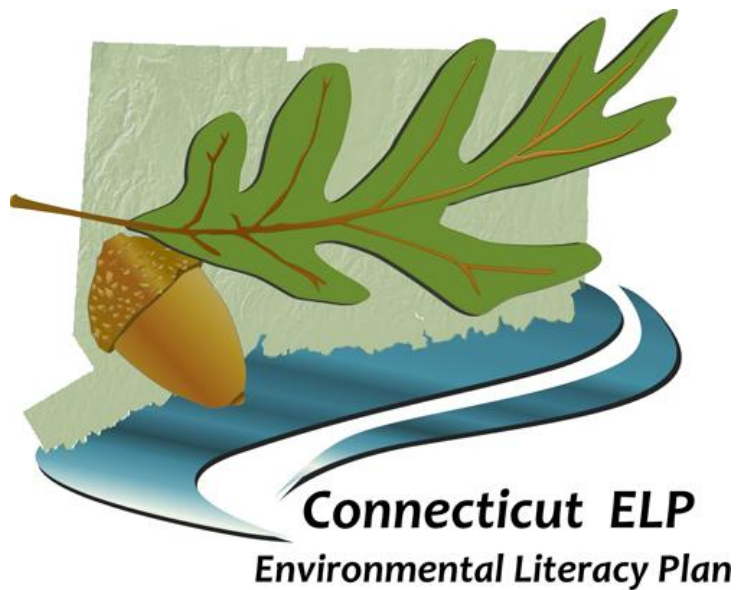


Connecticut's Environmental Literacy Plan



Working together to ensure that all CT's citizens are environmentally literate

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Background: The Need for Environmental Literacy

Within the United States and in the state Connecticut, the need for comprehensive environmental education has never been greater. The health of Connecticut's future depends on its citizens being environmentally literate and able to make informed choices about environmental issues such as water use, air quality, and land development.

Consumption of natural resources, air and water pollution, and the impacts of climate change are among the many complex challenges that threaten human health, economic development, and national security. Across the country, communities face the challenge of balancing the economy that provides our 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 and helping students understand the interrelated elements of sustainable environmental systems – from ecological, economical, and community perspectives. It is critical that every American understands how our community, economy, and the environment are connected and mutually dependent. Environmental education prepares all citizens with 21st Century essential skills that contribute to healthier, more environmentally sustainable, and economically prosperous communities.

"As educators and parents, we have a responsibility to instill in the next generation an appreciation of the great natural resources we have in our state and nation and of the impact humans have on them. Of course, there is no better way to establish a connection with the environment than to be outdoors, observing and learning about how air, water and soil sustain an amazing diversity of life. It is also important to note that environmental science will play an important role in shaping careers in the green economy predicted in our future. Environmental education can be an inspiring and relevant context for assuring that today's students are prepared to respond to the environmental challenges of our times."

Mark McQuillan, Commissioner, Connecticut State Department of Education

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 prepare today's students - tomorrow's policy makers - with the proper knowledge and skills to make critical decisions regarding our global and local resources and 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 ability to make responsible decisions based on scientific, economic, cultural, and ethical considerations
- The confidence and motivation to exercise rights and responsibilities as a member of a community

Components of Environmental Literacy*

In order to be a fully environmentally literate citizen, all of the following must be developed.

Awareness

Awareness is 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 much more. Environmental awareness can arise from many activities - education being just one – and is a first step toward deeper understanding.

Knowledge

Developing knowledge requires more than acquisition of new information or data. 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 with the student) - something that is 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 often is an essential part of a formal (or non-formal) education program.

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 natural systems. Environmental education is the process of developing that capacity.

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

How is Environmental Literacy Achieved?

Environmental education (EE) is the learning process through which citizens attain environmental literacy. 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.

Connecticut citizens have ready access to diverse spaces that can serve as experiential learning environments including 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 gardens, and classroom science experiments are all excellent opportunities to learn more about natural systems and environmental issues.

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. However, they often provide these experiences of their own accord and at their own expense since most primary and secondary schools have not integrated environmental education into their curricula. Connecticut has a broad network of community organizations, public agencies, and businesses committed to providing high quality environmental education experiences for teachers and students.

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. EE is taught in traditional classrooms, in communities, and in settings like nature centers, museums, parks, and zoos. In schools, learning about the environment often involves integrating knowledge and skills from many subjects and reflects state curriculum standards.

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 (CMT and CAPT), require students to demonstrate proficiency in diverse subject areas. Environmental education unites subject areas and provides 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.

Environmental education has been shown to contribute 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.”

Evidence gathered from this study and others indicates 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

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

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 attitudes 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 partners that must work collaboratively and in support of each other to achieve the goal of an environmentally literate citizenry.

