmental actions.

Education Partners

Formal and informal educators are central to achieving environmental literacy. Many opportunities exist both within and outside of our schools for students to engage in meaningful learning that connects them to the environment. Education partners include but are not limited to:

- Informal Environmental Educators
- Pre-K through Higher Education Teachers
- Teacher Associations
- School Administrators and Staff
- Parent-Teacher Organizations
- Boards of Education
- Connecticut Department of Education
- Regional Educational Service Centers
- Non-profit Educational Organizations
- Universities and Colleges
- Connecticut Department of Energy and Environmental Protection

Community Partners

Our local communities play a vital role in educating children and adults about environmental issues. Communities can offer direct learning experiences as well as support efforts to promote environmental education. Community partners include but are not limited to:

- Business Groups
- Civic Organizations
- Youth Groups
- Libraries
- Religious Organizations
- Neighborhood Associations
- Local Media
- Health Professionals

Connecticut Trails Day
town of East Hartford, 2021
CT Trails Day weekend event
coordinators/sponsors CFPA

Government Partners

Government entities must develop policies and laws that support environmental education efforts. The success of these efforts heavily depends on necessary funding. Government is key to providing the resources and professionals that train municipalities and communities, as well as outreach professionals who collaborate with local citizens, facilitating their understand of policies and required actions. Materials, policies, and funds for adult training, program implementation, and technical assistance are necessary to secure system thinking and unified applications.

Government partners include:

- State Representatives
- Town Councils
- Local Land Use Boards
- Municipal Leaders and Committee Members
- State and Local Agencies
- Advocacy and Policy Officials
- Connecticut Department of Energy & Environmental Protection
- Connecticut State Department of Education
- Connecticut Department of Public Health
- Connecticut Department of Agriculture

Green Ribbon School Federal Recognition Ceremony
CT Green LEAF Program member
Weston High School- Awardee
Washington DC 2019

Elements of Connecticut's Environmental Literacy Plan

The following six elements are addressed within Connecticut's Environmental Literacy Plan for each of the three stakeholder groups. Each of these elements plays an important role in ensuring environmental literacy for all people.

Learning Opportunities for All

The North American Association for Environmental Education (NAAEE) has developed and provides free, downloadable versions of The Guidelines for Excellence Series:

- ***Community Engagement: Guidelines for Excellence***
- ***Early Childhood Environmental Education Programs: Guidelines for Excellence***
- ***Nonformal Environmental Education Programs: Guidelines for Excellence***
- ***Environmental Education Materials: Guidelines for Excellence***
- ***K-12 Environmental Education: Guidelines for Excellence***
- ***Professional Development of Environmental Educators***

This series of documents assists professionals in creating effective programs and lessons that engage and educate the public sector through a variety of opportunities. They demonstrate how to assess materials, apply actions, and develop strong programs that build understanding and move the public to improved literacy starting with our youngest citizens and continuing to adults and professionals. Education and learning are not just found in school settings, but they are also provided through all three-partner groups.

The ELP stresses the alignment of educational materials with the NGSS and Common Core for formal educational settings so that the transfer of science from school to home is available. Inclusion of action and stewardship projects is key to both environmental literacy and educational standards across the curriculum. The CT ELP suggests ways to identify **instructional opportunities** (e.g., outdoor learning, STEM, service learning, etc.) that teach about the environment in Pre-K-12 grades through existing multidisciplinary models and specific courses or units of instruction.

Involvement of community groups, businesses, and use of community spaces help all ages see and understand sustainable actions, drawing connections from theory to practice. Development of new policy for resource conservation or application of new technologies illustrates commitment by citizens and leaders in designing a future that improves health and addresses climate change for future generations.

Environmental Leadership Development

NAAEE's *Guidelines for the Preparation and Professional Development of Environmental Educators* provide a set of recommendations for educators to offer high-quality environmental education and become leaders in their communities. Both pre-service and in-service teachers need to be prepared to teach their students about the environment in and out of the classroom. This requires high quality **professional development**. Partnerships between K-12 school systems and experienced environmental/outdoor educators can provide excellent models.

Municipalities and State Agencies train adults to take leadership roles in local government and implement policy for their communities. This knowledge is vital to programs designed to protect habitats, greenways, support recreation, improve air and water quality, and implement climate change action. It is necessary to develop knowledgeable leaders with a strong

understanding of policy implementation to ensure plans are supported and consistent for positive outcomes and progressive movement. NGOs operate directly with the public to provide understanding and help develop the leaders at the local or regional level. Creating strong training materials and outreach to NGO's supports continued environmental literacy, planning, and actions at the local level.

Preservation and Use of School Grounds, Green Space, and Natural Resources

Our local communities' and schools' grounds should allow easy accessibility for green spaces and natural resources to use as opportunities to learn about and connect with the environment. Outdoor spaces should serve as learning laboratories and be used for low impact recreational use in all communities. Many city, county, or state environmental management agencies are potential partners to develop strategies for new building construction and renovation projects to meet design requirements that focus on climate change resiliency and reduce its effects. Local grassroots organizations provide the same focus on neighborhoods and communities addressing improved design and needs that mirror and support larger initiatives for towns and the state. Inclusion of diverse groups expands environmental literacy and makes resources available to all parts of a community. Expanding networks for inclusion strengthens social ties of communities and allows for a common expression of environmental values. In addition, all learning environments should incorporate and model environmentally sustainable practices.

Awareness, Communication, and Collaboration

All citizens must have an awareness of environmental issues and their local natural resources as a first step toward environmental literacy. Information must be readily shared among education, community, and government partners, and the public about ongoing EL efforts as their success depends on effective communication. Working together, citizens can magnify their efforts and increase their impact. The emergence of social media and the formation of many new outdoor focused social groups has expanded the capacity to provide awareness opportunities and collaborations. Tapping into these groups as volunteers or action-based audiences through new social interactions and frameworks has bolstered communication. This expansion provides stakeholders with diverse audiences, and the ELP seeks to increase the diversity of participation as afforded by technology.

Implementation and Funding

Our education and community partners need to develop workable plans to implement the ELP. Government policies and funds need to support EE efforts at the local, regional, and state levels. To help with implementation, the ELP identifies model EE programs that might be replicated throughout the state. The ELP also addresses potential funding sources such as Sustainable CT Community Match Fund which unifies community involvement at the town level and develops educational actions with town focus and benefit. This includes the use of existing programs and funds (e.g., Title II or Title V, Perkins grants, IDEA or STEM) that can be used to support the plan as well as areas where new policies and funding sources are needed. Strategy development for applications at the local level are not limited to foundations and grants but can emerge from business and education partnerships. Businesses benefit from an educated and skilled workforce, and the support of programs by businesses for STEM initiatives is a key component. Examples can be seen in many towns and can be replicated through contact with those groups who have successfully implemented these strategies.

Research and Assessment

Research on the effectiveness of EE programs is critical to their ongoing success. Established program evaluation methodologies and guidelines (i.e., NAAEE Guidelines for Excellence) should be used when appropriate. The ELP describes methods that can be used to measure and report on the status of environmental literacy in Connecticut. This includes traditional assessments, counts of student participation or performance, and other mechanisms. It is also important to understand research applied to environmental conservation and climate action as well as the research and critical thinking skills that are to be implemented in all manner of education and at all levels.

Access to current research, data, and policy for actions necessary for public involvement, and education through community organizations, municipal settings, and academia make understanding these resources possible. The importance of critical thinking skills and informed decision making begins in schools and extends to adulthood.