Education Partners

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 that connects them to the environment. Education partners include:

- Informal Environmental Educators
- Pre-K through Higher Education Teachers
- Teacher Associations
- School Administrators and Staff
- Parent-Teacher Organizations
- Boards of Educations
- State Department of Education
- Regional Educational Service Centers
- Non-profit Educational Organizations

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:

- General Public
- Business Groups
- Civic Organizations
- Youth Groups
- Libraries
- Religious Organizations
- Neighborhood Association
- Local Media
- Health Professionals

Government Partners

Government entities must develop policies and laws that support environmental education efforts. Providing the necessary funding for these efforts is key to their success. Government partners include:

- State Representatives
- Town Councils
- Local Land Use Boards
- Municipal Leaders and Committee Members
- State and Local Agencies
- Advocacy and Policy Officials
- State Department of Environmental Protection

Elements of Connecticut's Environmental Literacy Plan

The following elements are addressed within the CT Environmental Literacy Plan for each of the three partners. Each of these elements plays an important role in ensuring environmental literacy for all citizens.

Learning Opportunities for All

The North American Association for Environmental Education (NAAEE) has developed *Excellence in Environmental Education: Guidelines for Learning* for Pre-K through grade 12 students. This document can guide the development of learning programs not only in schools but also for informal and community environmental education programs for life-long learning. The ELP includes an alignment between the state's content standards and the NAAEE EE standards to help guide schools in the integration of EE across the curriculum. The ELP also considers how environmental literacy might be incorporated into the state's **graduation requirements** by addressing how environmental education standards can be included in specific high school programs of study and other experiences. The CT ELP suggests ways to identify **instructional opportunities** for using existing models and programs (e.g, outdoor learning, STEM, service learning, etc.) for teaching about the environment in pre-K-12 grades through multidisciplinary models or specific courses or units of instruction.

Environmental Leadership Development

NAAEE's *Guidelines for the Preparation and Professional Development of Environmental Educators* provide a set of recommendations about the knowledge and abilities educators need to provide high-quality environmental education and become leaders in our 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.

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

Our local communities and schools grounds should provide easily accessible green spaces and natural resources to use as opportunities for students to learn about their environment. Outdoor spaces should serve as learning laboratories and be used for low impact recreational use. Many city, county, or state environmental management agencies are potential partners to develop strategies for new building construction and renovation projects to meet green design requirements. 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 first step toward environmental literacy. Information must be readily shared among education, community and government partners and the public about ongoing EL efforts as effective communication is vital to their success. Working together, citizens have the ability to magnify their efforts and increase their impact.

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. 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.

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 CT. This includes traditional assessments, counts of student participation or performance, and other mechanisms.

The Role of the CT Environmental Literacy Plan Steering Committee

The CT Environmental Literacy Plan Steering Committee was formed in 2009 and has coordinated the development of the ELP. The ELP Steering Committee will continue to oversee the implementation of the plan in the coming years 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;
- an online database of EE resources available in the state that is easily accessible to educators;
- 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; and
- a process to monitor the implementation of the ELP and publicly report the results.

The Connecticut Outdoor and Environmental Education Association (COEEA) will coordinate the ELP Steering Committee. The ELP Steering Committee will include representatives from various environmental and educational organizations throughout the state (e.g., CT Department of 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 current ELP Steering Committee members.

The Development and Adoption of the CT Environmental Literacy Plan

The development of the CT ELP began in 2009 in response to the proposed federal *No Child Left Inside* (NCLI) legislation. The NCLI bill currently includes \$500 million for state educational agencies to distribute to equip teachers with the skills, knowledge, and confidence they need to integrate the environment into their curricula. Only states with qualifying Environmental Literacy Plans will be eligible for a percentage of this funding. The development work was coordinated by the ELP Steering Committee (see above) which convened planning sessions throughout 2009 and 2010. A series of informational and input sessions took place in the 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 overall plan and for each sector (Education, Community and Government) to guide further development of the ELP. Two writing sessions were then held in July, 2010. In addition, members of the ELP Steering Committee have participated in meetings and conference calls with representative from fellow New England states that are also developing ELPs. Drafts of the ELPs have been shared among the states. A time for public comment on the CT ELP will be available in the fall of 2010. The ELP Steering Committee will work to ensure the adoption of the plan by various state agencies and educational organizations in early 2011.