The Role of the CT Environmental Literacy Plan Steering Committee

The CT Environmental Literacy Plan Steering Committee formed in 2009 coordinated the development of the ELP. The ELP Steering Committee continues to oversee the implementation of the plan including the development of:

- a communication strategy to raise awareness about the ELP and to coordinate efforts among various education, community, and government partners in support of the ELP.
- an in-service and pre-service program for educators to promote understanding of ELP applications for formal and informal settings.
- tools and protocols for the evaluation of the quality and impact of EE programs.
- guidelines that support implementation of the ELP in school and community settings.
- a plan to secure necessary funding to foster the goals of the ELP.
- a process to monitor the implementation of the ELP and publicly report the results.

The Connecticut Outdoor and Environmental Education Association (COEEA) will post the ELP document on their website and provide for continued updates and reviews. Connection and links to the ELP will be provided by state agencies and associated partners and supporters of the plan on the COEEA website. The Department of Energy and Environmental Protection will identify a person to provide for the review and update of the ELP with COEEA every five years. The ELP Steering Committee includes representatives from various environmental and educational organizations throughout the state (e.g., CT Department of Energy and Environmental Protection, CT State Department of Education, CT Science Teachers' Association, CT Forest and Park Association, Southeastern New England Marine Educators, higher education institutions, etc.). See Appendix A for a list of the past and current ELP Steering Committee members.

The Development and Adoption of the CT Environmental Literacy Plan

Development of the CT ELP began in 2009 in response to the proposed federal No Child Left Inside (NCLI) legislation. The NCLI bill identified that funds, should they become available, are to be used in support of developing and equipping teachers with the skills, knowledge, and confidence they need to integrate the environment into their curricula. States with qualifying Environmental Literacy Plans will be eligible for a percentage of this funding, or grants identifying connections to these state plans will be evaluated at a higher standard than those not related to the goals of their states plans. As of this date, 2021, the EPA has not provided such specific funding. However, language for grants through NOAA, EPA, and other national groups have incorporated the language found in literacy plans as part of their application process. In 2014, as a follow up to the initial funding challenge and implementation of state ELP's, the U.S. Department of Education collaborated with the EPA to create the U.S. Department of Education Green Ribbon Schools program supporting environmental literacy and applications through development of healthy, green, and sustainable schools. Pillars of implementation reflected the focus of environmental literacy through school facilities. Connecticut became part of the U.S. Department of Education Green Ribbon Schools network by developing the Green LEAF program which builds the partnering aspect of the ELP into application through schools. The Green LEAF program is provided through partnership by members of COEEA, DEEP, DOE, DPH, and the environmental community. Green LEAF is an outgrowth from the ELP and continues to work with schools, community, and government to provide for implementation of laws and best practices for green and healthy schools.

The ELP Steering Committee held planning sessions throughout 2009 and 2010 coordinating the development work for Connecticut's plan. Original development of the ELP consisted of a series of informational and input sessions in spring of 2010 at various venues (e.g., state educator conferences and workshops, open forums, etc.). The ELP Steering Committee then developed logic models for the plan and for each sector (Education, Community, and Government) to guide further development of the ELP. Inclusion of the logic models provides users of the ELP a snapshot of the plan's goals and outcomes that are universal to our state activities. They provide the language to help stakeholders form partnerships, identify areas of specialization, and unify needs through skill and resource sharing. Open writing sessions that took place in the beginning of development served as a model for continued updates to the plan every five years. The core organizations as identified in the Steering Committee participant list will serve as the basis of persons on the steering and update committees for the future. Review of the plan will take place every five years with an in-depth update and revision provided as necessary.

On June 20, 2012 Connecticut Environmental Literacy Plan was supported by then-governor Dannel Malloy through official proclamation and endorsed it as "a way to meet environmental challenges in Connecticut." In 2014, the CT Environmental Literacy Plan was used to help structure and implement Connecticut's Green LEAF schools' program as part of the Federal Green Ribbon program. In 2014-2015, a review of the plan was written, and its goals were pursued by the Steering Committee to help maintain current needs and reflect the growth of literacy actions in Connecticut. In 2019-2020, CT DEEP Education Outreach conducted a larger rewrite and update to the ELP to include current language that reflects changes in education strategies, adopt NGSS and Connecticut

Community Science for the Classroom, Kellogg Environmental Center, Derby, CT
CT DEEP Photo

Pond Exploration, Northwest Park Windsor, CT

Common Core, possess organizational and agency evolutions, and acknowledge advancements in state actions and developments in the environmental arena. To allow for future replication of successful programs and access to resources to advance future actions, the 2020 plan includes Successful Environmental Developments and Resources for Connecticut. The revision and review were interrupted by the 2020 COVID-19 Virus Pandemic and delayed the process so that it concluded in summer 2021. Following the revision was a review process of steering committee and partner organizations. A new plan for promotion and information on use of the ELP was finalized in the fall of 2021.

Environmental Literacy Plan Elements for Education Partners

Learning Opportunities for All

Goal: Integrate Environmental Education into the PreK-12 curriculum and instructional programs to ensure all CT students are environmentally literate. Action items include:

- Provide trainings on the North American Association for Environmental Education (NAAEE) *Excellence in Environmental Education: Guidelines for Learning* for informal centers and educators to advance quality EE experiences and programs that meet standards.
- Support and provide professional development opportunities for formal and informal educators that incorporate EE best practices and programs. Encourage interdisciplinary study that incorporates 21st Century Skills, social studies, and STEM applications.
- Include meaningful outdoor learning experiences at all grade levels. On-site or off-site accessible outdoor learning opportunities will be utilized whenever possible and transportation to other outdoor learning venues should be supported when necessary.
- Schools will embed outdoor and environmental experiences into the curriculum to sustain the programs' and applications' consistency in the curriculum. EE learning experiences must be inclusive and equitable for all students and reflect the diversity of cultural backgrounds in our state, such as meeting students where they are as a source for exploration.
- Encourage active PTO involvement in the support of outdoor and environmental learning programs. Identify and expand areas where environmental literacy connects with career development, college preparations, civic engagement, and community connections for action.
- Support community science programs, environmental clubs, after-school programs, and EE distance learning initiatives in schools with support from local community resource professionals.
- Encourage students and teachers to engage in research of environmental issues, civic engagement, and programs to improve critical thinking skills and climate change actions.
- Identify and expand areas where environmental literacy connects with CT graduation requirements. This includes high school course requirements, statewide assessments, the Capstone experience (including service-learning projects), and Student Success Plans that are part of the state's secondary school reform effort. A task force will be formed to develop a plan to determine various ways that students can demonstrate environmental literacy prior to graduation.
- Include natural resource management, environmental restoration, and "green business" opportunities in school-to-work programs and other career programs.

Goal: Informal environmental education centers and non-profit educational organizations collaborate with schools and provide direct learning experiences to improve the environmental literacy of learners of all ages. Action items include:

- Increase and broaden the diversity of EE providers, programs, and audiences at informal learning centers and non-profit educational organizations throughout the state to reflect the demographic of Connecticut.
- Support equitable access to EE programs through funding and in-kind support. Find new partners.
- Program providers will evaluate and enhance their learning programs using the NAAEE *Guidelines for Excellence* and update methods to support school needs to provide meaningful and current EE experiences.
- Program providers will work to incorporate and illustrate climate change impacts and actions to support NGSS connections and climate actions for student.
- COEEA, DEEP, and higher education partners will work together to provide access to exemplary programs for professional growth and promote statewide elevation of programs.