Education Partners

Learning Opportunities for All

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

- Align the National EE standards and CT educational standards. A cross-walk document will be prepared showing the connections between the state’s content standards and the North American Association for Environmental Education (NAAEE) *Excellence in Environmental Education: Guidelines for Learning*.
- Incorporate EE best practices and programs that are developmentally appropriate for all students across the PreK-12 curriculum. This includes Language Arts, Social Studies, the Arts, and Science, Technology, Engineering and Mathematics (STEM) programs. Encourage interdisciplinary study that incorporates 21st Century Skills where appropriate.
- Include meaningful outdoor learning experiences at all grade levels. The use of onsite or easily-accessible local outdoor learning opportunities should be utilized whenever possible and transportation to other outdoor learning venues should be supported when necessary.
- EE learning experiences must be inclusive of all students and reflect the diversity of cultural backgrounds in our state.
- Encourage active PTO involvement in the support of outdoor and environmental learning programs.
- Develop, promote and effectively use a comprehensive EE resource database that is readily available online to all CT educators.
- 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.
- Support citizen 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 and programs.
- Include natural resource management, environmental restoration and “green business” opportunities in school-to-work 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.
- Support resource professionals in informal EE centers to integrate EE learning programs in PreK-12 classrooms.
- EE centers will evaluate and enhance their learning programs using the NAAEE *Guidelines for Excellence*. Exemplary programs will be included in the online database of resources. The CT Outdoor and Environmental Education Association (COEEA) and partners will support this effort.

Environmental Leadership Development

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

- Assess the EE professional development needs of educators utilizing existing surveys developed by partner New England states and other sources.
- Increase opportunities and incentives for educators to participate in national EE curriculum workshops and programs.
- Require coursework or professional development 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 certification opportunities for EE providers based on the NAAEE *Guidelines for Excellence*.
- Form partnerships with higher education institutions to support professional/adult learning opportunities.
- Form partnerships with higher education institutions to support professional/adult learning opportunities.

Goal: Develop a body of environmental education leaders in all school districts, informal learning centers and non-profit educational organizations. 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 and to train other educators. Green Teams should include teachers and administrators from schools and informal educators from local EE learning centers.
- Hire full-time consultant(s) or 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 among administrators, higher education and teacher educators throughout the state.

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 and informal centers should utilize on-site and/or nearby outdoor spaces for varied EE learning experiences (e.g., school gardens, pond ecology, urban forestry, working lands, etc.). Professional development should support the effective use of facilities and grounds for EE learning.
- All educational settings should model environmentally sustainable practices (e.g., conservation of natural resources, recycling, healthy local foods, efficient use of renewable energy sources, etc.), and should provide opportunities for learning about environmental stewardship (e.g., monitoring of energy and water usage).

- Outdoor learning environments should be safe and accessible to and useable by everyone regardless of physical abilities.
- Buildings used for educational purposes should reflect green design and sustainability principles (including new construction and renovations).

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.
- Identify opportunities for participation in community-based service learning projects that enhance environmental literacy.

Implementation and Funding

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

- The ELP Steering Committee will continue in its role of overseeing the implementation of the ELP. The ELP Steering Committee will include representatives from environmental and educational organizations (e.g., DEP, CSDE, COEEA, CSTA, SENEME, Higher Ed. Institutions, etc.). COEEA will coordinate the ELP Steering Committee. (See page 9 for further information.)
- 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., DEP, 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.
- A part-time or full-time person should be hired (using secured funds) to coordinate the implementation of the ELP with the Steering Committee.
- 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:

- An online inventory of existing educational funding sources and initiatives that could support the goals of the ELP should be developed by the ELP Steering Committee. These include Race to the Top, STEM initiatives, Secondary School Reform, Title II and V, Perkins grants, Math and Science Partnership grants, business and industry grants, etc.
- The ELP Steering Committee will assemble a grant writing advisory team to aid in securing necessary funds.
- COEEA and partners will lead the search for additional funding sources and the development of grant proposals to support the implementation of the ELP.
- Schools should identify local funding sources to support the implementation of the ELP into school learning programs and practices. This may include financial support for professional development, onsite green learning spaces, and substitute teachers if necessary.
- The ELP Steering Committee will work with education, community and government partners to seek out in-kind and financial support for educational 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. The use of a comprehensive EE online resource database (e.g., replicable programs, best practices, town successes, etc.) will be utilized to communicate about available EE programs within the state.
- Partnerships must be developed between formal and informal educators to develop effective EE programs. COEEA and partners will assist informal educators in better understanding the needs of formal educators and local schools.
- DOE and EE partners will collaborate to incorporate EL into state standards and existing programs.
- The ELP Steering Committee will design an in-service and pre-service program to promote understanding of ELP applications for 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:

- Utilize the NAAEE *Guidelines for Excellence* as a basis to assess the effectiveness of EE programs and initiatives supported by the ELP.
- The ELP Steering Committee will develop a strategy to regularly assess the implementation of the ELP, EE efforts and outcomes and publicly report the results.
- Seek competent EE researchers to conduct valid and reliable EE research to inform best practices.
- Use the results of the research and assessments to inform improvements in EE programs and evaluate their impact among education partners.
- Utilize the assessments of successful existing EE programs to foster the model for replication.

Goal: Assess the environmental literacy of students and education partners in Connecticut at the local and state levels.