Environmental Leadership Development

Goal: Support high quality EE professional development for formal and informal educators, administrators, and support staff. Action items include:

- Develop a tool to assess the EE professional development needs of educators.
- Increase opportunities and incentives for participation in national EE curriculum workshops and programs of study.
- Encourage higher education partners to integrate environmental resources for all pre-service and in-service teachers and administrators to incorporate EE across the curriculum. Professional development should include meaningful, outdoor, and experiential learning experiences (e.g., use of field techniques and data collection to improve methods of science education).
- Utilize opportunities for environmental education providers to engage with the NAAEE Guidelines of Excellence and use in their program applications.
- Form partnerships with higher education institutions to support professional/adult learning opportunities.
- Identify leaders in diverse education communities to incorporate and promote environmental applications in support of the ELP.
- Create career pathways to environmental education in settings for higher education.

Goal: Develop a body of environmental education leaders in all school districts. Action items include:

- Promote EL leadership opportunities for students of all ages in schools and other settings.
- Develop and support Green Teams in all school districts to coordinate EE and sustainability efforts utilizing the CT Green LEAF program.
- Develop educator-in-residence at the state department of education or other non-profit educational organization to promote the integration of EE across the curriculum in PreK-12 schools.
- Support and enhance the role of COEEA and its partners as leaders in EE including greater collaboration and networking between formal and informal educators.
- Increase the awareness and knowledge of EE benefits among administrators, higher education, and educators throughout the state as well as among community and government partners.

- Encourage environmental education training programs for formal and informal sectors through higher education partnerships leading to continuing credits and recognized degrees.

Goal: Strengthen pathways to environmental careers in CT.

- Create a living wage career pathway supporting environmental education careers.
- Create partnerships to connect volunteer jobs with employment in organizations and agencies.
- Advocate for environmental careers to create an inclusive sector for environmental careers and jobs.

Preservation and Use of School Grounds, Green Spaces, and Natural Resources

Goal: All educational settings should utilize their grounds and facilities as EE learning laboratories and to model environmentally sustainable practices. Action items include:

- Schools (private, public, religious, and alternative) should join the Green LEAF program to develop safe and healthy facilities for staff and students.
- Schools and informal centers should utilize on-site and/or nearby outdoor spaces for varied EE learning experiences (e.g., school gardens, courtyards, pond ecology, urban forestry, working lands, etc.).
- Encourage development of green spaces and local sites to be accessible to all with applicable signage and structural support. Outdoor learning environments should be safe, accessible to, and useable by everyone regardless of physical abilities.
- Support schools in addressing requirements in health, environment, and design regulations as required by state and federal law and as part of Green LEAF School Program.
- Encourage the use of indoor spaces for environmental applications and learning laboratories for practices, such as cafeterias, front entryways, courtyards and outdoor hardscapes, media rooms, etc.

Goal: Education groups should collaborate with community partners to identify and utilize local environmental resources for outdoor learning opportunities. Action items include:

- Use and/or develop local resources (e.g., parks, forests, river fronts, bodies of water, trails, etc.) as EE learning venues connected to curriculum plans for sustainable use in schools.
- Identify opportunities for participation in community-based, service-learning projects that enhance environmental literacy and build social capital in the community.
- Develop locations in the school and the education plans to support use of real science through Community Science programs.

Implementation and Funding

Goal: Education partners within the state will collaborate to ensure the adoption and implementation of the ELP. Action items include:

- The ELP Steering Committee will continue its role of overseeing the implementation of the ELP. The ELP Steering Committee will include representatives from environmental and educational organizations (e.g., DEEP, CSDE, COEEA, CSTA, SENEME, Higher Ed. Institutions, Office of Early Childhood, etc.). CT Department of Energy and

Environmental Protection will serve as coordinator of the Environmental Literacy Plan and oversea the steering committee.

- The ELP Steering Committee will take necessary steps to ensure the adoption of the CT ELP at the state level including various state agencies (i.e., DEEP, CSDE) and educational organizations.
- ELP Steering Committee members will develop a process to promote, implement and monitor the ELP by working through their various organizations and networks.
- Educational organizations within the state should be encouraged to incorporate appropriate sections of the ELP into their mission, goals, and /or strategic plans.

Goal: The ELP Steering Committee will coordinate a statewide effort to secure necessary funding for the success of the ELP. Action items include:

- The ELP Steering Committee will work with all its partners to seek out in-kind and financial support for educational implementation of the ELP.
- The ELP will be publicly accessible for use by formal and informal education groups. All partners will identify actions and outcomes in grant proposals as their part in supporting the implementation of the ELP.

Awareness, Communication, and Collaboration

Goal: Increase awareness of the importance of environmental literacy among educators and develop effective communication and collaboration strategies to support the ELP. Action items include:

- The ELP Steering Committee will work through its partners to raise awareness about the ELP among formal and informal educators using various means (e.g., newsletters, conferences, listservs, etc.).
- The ELP Steering Committee and its partners will develop a communication strategy to coordinate efforts among various educational organizations in support of the goals of the ELP. Develop intentional relationships and partnerships between formal and informal educators to affect successful environmental education programs.
- CT State Department of Education will collaborate with environmental education partners to incorporate environmental literacy in educational trainings and school systems.
- The ELP Steering Committee will build and strengthen partnerships across a variety of sectors to promote understanding of ELP applications for formal and informal settings.
- The educational community will seek out new avenues and diverse groups to collaborate on programs and actions that increase knowledge, action, and implementation of positive environmental ethics.
- The ELP Steering committee will cross-promote awareness of existing in-service and pre-service programs to support understanding of ELP applications in formal and informal settings.

Research and Assessment

Goal: Conduct research on and assessment of the effectiveness of EE programs and initiatives within the state and use this information to implement effective changes when needed. Action items include:

- Encourage partners to utilize the NAAEE *Guidelines for Excellence* for self-assessment of environmental education program effectiveness as aligned with best practices and accepted standards in formal and informal educational settings.

- ELP Steering Committee members working with Higher Education will pool resources for research updates and reviews in support of developing an informed outreach community. Literature and research will be shared through COEEA to identify applications and best practices in support of program development and applications of outcomes.
- Use the results of the research and assessments to inform improvements in EE programs and evaluate their impact among education partners using formal and informal methods as needed.
- Conduct surveys of successful programs and projects for sharing in the environmental education community, to foster model replication as well as mentoring using Green LEAF Schools and NGO Conferences and trainings.

Goal: The ELP Steering Committee and its partners will identify ways to conduct a gap analysis within the implementation of Environmental Literacy to identify needs and successes in the state for improved collective impact of actions. Action items include:

- Increase awareness and use of environmental education as applied to social studies standards plus the NGSS and Common Core crosswalk correlations.
- Provide outreach trainings to address understanding of environmental education concepts and access to resources for underserved communities.
- Identify nontraditional education groups and provide access to resources to increase participation in programs and funding opportunities that support environmental literacy.
- Map the coverage of environmental programs in CT by county to identify what is presented and attended in our state.

Goal: The ELP will be reviewed and updated on a regular basis with open involvement by constituents.

- DEEP will provide a staff person that will serve as the coordinator of the ELP review and revision process who will work with COEEA to maintain continuity of the plan and its implementation.
- Participants in the review process (COEEA, State Department of Education, and CT DEEP) will serve to promote and implement the ELP following revisions.
- Review process will be open and transparent for all persons.
- Review process will provide for identification and recognition of achievements reached under the ELP goals and outcomes.
- The ELP updates, achievements, and materials will be included in the annual conference or meeting of COEEA to maintain awareness and use of the plan in program self-assessments.

Lone star tick research, New Haven County, CT Agriculture Experiment Station

Marsh Encroachment, Milford CT.
Photo, Paul Fusco DEEP

Environmental Literacy Plan Elements for Community Partners

Learning Opportunities for All

Goal: Continuously provide EE opportunities in community settings for all citizens for lifelong learning. Action items include:

- Identify and/or develop easily accessible EE materials and resources (e.g., speaker bureaus, loaner kits, etc.) to support local learning programs.
- Work with organizations to develop inclusive EE opportunities that reflect the community they serve while considering diversity, cultures, age, and access.
- Conduct EE seminars and topical forums in various community venues (e.g., libraries, local and state parks, historical sites, town festivals, etc.).
- Create forums for environmental justice discussions and actions.
- Expand social media networks for contact to promote EE opportunities in Connecticut.
- Support local historical, cultural, and other community events that promote environmental literacy (e.g., town clean ups, nature walks, nature center festivals, hazardous waste days, etc.).
- Increase the awareness and knowledge of EE benefits among administrators, higher education, and educators throughout the state as well as among community and government partners.
- Encourage community members to engage in research of environmental issues and community science programs supporting state initiatives.
- Host programs and projects that create positive learning environments about the natural world in underserved areas.
- Create new partnerships with organizations typically not focused on EE and outdoor engagements.

Early Childhood Professional Development Workshop, White Memorial Conservation Center

Goal: Connect schools with community resources to provide EE opportunities that reflect sustainable practices modeled in that community. Action items include:

- Identify EE learning programs in local communities for schools to use in curriculum applications. e.g., library speakers, town trainings, etc.).
- Provide resources and support for service-learning projects, internships, and green career paths for students through existing community groups.
- Partner with local community groups from the area or region to make the connections sustainable while supporting the needs of the community.
- Identify or build projects and programs that provide co-benefits for improving social, and physical needs around environmental issues.
- Network local speaker lists between regions using schools, libraries, and community nonprofit networks as partnerships in lifelong learning opportunities.

- Build on the interlibrary loan system to expand resource sharing and materials to support outreach activities of centers and organizations.
- Connect with and build on community networking through the library system for public access to information, program promotion, and outreach activities.

Environmental Leadership Development

Goal: Develop a team of environmental leaders within each local community to coordinate environmental literacy opportunities. Action items include:

- Identify and effectively utilize existing individuals and organizations in the community who promote environmental literacy by providing workshops, training, and leadership (e.g., suggesting ways for community partners to support sustainable practices). Work to make groups inclusive of the community demographics and needs.
- Support and bolster coordination among existing environmental leaders/programs and develop new ones where needed.
- Provide training and mentorships for volunteers, health educators, city planners, directors of service-learning programs, and other community leaders.
- Engage with key local officials and state legislators to create policies and legislation that supports the ELP.

Preservation and Use of School Grounds, Green Space, and Natural Resources

Goal: Preserve and use local community resources for environmental learning opportunities. Action items include:

- Connect climate action to local issues (e.g., carbon footprint reduction van pools, water conservation, etc.) by encouraging the sustainable use of local resources.
- Provide spaces (e.g., community gardens, nature trails, etc.) for outdoor learning experiences.
- Encourage community organizations to collaborate on co-beneficial projects and pool resources of people and funds.
- Identify user groups and their networks within communities that support green space development and utilization of green spaces.
- Municipalities work with organizations to access and implement best practices for green space development.
- Develop leaders in organizations and in education system to advocate for the updating of practices that reflect current best management strategies for green spaces.
- Use emerging technology to connect members of community with engagement in community action focused on green space development and utilization.
- Make announcements understandable to the community they serve. Accessibility to information is required for participation.

Goal: Advance applications of accessibility for the improved use of green spaces within communities.

- Develop equitable access to outdoor green spaces. Equity is not limited to physical access, but also includes knowledge about spaces, the resources available to the public through the green spaces, expanded publicity to fringe and underserved groups, and improved signage.

- Encourage communities to identify user groups of green spaces and include these groups in planning and care of the space.
- Identify the needs of communities for resources to expand their involvement and provide resources for programs, walks, and network development. Communities need resources.

Implementation and Funding

Goal: Communities should develop effective ELP implementation strategies. Action items include:

- The ELP Steering Committee will develop marketing information and connections making community awareness of the ELP a priority for its implementation.
- Local community organizations and/or EE leaders will use the guidelines to develop networks and partnerships to support the implementation of the ELP as it applies to their community needs.
- Encourage town-wide and regional "green" activities that promote collaboration among community groups through partnerships with Sustainable CT.

Goal: Community partners will identify and secure sources of funding to support the goals of the ELP. Action items include:

- The ELP Steering Committee will work with education, community, and government partners to seek out in-kind and financial support for community implementation of the ELP.
- Identify and replicate effective management and dissemination of funds through state agencies, non-profit organizations, and/or foundations.
- Identify and engage business partners as financial supporters of EE initiatives within communities.
- Promote the use of public and private partnership to leverage funds, opportunities, and resources.

Awareness, Communication, and Collaboration

Goal: Increase awareness of the importance of environmental literacy among community leaders and the public and promote better communication and collaboration between community partners. Action items include:

- The ELP Steering Committee and its partners will develop a communication strategy to coordinate efforts among community organizations and media in support of the goals of the ELP.
- Build awareness of environmental education events and learning opportunities through various media and disseminate information directly through community organizations (e.g., youth organizations, civic organizations, museums, libraries, local businesses, environmental organizations, etc.)

Goal: Promote collaboration among community groups to implement the goals of the ELP.

- Educate and encourage organizations to adopt the ELP as part of their organizational planning and collaboration strategies.
- Utilize the ELP as a tool for collective impact that advances environmental understanding and action in communities.

- Use the ELP to help advance community goals that use collaboration and expansion of partnerships to produce desired outcomes.
- COEEA, ELP Advisory Council and organizations will highlight their support of the ELP

Research and Assessment

Goal: Utilize the results of research to encourage the use of effective environmental programs. Action items include:

- Promote knowledge and use of the NAAEE *Guidelines for Excellence* for program evaluation.
- Conduct periodic environmental reviews and evaluations of local natural resources available for EE learning programs. Members of the community should participate in reviews to make proposals that conserve and enhance local resources.

Goal: Assess the environmental literacy of the public. Action items include:

- Develop an assessment of environmental literacy to establish the baseline among community partners.
- A survey of the environmental literacy of the general population of CT should be conducted every few years. The results should be publicly reported, progress monitored, and gaps identified for further study with recommendations for EE learning program modifications.

Woodbury, CT Earth Day Community Event
2019 Pomperaug River Watershed

Environmental Literacy Plan Elements for Government Partners

Learning Opportunities for All

Goal: Local and state agencies should support and sustain environmental learning programs throughout the state. Action items include:

- Support ongoing opportunities for government officials at both the town and state level to learn about key environmental issues and the need for environmental literacy.
- Review existing policies and legislation (e.g., academic learning standards, teacher certification, commission certification programs, etc.) that support EE learning opportunities in schools and local communities; modify these as necessary to strengthen environmental literacy.
- Develop new policies and legislation to support environmental literacy.
- Increase the awareness and knowledge of EE benefits among administrators, higher education providers, and educators throughout the state as well as among community and government partners.

Environmental Leadership Development

Goal: Develop a team of environmental leaders within local and state agencies to promote and advocate for the ELP. Action items include:

- Identify government resources to support professional development in schools and informal settings.
- Sponsor professional development for educators on civic action and policy development related to environmental issues.
- Initiate professional development opportunities based on sound science for volunteers to increase their knowledge of environmental issues.
- Engage key legislators to create state and local policy and legislation that support environmental actions and implementation of the ELP.
- Encourage towns to participate in on-going certification programs at state and local levels (e.g., inland wetlands, coverts, Sustainable CT, etc.)