- Develop an assessment of the environmental literacy to establish the baseline among education partners.
- Local school systems should identify opportunities in existing assessment practices to monitor the environmental literacy of their students. The alignment between the CT standards and the NAAEE *Excellence in Environmental Education: Guidelines for Learning* will assist schools in identifying the connections between EL and learning across various content areas.
- Incorporate environmental literacy into the state's comprehensive assessment system. Identify areas on the statewide testing programs (CMT and CAPT), benchmark and performance assessments where environmental literacy is currently integrated. Work toward increasing the integration of EL into statewide assessment programs where gaps exist.

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.
- Create master lists of community EE learning opportunities (e.g., seminars, topical forums, workshops, etc.) that is updated regularly and made accessible to the public online.
- Conduct EE seminars and topical forums in various community venues (e.g., libraries, local and state parks, historical sites, town festivals, etc).
- Support local historical, cultural, and other community events that promote environmental literacy (e.g., ____).
- Encourage community members to engage in research of environmental issues and citizen science programs .

Goal: Connect schools with community resources to provide EE opportunities and to learn about and model sustainable practices. Action items include:

- Identify EE learning programs in local communities that can be utilized by schools (e.g., ____).
- Provide resources and support for service learning projects, internships and green career paths for students.

Environmental Leadership Development

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

- Identify and utilize more effectively 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).
- Support and bolster coordination among existing environmental leaders and 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 global perspectives 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.

Implementation and Funding

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

- The ELP Steering Committee will develop guidelines that support community implementation of the ELP.
- Local community organizations and/or EE leaders will use the guidelines to develop networks and partnerships to support the implementation of the ELP.
- Encourage town-wide and regional “green” activities that promote collaboration among community groups.

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 various community organizations and the media in support of the goals of the ELP.
- Increase awareness of environmental education events and learning opportunities through various media and by disseminating information directly through various community organizations (e.g., youth organizations, civic organizations, museums, libraries, local businesses, environmental organizations, etc.)
- Promote collaboration among community groups to implement the goals 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 and evaluations and to make proposals conserve and enhance local resources.

Goal: Assess the environmental literacy of the general 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.

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 to learn about key environment 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.

Environmental Leadership Development

Goal: Develop a team of environment 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 supports the ELP.
- Encourage towns to participate in on-going certification programs at state and local levels (e.g., inland wetlands, coverts, 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, etc.
- Develop policies that promote green planning, including *low-impact* educational and recreational open spaces.
- 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, citizen science, corridor establishment)

Implementation and Funding

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

- Develop policies and legislation that support the goals of the ELP.
- Support the development of a statewide database for EE resources, learning opportunities and replicable programs.

- Encourage sustainable living within schools and communities (e.g., green spaces, habitat preservation, recycling, composting, IPM school applications, etc.). Action items include:
- Support and encourage partnering opportunities at federal, state and/or local levels between executive and education branches to implement the goals of the ELP.

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 federal funds for EL programs.
- Target existing funds and grants to include EL 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 EL 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 and materials (e.g., DEP's *No Child Left Inside* initiative, Culture and Tourism, etc.) that foster environmental literacy for the general public through various media outlets.
- Support efforts in local communities and at the state level to promote events that include EE learning opportunities through various media outlets.