Preservation and Use of School Grounds, Green Space, and Natural Resources

Goal: Preserve and use state and local community resources for environmental learning opportunities. Action items include:

- Provide grants and/or other incentives for outdoor classrooms, open space preservation, meaningful field trip experiences, etc.
- Develop policies that promote green planning including *low-impact* educational and recreational open spaces and retrofitting schools for solar or other low carbon applications when doing building construction or repair.
- Encourage environmental review teams to review and evaluate the educational value and selection criteria for acquisition of open space (e.g., issues such as accessibility, community science opportunities, walking or wildlife corridor establishment,) with towns and boards of education).

Implementation and Funding

Goal: Provide support for the implementation of the ELP. Action items include:

- Develop policies and legislation that support the goals of education for traditional and nontraditional settings.
- Encourage sustainable living within schools and communities (e.g., green spaces, habitat preservation, recycling, composting, IPM school applications, etc.).
- Support and encourage partnering opportunities at federal, state and/or local levels between executive and education branches to implement the goals of the ELP.
- Make access to the ELP available through state agency websites and partnering organizations.
- Require organizations and municipalities to identify how they are implementing the ELP goals, actions, and/or outcomes as part of funding requests and project applications.

Goal: Provide sustainable funding sources to support the goals of the ELP. Action items include:

- The ELP Steering Committee will work with education, community, and government partners to seek in-kind and financial support for government implementation of the ELP.
- Develop effective strategies to leverage government and private funds for EL programs.
- Target existing funds and grants to include Environmental Literacy initiatives for local and state groups that address EE learning programs and quality standards using NAAEE guidance and measurement tools.
- Develop incentives and new funding opportunities for formal and informal settings to support the implementation of the ELP.
- Financially support community efforts to promote environmental literacy at the local level.

Awareness, Communication, and Collaboration

Goal: Promote awareness, communication, and collaboration of the ELP and its goals among government partners. Action items include:

- The ELP Steering Committee and its partners will develop a communication strategy to coordinate efforts among various government organizations in support of the goals of the ELP.
- Develop and market public education programs that foster environmental literacy for the public through various media outlets and programs through State Park Education and Outreach Office and other outreach education offices of DEEP and other state agencies.
- Support efforts in local communities and at the state level to promote events that include EE learning opportunities through various media outlets.

Research and Assessment

Goal: Support efforts to research and assess the effectiveness of EE programs and environmental literacy of all citizens in CT. Action items include:

- Share the results of research and assessment with government partners to develop supportive legislation and funding.

- Engage government agencies and commissions in collecting and reporting data on environmental initiatives to serve as evidence of the effectiveness of the ELP.
- Provide research information and updates through COEEA, DEEP, CT State DOE, State Library Systems, and CT Science Teacher Association.

DEEP, Fisheries CARE Program at Keney Park- Community fishing program Hartford, CT.
Photo Doris Johnson, DEEP

Appendix A: Connecticut Environmental Literacy Plan Logic Models

Connecticut's Environmental Literacy Plan: Logic Model

Situation: The health of Connecticut's future depends on its citizens being environmentally literate and able to make equitable and informed decisions on environmental issues such as climate change, environmental justice, water use, air quality, and land development.

INPUTS	OUTPUTS		OUTCOMES - IMPACT		
	Activities	Participation	Short Term	Medium Term	Long Term
Time, knowledge and skills from educators, scientists, community leaders, and volunteers to foster *environmental literacy* and scientific understanding	Professional development provided to all environmental educators in CT.	**Education Partners:** Informal Environ. Educators Pre-K thru Higher Ed. Teachers Teacher Associations School Admin. & Staff Parent-Teacher Orgs. Boards of Educations DOE and RESCs	All education, community, and government partners in CT will be aware of the ELP and their role in its implementation.	**Education partners** will work together to foster environmental literacy in formal and informal settings.	**Connecticut citizens will create sustainable communities reflecting the principles and elements of environmental literacy that lead to equitable actions and healthy communities.**
Funding for programs and professional development in schools, informal learning centers, and community settings.	Formation of partnerships that build social capitol and create norms for public engagement in environmental actions including focus on climate change.	**Community Partners:** General Public Business Groups Civic & Youth Groups Neighborhood Associations Local and State Media Health Professionals Religious Institutions Libraries	All educators will be equipped with the knowledge and skills to foster environmental literacy in their communities building equitable climate resilient co- benefits.	**Community partners** will offer direct learning experiences, as well as support efforts to promote environmental literacy among all of their citizens using quality resources and expanded partnerships.	
EE resources including curricular materials, outdoor learning environments, and green spaces.	High quality EE resources will be readily available to all CT educators.	**Government Partners:** State Representatives Town Councils Local Land Use Boards Municipal Leaders Community Members State and Local Agencies/ Advocacy and Policy Officials	Education, community, and government leaders will be motivated to support environmental education efforts at the local, regional, and state levels.	**Government partners** will develop policies and laws that support environmental literacy efforts including providing necessary funds for these efforts to be provided through partnerships for improved equity and support of actions.	
Examples of collaboration among Education, Community, and Government partners to serve as models for developing collective impact actions.	Local and state media outlets will provide useful information about EE opportunities for equitable access.				
	Assessment of ELP impacts created to measure progress on ELP outcomes.				

Assumptions:
Connecticut education, community and government partners will act as leaders to support the development and implementation of the ELP elements.

External Factors:
Support from the public for EE efforts at the local, regional, and state levels.
Competition for time, money, and resources.
Sharing of successes through cooperative actions and success stories.

Rev.2021

Connecticut's Environmental Literacy Plan: Education Partners Logic Model

Situation: Education partners, including formal and informal educators, are central to achieving environmental literacy. Many opportunities exist within and outside of our schools for students to engage in meaningful learning experiences that connects them to the environment.

INPUTS	OUTPUTS		OUTCOMES - IMPACT		
	Activities	Participation	Short Term	Medium Term	Long Term
Education partners prioritize time & resources toward development of skills that implement environmental literacy outcomes.	Identification of areas where EL connects with CT graduation requirements.	**Education Partners include:** Informal Environ. Educators Pre-K thru Higher Ed. Teachers Teacher Associations School Admin. & Staff Parent-Teacher Orgs. Local and State Boards of Educations State Dept. of Education Regional Ed. Service Centers Non-profit Educational Orgs.	Education leaders will be aware of the ELP and their role in supporting it.	Integrate EE in all content areas to ensure that all students are environmentally literate upon graduation.	**All citizens in Connecticut use environmental literacy for individual and social purposes to create and maintain sustainable communities.**
Adequate funding for EE programs in K-12 schools and informal learning	Identify best practice system for EE that is developmentally appropriate for all grade levels.		Provide high quality professional development for educators to integrate EE best practices.	Use their grounds and facilities as learning laboratories to model sustainable practices.	
EE resources integrated into educational facilities and curriculum including outdoor learning environments, and green spaces.	High quality EE resources will be readily available to all CT educators online.		Education partners will cross communicate resources, needs, and opportunities to support EE in school and within communities they operate.	Develop a body of EE leaders in all school districts and local communities.	
	Utilize the NAAEE Guidelines of Excellence to evaluate quality of programs.	Partnerships will be formed between formal and informal educators to support EE efforts.		Access and effectively use a comprehensive EE resource base.	
Collaboration among formal and informal teachers, administrators, and parents to provide EE opportunities to all students and professionals.	Professional development will be provided to all in CT.	Assessment of EE efforts and outcomes will occur on a timely basis and be publicly reported.	K-12 administration understands and supports EE through curriculum, staff development and green school practices.	Link K-12 schools and community resources to provide life-long learning about sustainable actions.	
	EE certification recognition for professional development and training programs.	Education Partners will incorporate community actions that reflect improved environmental actions to build social norms.	Educators will include significant outdoor learning experiences at all grade levels.	Support professional/adult learning opportunities.	
				Modeling of environmental and civic responsibilities.	

Assumptions:
Connecticut education partners will act as leaders to support the development and implementation of the ELP.

External Factors:
Support from the public for EE efforts at the local, regional, and state levels.
Competition for time, money, and resources.

Connecticut's Environmental Literacy Plan: Community Partners Logic Model

Rev.2021

Situation: Our local communities play a vital role in educating children and adults about environmental issues. Communities can offer direct learning experiences as well as support efforts to promote environmental education through modeling of norms related to environmental norms.

INPUTS

- Time commitments from community leaders and volunteers to coordinate efforts and implement the ELP.
- Sustainable funding sources to support EE efforts at the local, regional and states levels.
- Resources that are readily available to EE providers within communities.
- Partnerships among community organizations to support EL.

OUTPUTS

Activities

- Identify and develop environmental leaders within local communities.
- Identify and protect local resources and green spaces to bring global perspectives to local communities.
- Develop EE materials to support local learning programs and seminars.
- Conduct topical forums in various community venues (e.g., libraries, town festivals, etc).
- Support historical, cultural, and other community events to support a sense of place for protective actions.
- Provide resources for green career paths.

Participation

Community Partners include:

General Public
Business Groups
Civic Organizations
Youth Groups
Religious Organizations
Neighborhood Associations
Local Media
Health Professionals
Libraries
Recreation
Civic Organizations and Clubs

OUTCOMES - IMPACT

Short Term

- Create general awareness of environmental issues and connections to local and state resources.
- Develop EL knowledge and skills among community leaders and the public.
- Support EE efforts in K-12 and informal settings at the local, regional, and state levels.

Medium Term

Community partners will:

- Provide ongoing environmental education for lifelong learning.
- Serve as leaders in environmental literacy.
- Use the ELP to guide planning within their communities
- Use green/open space and working lands to promote EL and fully integrate these areas into community life.
- Cooperate and support each other to achieve sustainability goals.
- Provide EE service-learning opportunities for students.
- Serve as models of sustainable practices.

Long Term

All citizens in Connecticut use environmental literacy for individual and social purposes to create and maintain sustainable communities.

Assumptions:
Connecticut community partners will act as leaders to support the development and implementation of the ELP.

External Factors:
Support from the public for EE efforts at the local, regional, and state levels.
Competition for time, money, and resources.

Connecticut's Environmental Literacy Plan: Government Partners Logic Model

Rev.2021

Situation: Government entities must develop policies and laws that identify the necessity for and include support for environmental education efforts. Providing the necessary funding, career opportunities, and ongoing trainings for these efforts is key to their success.

INPUTS

- Time for local officials and government agencies to plan and implement efforts to support ELP elements in projects and planning.
- Sustainable funding sources for EE efforts in divisions that support schools and community implementation.
- Identify government resources to support professional development in schools, communities, and informal settings.
- Communication and partnerships between offices of Gov. Agencies plus local levels to promote and support outreach and transparency of environmental actions.

OUTPUTS

Activities

- Conduct educational workshops and forums on EL for-government officials and community leaders.
- Support opportunities for students and citizens to learn about government in action.
- Provide opportunities for improved civic action & participation in policy development.
- Support & develop equitable recreational opportunities for all.
- Work with media to promote science, environmental issues and implement the ELP.
- Initiate PD opportunities based on sound science and current resources for the public to increase their knowledge of environmental issues and grow a diversity of leaders to represent the demographics of our areas.

Participation

Government Partners include:

- Governor
- State Representatives
- Mayors and Town Supervisors
- Town Councils
- Local Land Use Boards
- Municipal Leaders and Committee Members
- State and Local Agencies
- Advocacy and Policy Officials
- State Department of Energy and Environmental Protection
- Youth Group Leaders

OUTCOMES - IMPACT

Government partners will:

Short Term

- Awareness of environmental issues and the importance of all citizens being environmentally engaged, and literate.
- Support engagement with the public that provide knowledge and feedback that lead to sound policies and activities at the local and state levels.
- Collective impact by state agencies and offices to support EE efforts in K-12 and informal settings through sustainable funding sources.
- Motivate the public to give high priority to EL and sustainability goals that implement resilient action and equitable co-benefits.

Medium Term

- Develop policies to achieve and maintain sustainability goals (EL incorporated into schools, business plans, government plans, building operations)
- Provide financial support for local, regional, and state EE efforts.
- Provide support for environmental action by municipal, local and grass root organizations.
- Promote "green planning" in all town policies.
- Create policies to protect the use of recreational and educational open space throughout the state for improved environmental and public health.

Long Term

All citizens in Connecticut use environmental literacy for individual and social purposes to create and maintain sustainable communities.

Assumptions:
Connecticut government partners will act as leaders to acknowledge and support the implementation of the ELP elements as necessary to achieving environmentally literate adults for improved environmental actions.

External Factors:
Support from the public for EE efforts at the local, regional, and state levels.
Competition for time, money, and resources.
Lack of awareness of educational applications, partnerships, and opportunities

Appendix B: Alignment of NAAEE *Excellence in Environmental Education Guidelines for Learning* with CT Science, Social Studies, and Climate Education Standards

Presented here is a summary of the alignment between the ***Excellence in Environmental Education Guidelines for Learning*** (Pre-K-12, revised 2019) and the Next Generation Science Standards, (NGSS). The review connects to the NAAEE website's review of NGSS with the Guidelines for Excellence. It is noted in the review that the correlation is produced to reflect a base evaluation and that some areas may be interpreted more strongly in correlation identity. This is due to the extent of personal perspective of institutions and application of the standards with Social Studies. Many of the correlations are increased with the application of Social Studies Standards based on the inclusion of human actions and civic roles. The high degree of overlap between science and social studies is an important condition when implementing lessons through integrated methods. While the alignment of science and social studies is key, environmental literacy should be achieved through integration with all subject areas, including language arts and mathematics. The inclusion of Common Core Connections in NGSS supports this integration as seen when reviewing the individual NGSS standards, and the ELA and Mathematics are highlighted for each.

The ***Excellence in Environmental Education Guidelines for Learning*** (Pre-K-12, revised 2019) provide various audiences with a set of common guidelines for EE. The guidelines set a standard for high-quality EE in a variety of settings (formal, informal, and early childhood) across the country and are based on what an environmentally literate person should know and be able to do. They draw on the best thinking in the field to outline the core ingredients for EE. The guidelines are organized into four strands:

- Strand 1: Questioning, Analysis, and Interpretation Skills
- Strand 2: Knowledge of Environmental Processes and Systems
- Strand 3: Skills for Understanding and Addressing Environmental Issues
- Strand 4: Personal and Civic Responsibility

Connecticut Common Core and NGSS both articulate the main conceptual themes and content standards that all students are expected to learn in their elementary, middle, and high school science classes. Being scientifically literate requires that a person have an essential understanding of key science ideas along with a fluency in the language and terms used to describe them. Scientific literacy also requires the ability to apply critical thinking skills when dealing with science-related issues. Environmental literacy requires individuals to apply knowledge to decision-making skills individually and to collective actions of citizens and or organizations. This extends the learning experience beyond school age into lifelong learning as adults. The collaboration between the educational standards for school systems and the overlay of Guidelines of Excellence marries the concepts of better application and consistent development of educational opportunities into adult learning situations. The framework was designed to target the age-appropriate critical thinking (or inquiry) skills that should be infused into the learning of each of the content standards. The framework therefore is organized by:

- Core Scientific Inquiry, Literacy, and Numeracy
- Core Themes, Content Standards, and Expected Performances

The ***Connecticut Social Studies Framework*** (Pre-K-12) is a comprehensive document that provides a roadmap for teachers to understand what students should know and be able to do from prekindergarten through high school. The framework assists teachers in teaching content from the variety of history and social studies disciplines at every grade level instead of teaching these disciplines in isolation.