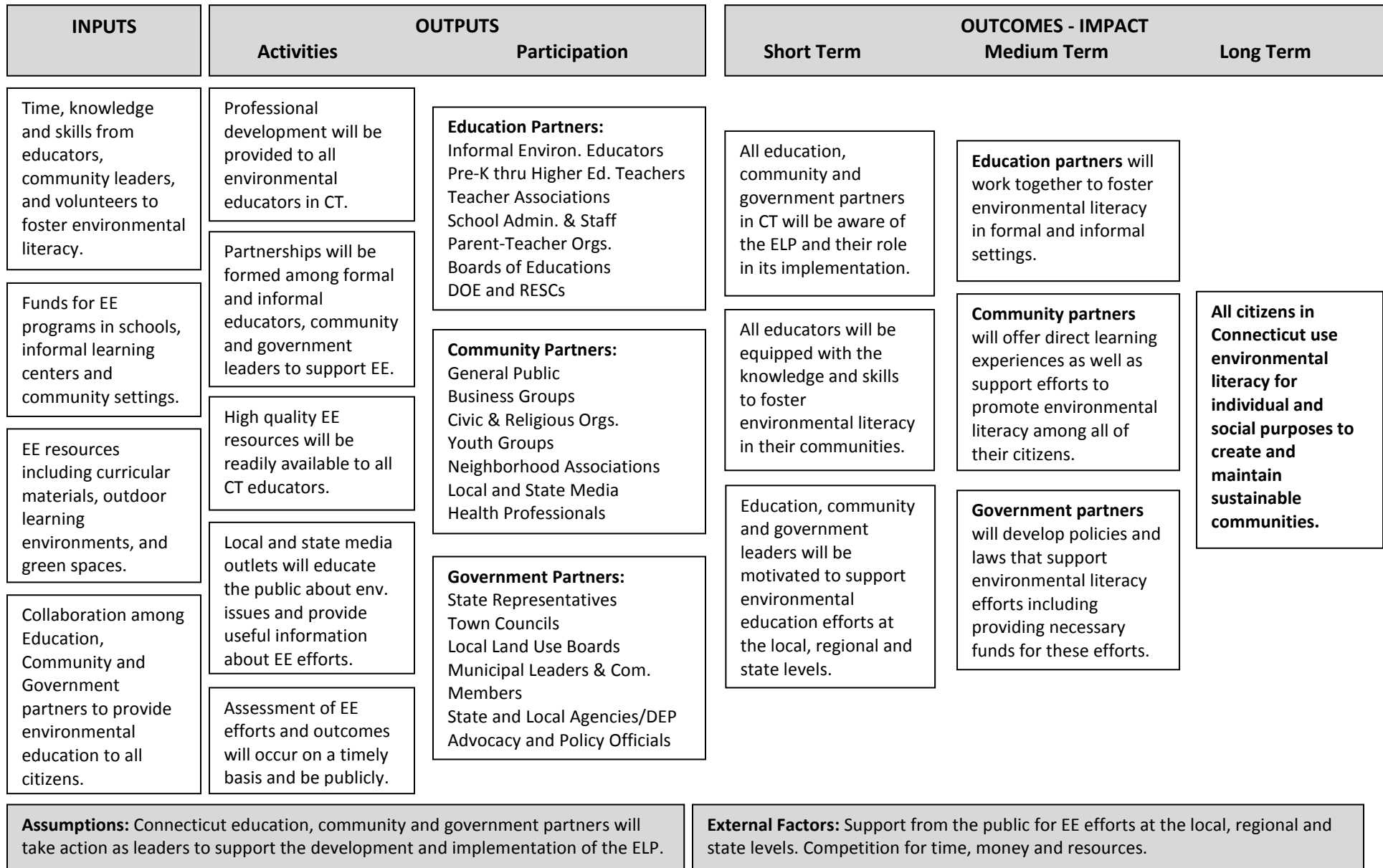
Research and Assessment

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.

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 informed choices about environmental issues such as water use, air quality, and land development. Environmental literacy includes an understanding of the natural world, the ability to make responsible decisions and the confidence and motivation to exercise rights and responsibilities as a member of a community.



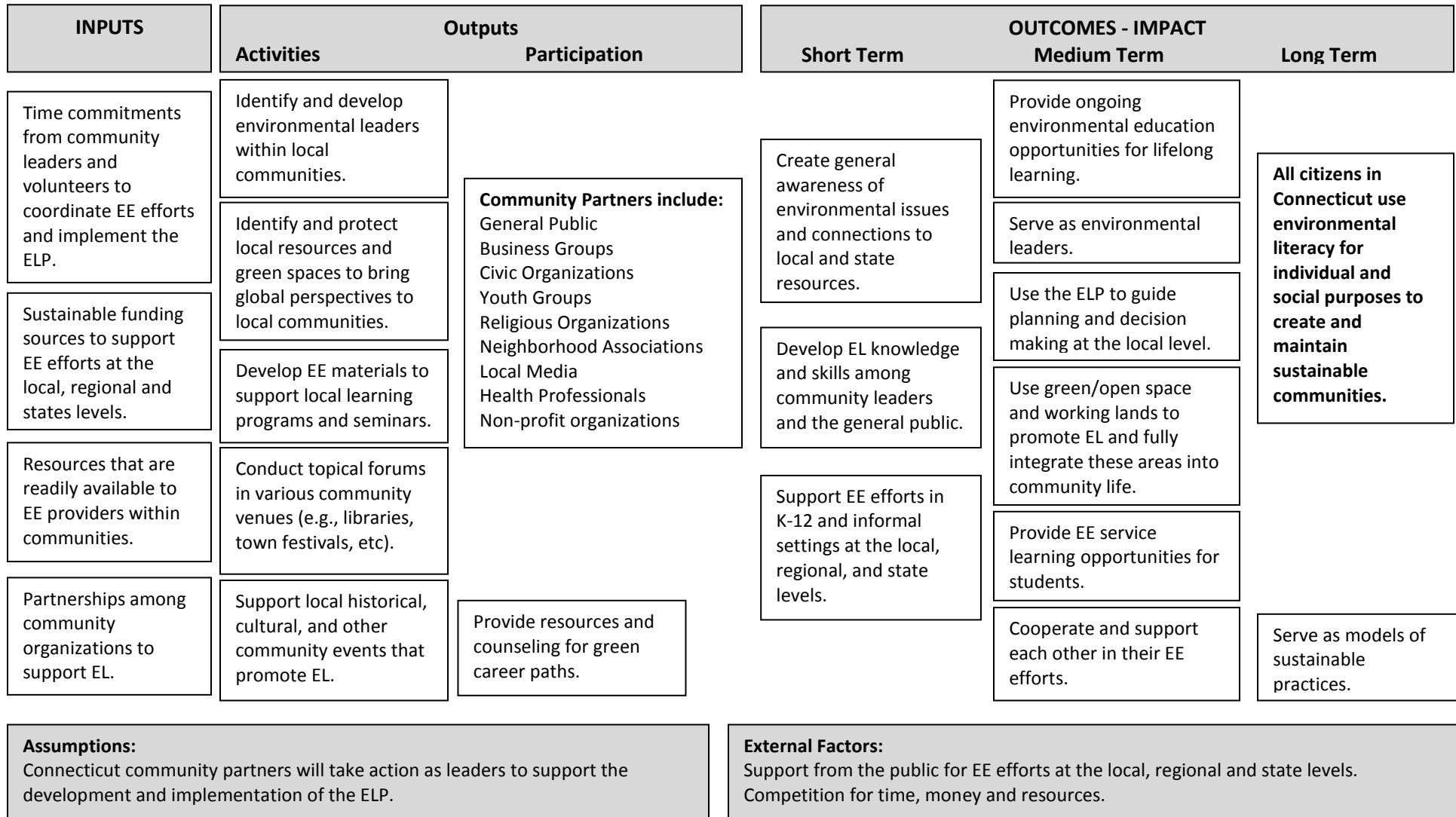
Connecticut's Environmental Literacy Plan: Education Partners Logic Model

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 connect them to the environment.

INPUTS	OUTPUTS		OUTCOMES - IMPACT		
	Activities	Participation	Short Term	Medium Term	Long Term
<p>Education partners will devote time and resources and develop knowledge and skills to foster environmental literacy.</p> <p>Adequate funding of EE programs in K-12 schools and informal learning centers.</p> <p>EE resources including curricular materials, outdoor learning environments, and green spaces.</p> <p>Collaboration among formal and informal teachers, administrators and parents to provide EE opportunities to all students.</p>	<p>Align National EE standards and CT educational standards.</p> <p>Identify areas where EL connects with CT graduation requirements.</p> <p>Identify best practice system for EE that is developmentally appropriate.</p> <p>Make EE resources readily available online to all CT educators.</p> <p>Utilize the NAAEE Guidelines of Excellence to evaluate quality of programs.</p> <p>Develop EE certification for professional development and training programs.</p>	<div style="border: 1px solid black; padding: 5px;"> <p>Education Partners include: Informal Environ. Educators Pre-K thru Higher Ed. Student & Teachers Educator 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.</p> </div> <p>Form partnerships between formal and informal educators to support EE efforts.</p> <p>Assess EE efforts and outcomes on a timely basis and publicly report the results.</p> <p>Provide high quality professional development to all environmental educators in CT.</p>	<p>Education leaders will be aware of the ELP and their role in supporting it.</p> <p>Through high quality professional development, educators will integrate EE best practices into their programs.</p> <p>Education partners will cooperate and communicate resources, needs and opportunities to support EE.</p> <p>K-12 administration understands and supports EE through curriculum, staff development and school practices.</p>	<p>Integrate EE in all content areas to insure that all students are environmentally literate upon graduation.</p> <p>Include significant outdoor learning experiences at all grade levels.</p> <p>Use their grounds and facilities as learning laboratories to model sustainable practices.</p> <p>Develop a body of EE leaders in all school districts and local communities.</p> <p>Access and effectively use a comprehensive EE resource base.</p> <p>Link K-12 schools and community resources to provide life-long learning about sustainable living.</p>	<div style="border: 1px solid black; padding: 5px;"> <p>All citizens in Connecticut use environmental literacy for individual and social purposes to create and maintain sustainable</p> </div> <p>Support professional/adult learning opportunities.</p> <p>Connect education and environmental civic responsibilities.</p> <p>Apply best practice system for EE.</p>
<p>Assumptions: Connecticut education partners will take action as leaders to support the development and implementation of the ELP.</p>			<p>External Factors: Support from the public for EE efforts at the local, regional and state levels. Competition for time, money and resources.</p>		