The framework document provides sample compelling questions (to guide inquiry) for each grade. For each compelling question, there is a series of supporting questions; these are often content-based questions that help students and teachers tackle the more complex compelling questions.

As mapped out in the College, Career, and Civic Life (C3) national frameworks, there are four separate Dimensions of Inquiry:

Dimension 1: Developing questions and planning inquiry
Dimension 2: Applying disciplinary concepts and tools *(content)*
Dimension 3: Evaluating sources and using evidence
Dimension 4: Communicating conclusions and taking informed action

The dimensions used in framing social studies content align with science inquiry methods and integrate the Connecticut Common Core requirements with content outcomes. Regarding science, social studies, and environmental literacy the application of Dimension 4 is a critical point. Research has found that just providing awareness of environmental issues does not lead to improved action on the part of students. It is necessary to provide a demonstration of actions and professional models that model norms and behavior examples for application of learned materials. The importance of taking informed action is pivotal, not just to the education system, but also to developing educated adults able to make critical decisions for their communities. Integration between all content areas and their standards reflect the importance of integrated teaching methods. Environmental situations provide the tool for student involvement and evaluation of learning outcomes.

Below is the "Alignment at a Glance" which presents a summary table of the standards from the Next Generation Science Standards (NGSS) with North American Association of Environmental Educators Guidelines of Excellence with frameworks and concepts from CT Common Core and C3 Social Studies Framework.

Alignment at a Glance

National Environmental Literacy Standards (North American Association of Environmental Education (NAAEE) Guidelines for Learning	**Next Generation Science Standards Connecticut Science and Social Studies Content Standards**	**C3 Social Studies Framework Dimension**
Strand 1: Questioning, Analysis, and Interpretation Skills	Core Practice- application of scientific and engineering practice- Study/learn like a scientist	Dimension 1: Developing questions and planning inquiry
Strand 2: Knowledge of Environmental Processes and Systems	Core Content: Earth Science Life Science Physical Science Science, Engineering, and Technology	Dimension 2: Applying disciplinary concepts and tools (this is where "content" is critical)
Strand 3: Skills for Understanding and Addressing Environmental Issues	Cross Cutting Concepts: Cause and Effect Patterns Recognition Scale and Proportion Systems and System Modeling Energy Flow Structure Function Stability and Change	Dimension 3: Evaluating sources and using evidence
Strand 4: Personal and Civic Responsibility	Action Education and Capstone projects grades 4-12 in all sciences	Dimension 4: Communicating conclusions and taking informed action

With legislation from 2018 identifying the support and importance of including climate change education in the K-12 system it is necessary to see how the standards of social studies and science currently intersect with the subject to allow integrated pedagogy. Analysis of the NGSS and Social Studies Framework identifies many points that allow inclusion of climate change in the classroom or grades K-12. During 2021 and 2022 educational year a committee of educational, environmental, and educational writers will meet to create a sample curriculum for inclusion of climate change in grades 5-12.

Lower elementary grades however should not be required to directly address climate change and its impacts. The lower grades are developing the critical thinking skills and basic science system knowledge to provide for the foundation of understanding or environment. The current NGSS requirements provide for learning about life sciences, earth sciences, engineering, and social sciences, as a precursor to applications to global warming and the climate impacts being seen.

For outlines of how NGSS applies to Climate Change Education there are many resources that provide the insights to assist with educational applications. Provided here are several that specifically address middle and high school applications.

1. http://www.climateedresearch.org/publications/2013/Climate-Change-NGSS.pdf
2. https://www.nsta.org/topics/climate-change
3. https://www.climate.gov/teaching/national-climate-assessment-and-next-generation-science-standards
4. https://cmapspublic2.ihmc.us/rid=1QFJG61Q8-SZBGRN-5NYD/StrandMap-NGSS%20Climate%20Weather2.cmap.cmap

The final resource identified above is an interactive strand map identifying NGSS and Common Core intersections with climate change by grade level. It calls out the K-4 applications as well as the middle and high school levels.

Appendix C: Connecticut Environmental Literacy Plan Steering Committee

2020

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Appendix D: Frameworks, Key Reports, and Studies on Environmental Literacy

Background: The Need for Environmental Literacy

Environmental Literacy in America. Coyle, Kevin. 2005 https://files.eric.ed.gov/fulltext/ED522820.pdf

- As of 2005 poll, "85% [of Americans] agree that government agencies should support environmental education programs"
- "A large majority (80%) believe that private companies should train their employees to help solve environmental problems"
- Only ~12% of Americans "can pass a basic quiz on awareness of energy topics"

What is Environmental Literacy?

Environmental Literacy in Science and Society. Scholz, Roland. 2011.
http://assets.cambridge.org/97805211/92712/frontmatter/9780521192712_frontmatter.pdf

- Environmental literacy: "the capacity to perceive, appropriately interpret, and value the specific state, dynamics, and potential of the environmental system, as well as to take appropriate action to maintain, restore, or improve these states"

Environmental literacy, ecological literacy, and ecoliteracy: What do we mean, and how did we get here? McBride et al. 2013 https://esajournals.onlinelibrary.wiley.com/doi/pdf/10.1890/ES13-00075.1

- "The term environmental literacy was first used 45 years ago in an issue of the Massachusetts Audubon by Roth (1968) who inquired 'How shall we know the environmentally literate citizen?'"
- "An awareness of and concern about the environment and its associated problems, as well as the knowledge, skills, and motivations to work toward solutions of current problems and the prevention of new ones"

How is Environmental Literacy Achieved?

Pragmatist Ecological Economics: Focusing on Human-Nature Relationships and Social-Ecological Systems. Armatas, Christopher. 2019 https://scholarworks.umt.edu/cgi/viewcontent.cgi?article=12509&context=etd

- Human-nature relationships: "(1) positionality, which captures the perceived appropriate role of humans in nature; (2) character of bond, which captures not only why people think nature is important, but also whether people perceive there to be an existing bond with nature (i.e., 'connectedness/apathy') and; (3) understanding of nature, which includes notions about the fragility and/or resilience of nature"
- Need for specific topics in research programs, and current research programs are too broad in design

The concept of experiential learning and John Dewey's theory of reflective thought and action. Miettinen, Reijo. 2000. https://www.tandfonline.com/doi/pdf/10.1080/026013700293458

- Lewinian experiential learning model: continuous process of concrete experience, to observations and reflections, to formation of abstract concepts and generalizations, to testing implications of concepts in new situations, and back to concrete experience

What are the Benefits of Environmental Education?