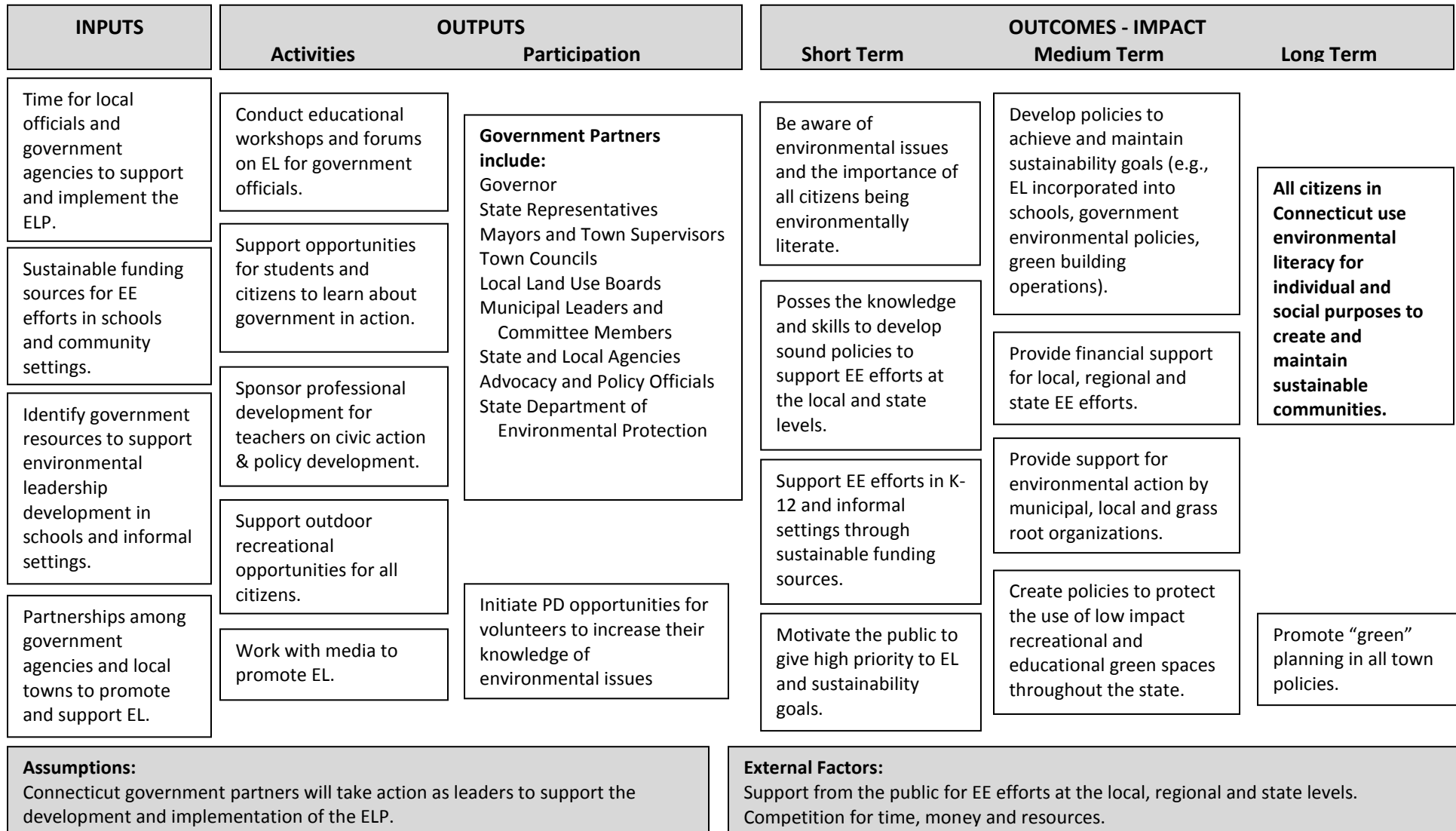
Connecticut's Environmental Literacy Plan: Community Partners Logic Model

Situation: Our local communities play a vital role in educating children and adults about environmental issues. Communities need to preserve natural resources and develop sustainable practices to promote environmental literacy.



Connecticut's Environmental Literacy Plan: Government Partners Logic Model

Situation: Government entities must develop policies and laws that support environmental education efforts. Providing the necessary funding for these efforts is key to their success.



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

Presented here is a summary of the alignment between the *Excellence in Environmental Education Guidelines for Learning* (Pre K-12) (revised 2004) and the CT Curriculum Standards for Science and Social Studies due to the high degree of overlap with these subjects. While the alignment with science and social studies is key, environmental literacy should be achieved through integration with all subject areas, including language arts and mathematics.

The *Excellence in Environmental Education Guidelines for Learning* (Pre K-12) (revised 2004) provide various audiences with a set of common, voluntary guidelines for EE. The guidelines set a standard for high-quality EE in schools across the country, 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

The *Connecticut Core Science Curriculum Framework* articulates 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. The framework was designed to target the age-appropriate critical thinking – or inquiry – skills that should be infused in 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 (Grade Pk-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 Connecticut Social Studies Framework is organized around the following three interrelated themes:

- Standard 1: Content Knowledge - Knowledge of concepts and information from history and social studies is necessary to promote understanding of our nation and our world.
- Standard 2: History/Social Studies Literacy Skills - Competence in literacy, inquiry, and research skills is necessary to analyze, evaluate and present history and social studies information.
- Standard 3: Application - Civic competence in addressing historical issues and current problems requires the use of information, skills and empathic awareness.

Below is the “Alignment at a Glance” which presents a summary table of the standards from the CT Science and Social Studies Frameworks that align with the standards from the *Excellence in Environmental Education Guidelines for Learning*. The standards from each content area are color-coded for ease of use.