Benefits of elementary environmental education. Brock, Ryan, and Crowther, David. 2014
http://ndl.ethernet.edu.et/bitstream/123456789/38294/1/448.Michael%20P.%20Mueller.pdf#page=163

- Case study – Ryan's nature club: "By creating learning experiences where children from the club might interact with objects both inside the classroom as well as during outdoor trips, Ryan's children came to understand nature at a deeper level according to their notebook entries, interviews, and pre- and post- EID results"
- Integration of 4/5 senses, combination of indoor learning with artifacts and outdoor immersive learning, cataloging (photos, interviews, field journals/notebooks)
- "Ryan's study also reveals that students develop other skills that are equally significant in fostering scientific understandings and environmental identity" such as discovering new hobbies, strengthening of social identity, and development of process skills (such as observation)

Key Partners Working Together: Education, Community, and Government

Investigating the Benefits of Participatory Action Research for Environmental Education. Bywater, Krista. 2014
https://journals.sagepub.com/doi/pdf/10.2304/pfie.2014.12.7.920

- Participatory action research (PAR) unites "theory, participatory inquiry and social justice as researchers collaborate with community members to conduct research and devise solutions to resolve problems"
- "When we focus on buying green products like hybrid cars, we do not: decrease our consumption, demand that governments improve public transportation, change energy-intensive manufacturing processes, or alter our dependence on individual vehicles; thus, the economic and political systems that cause environmental destruction and poor human health remain unchanged"

From the *Campaign for Environmental Literacy* **(www.fundee.org)**

All of A Place: Connecting Schools, Youth and Community
Jack Chin, Funders Forum on Environment and Education, June 2001.

Are We Building Environmental Literacy?
A Report by the Independent Commission on Environmental Education, 1997.

Blueprint for a Green Campus: The Campus Earth Summit Initiatives for Higher Education
Campus Earth Summit, 1995.

Class of 2000 Report: Environmental Education, Practices and Activism on Campus
Benjamin Strauss, 1996. The Nathan Cummings Foundation, 475 Tenth Avenue, Fourteenth Floor, New York, NY,10018.

Closing the Achievement Gap: Environment as an Integrating Context for Learning
Gerald Lieberman, 1998. Science Wizards, 13648 Jackrabbit Road, Poway, California 92064.

Complex Environmental Systems: Synthesis for Earth, Life, and Society in the 21st Century
NSF Advisory Committee for Environmental Research and Education, National Science Foundation, 2003.

Creating a Community Specific Environmental Education Website, Chapter 3: Environmental Education on the Edge (draft)
Catherine Kavassalis, 2003.

Defusing Environmental Education: An Evaluation of the Critique of the Environmental Education Movement, Gregory A. Smith, 2000. Center for Education Research, Analysis, and Innovation, University of Wisconsin-Milwaukee.

Ecological Literacy: Education and the Transition to a Postmodern World
David W. Orr, State University of New York Press, 1992. ISBN:0-7914-0874-4.

Education for Sustainability: An Agenda for Action
President's Council on Sustainable Development, U.S. Government Printing Office, 1995. ISBN 0-16-048783-8

Education for Sustainable Development Toolkit Version 2
Rosalyn McKeown, 2002.

Engaging the Public on Biodiversity: A Road Map for Education and Communication Strategies
The Biodiversity Project, 1998.

Environment-based Education: Creating High Performance Schools and Students
National Environmental Education and Training Foundation, 2000.

Environmental Education at a Glance
National Association of Conservation Districts, 1998. EPA 171B98004.

Environmental Education: Challenges and Opportunities for Grantmaking
Jack Chin, Funders Forum on Environment and Education, 2001.

Environmental Education in the 21st Century: Theory, Practice, Progress, and Promise
Joy A. Palmer, Routledge, 1998. ISBN: 0-415-13197-9.

Environmental Education in the United States; Past, Present, and Future
Collected Papers of the 1996 National Environmental Education Summit, Burlingame, CA, Michele Archie (principal editor), North American Association for Environmental Education, 1998. (out of print)

Environmental Education Materials: Guidelines for Excellence
North American Association for Environmental Education.

Environmental Literacy in the United States: What Should Be & What Is & Getting from Here to There
Trudi L. Volk and Bill McBeth, North American Association for Environmental Education, 1997. USEPA EPA-NT902897-01-0.

Environmental Science and Engineering for the 21st Century: The Role of the National Science Foundation
National Science Board, National Science Foundation, 2000.

Environmental Studies in the K-12 Classroom: A Teacher's View
Survey Research Center, North American Association for Environmental Education and the Environmental Literacy Council, 2000.

Essential Readings in Environmental Education
The Center for Instruction, Staff Development and Evaluation, 2001. Stipes Publishing, Champaign, Illinois, ISBN: 0-58874-070-6

Excellence in EE - Guidelines for Learning (K-12)
North American Association for Environmental Education, 1999.

Guidelines for the Initial Preparation of Environmental Educators
North American Association for Environmental Education, 2000.

Increasing Diversity in the Environmental Field, Environmental Careers Organization
2001.

The Island Press Consortium on Environmental Teaching and Learning in Higher Education: Insights from the White Oak Symposium
Kristy Manning, Center for Resource Economics/Island Press, 1999.

Moving into the Educational Mainstream, Infobrief Number 26, Michele Archie, Association for Supervision and Curriculum Development
August 2001.

The National Report Card on Environmental Knowledge, Attitudes, and Behaviors
Roper Starch Worldwide, National Environmental Education and Training Foundation, 2001, 1999, 1998, 1997.

New Tools for Environmental Protection: Education, Information, and Voluntary Measures
Thomas Deitz and Paul C. Stern (Editors), National Academy Press, 2002. ISBN: 0-309-08422-9

Organization for Economic Co-operation and Development (OEED) 2009.
Green at Fifteen? How 15 year olds perform in environmental science and geosciences in PISA 2006. Retrieved from http://www.oecd.org/publishing/corrigenda

Partnership for 21st Century Skills. (2011) Framework for 21st Century Learning.
Retrieved from http://www.p21.org/index.php?option=com_content&task=view&id=254&Itemid=16 Beane, J., Turner, J., Jones, D. and Lipka, R. (1981). Long-term effects of community service programs. Curriculum Inquiry.

Pieces of the Puzzle: An Overview of the Status of Environmental Education in the United States
Gerald Lieberman, Science Wizards, 1995.

Place-based Education & Academic Achievement.
Prepared by: Michael Duffin, PEER Associates, Inc. Prepared for: The Place-based Education Evaluation Collaborative (PEEC) November 16, 2005, Available at: www.peecworks.org

Policy and The Environment: Education for a Sustainable and Secure Future, Third National Conference on Science, Draft Background Document
David Blockstein (editor), January 30, 2003.

Reaching Out: Broadening College Student Constituencies for Environmental Protection
Loges and Kidder, the Institute for Global Ethics, 2000.

Report Assessing Environmental Education in the United States and the Implementation of the National Environmental Education Act of 1990
EPA National Environmental Education Advisory Council, U.S. EPA, 1996.

Report to Congress 11 (Draft)
EPA National Environmental Education Advisory Council, 2002.

State of the Campus Environment: A National Report Card on Environmental Performance and Sustainability in Higher Education
Mary McIntosh with Kathleen Cacciola, Stephen Clermont, and Julian Keniry, NWF Campus Ecology Program, 2000.

Stumbling Towards Sustainability
John C. Dernbach (editor), the Environmental Law Institute, Washington, DC, 2002. ISBN: 1-58576-036-6

A Survey of the Status of State-level Environmental Education in the United States, 1998 Update
Abbey Ruskey, Rick Wilke & T. Beasley, Journal of Environmental Education, Spring 2001.

Using Environment-based Education to Advance Learning Skills and Character Development
North American Association for Environmental Education and the National Environmental Education and Training Foundation, 2001.

Additional resources:

Liu, S.-C., & Lin, H. (2014). Undergraduate students' ideas about nature and human-nature relationships: an empirical analysis of environmental worldviews. Environmental Education Research, 20(3), 412-429.