Alignment at a Glance

National Environmental Literacy Standards (North American Association of Environmental Education (NAAEE) Guidelines for Learning)			Connecticut Science and Social Studies Content Standards		
			Elementary School (Grades 3-5)	Middle School (Grades 6-8)	High School (Grades 9-12)
Strand 1: Questioning, Analysis, and Interpretation Skills	(no sub-strands)	A. Questioning	BINQ.1	CINQ.1	DINQ.1
		B. Designing investigations	BINQ.3	CINQ.3, CINQ.4	DINQ.3, DINQ.4, DINQ.5
		C. Collecting information	BINQ.2, BINQ.4, BINQ8, BINQ9, 2.1	CINQ.5, 2.1	DINQ.6, 2.1
		D. Evaluating accuracy and reliability	BINQ.6, BINQ10, 2.2	CINQ.2, 2.2	DINQ.2, DINQ.7, 2.2
		E. Organizing information	BINQ.6, BINQ.10, 2.5	CINQ.6, CINQ.7, 2.5	DINQ.8, 2.5
		F. Working with models and simulations			
		G. Drawing conclusions & developing explanations	INQ.5	CINQ.8, CINQ.9	DINQ.9
Strand 2: Knowledge of Environmental Processes and Systems	Strand 2.1: The Earth as a Physical System	A. Processes that shape the Earth	4.3	6.3, 7.3	9.7
		B. Changes in matter	3.1	6.1	9.8
		C. Energy	5.1	7.1	9.1, 9.3
	Strand 2.2: The Living Environment	A. Organisms, populations, and communities	3.2, 4.2	6.2, 7.2	10.6
		B. Heredity and evolution		8.2	10.5
		C. Systems and connections		6.2	
		D. Flow of matter and energy	4.2	6.2	9.1
	Strand 2.3: Humans and Their Societies	A. Individuals and groups			
		B. Culture	1.13	1.13	1.13
		C. Political and economic systems	1.10, 1.11	1.10, 1.11	1.10, 1.11
		D. Global connections	1.12	1.12	1.12
		E. Change and conflict			
	Strand 2.4: Environment and Society	A. Human/environment interactions	1.5	6.4, 1.5	9.6, 9.9, 1.5
B. Places		1.4, 1.6	1.4, 1.6	1.4, 1.6	
C. Resources		3.4, 1.10	1.10	1.10	
D. Technology		5.4			
E. Environmental issues		1.5	1.5	1.5	
Strand 3: Skills for Understanding and Addressing Environmental Issues	Strand 3.1: Skills for Analyzing & Invest. Env. Issues	A. Identifying and investigating issues	3.2	3.2	3.2
		B. Sorting out the consequences of issues	3.2	3.2	3.2
		C. Id. & evaluating alt. solutions & courses of action	3.2	3.2	3.2
		D. Working with flexibility, creativity, and openness			
	Strand 3.2: Decision-Making and Citizenship Skills	A. Forming and evaluating personal views	3.3	3.3	3.3
		B. Evaluating the need for citizen action	3.3	3.3	3.3
		C. Planning and taking action	3.3	3.3	3.3
		D. Evaluating the results of action	3.3	3.3	3.3
Strand 4: Personal and Civic Responsibility	(no sub-strands)	A. Understanding societal values and principles			
		B. Recognizing citizens' rights and responsibilities	1.9	1.9	1.9
		C. Recognizing efficacy			
		D. Accepting personal responsibility			

Alignment with CT Science Standards Alignment with CT Social Studies Standards

Appendix C: Connecticut Environmental Literacy Plan Steering Committee

Robin Bennett
CT Resources and Recovery Authority (CRRRA)

Lori Paradis Brant
CT Forest and Park Association (CFPA)

Elizabeth Buttner
CT State Department of Education (CSDE)

Ellen Castaldini
Member at large

Susan Cusato, PhD
Southern CT State University

Mark Dale
Winding Trails Recreation Center

Scott Graves, PhD
Southern CT State University

Jeff Greig
CT State Department of Education (CSDE)

Laurel Kohl
Institute for Sustainable Energy at Eastern CT State University

David Lavalley
Norwalk Montessori Middle School

Becky Newman
COEEA President and EarthPlace

Diana Payne, PhD
CT Sea Grant at UCONN Avery Point and SENEME

Susan Quincy
CT Department of Environmental Protection (DEP)

Tedor Whitman
CT's Beardsley Zoo

Ralph Yulo
Eastern CT State University

Appendix D: Key Reports and Studies on Environmental Literacy

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.

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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

Pieces of the Puzzle: An Overview of the Status of Environmental Education in the United States

Gerald Lieberman, Science Wizards, 1995.

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.

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Mary McIntosh with Kathleen Cacciola, Stephen Clermont, and Julian Keniry, NWF Campus Ecology Program, 2000.

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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.