

Appendix E

Conservation Education 2016 Forest Action Plan Update

Information and Education

One goal of the DLNR - Division of Forestry and Wildlife (DOFAW) is to play an active role in the development of a more environmentally literate citizenry. It is necessary to communicate with the public and educate them on the complexity of issues surrounding land management with the Department's dual mandate of providing opportunities for the public to engage in recreation while protecting and preserving natural and cultural resources. A well-informed public, including policy makers, special interest groups, educators, and the general public, is essential for ensuring the DOFAW has the resources and support to successfully manage healthy and sustainable forests. It also is very important to provide educational opportunities across all age groups and audiences in order to facilitate a better understanding of forest and natural resource management, health, protection, sustainability and other related issues. Conservation and environmental education can be utilized to inform the public about all the program areas overseen by the DOFAW.

The Division of Forestry and Wildlife recognizes that Conservation Education and the dissemination of information is an issue that is inextricably linked to all other issues and is demonstrated as such throughout the matrices. It is none-the-less important to share, in a coordinated manner, the history of CE in Hawaii, present efforts, and future goals.

This chapter includes information on the current status of EE in DOFAW, the history of Environmental Education (EE) in Hawaii, and future goals. The following issues are highlighted:

- EE in Select DOFAW program areas
- Select Local and National Environmental Education Resources Hawaii (those most utilized by the DOFAW)
- Environmental Education in Public Schools
- Public Perceptions of Natural Resource Management
- Internal communication training for the DOFAW personnel
- Pending national education that will affect the DOFAW

Hawaii's Division of Forestry and Wildlife

The Hawaii Division of Forestry and Wildlife (DOFAW) is the largest land managing Division within the Department of Land and Natural Resources. As such, DOFAW is an integral part of forestry and wildlife education in the state. The DOFAW is coordinated into 5 Program Areas: Na Ala Hele Trails and Access, Forest Health, Wildlife, Native Ecosystem Protection and Management, and Information and Technology. These program

areas include employee specialization in the following areas: fire management and suppression; forest pests; natural area reserve systems; watershed partnerships; entomology; legacy land conservation program; trails and access; information and education; wildlife; hunting; seabirds, migratory birds, and waterbirds; urban and community forestry, Plant Extinction Prevention, landowner assistance, among others.

Information below details some of the EE efforts within DOFAW's program areas:

Fire Program: The goal of the fire program is to provide protection for forest, brush, natural areas, and grassland to the extent needed to hold fire damage below the level at which it would interfere with high-level, sustained yield of products and services from these lands. The objective is to provide fire protection coverage on 3,360,000 acres throughout the State. The Division promotes fire suppression and safety and distributes fire prevention materials and brochures to the public at the DOFAW administrative and branch offices.

Smokey Bear is an important educational tool for use in festivals, parades and school programs. Smokey helps ingrain the message, "Remember: Only You Can Prevent Wildfires." Smokey's message continues to be relevant in Hawaii, where natural fires are extremely rare (except in the immediate vicinity of active lava flows) so native ecosystems are not fire-adapted.

Urban and Community Forestry Program: This section provides technical assistance to municipalities, cities and towns throughout Hawaii helping them prepare for tree plantings and providing assistance to establish tree projects.

Landowner Assistance Programs: Hawaii has a number of landowner assistance and acquisition programs including, the Conservation Reserve Enhancement Program, Forest Legacy Program, Forest Stewardship Program, and Legacy Land Conservation program. Staff facilitate community workshops to and provide one-on-one support to spread awareness about these opportunities.

Some of DOFAW's Landowner Assistance Programs:

Conservation Reserve Enhancement Program: The Conservation Reserve Enhancement Program (CREP) started in April of 2009. It is a federal-state natural resources conservation program that addresses state and nationally significant agricultural related environmental concerns. Through CREP, program participants receive financial incentives from U.S. Department of Agriculture (USDA) and the State to voluntarily enroll in the Conservation Reserve Program in contracts of 15 years. Participants remove cropland and marginal pastureland from agricultural production and convert the land to native grasses,

trees and other vegetation. The USDA Farm Service Agency (FSA) administers the CREP for USDA. CREP staff presents to interest groups such as the cattleman's council and soil and water conservation districts.

Forest Legacy Program: The Forest Legacy Program is a Federal grant program that aids States in identifying important private forest lands that are threatened by development or fragmentation. Through the program, interested landowners are provided with alternatives to selling their land for development in order to cover costs associated with increased taxes, management of the land, among others by selling the land or a conservation easement on the property to a government organization.

Forest Stewardship Program: Hawaii's Forest Stewardship Program (FSP) provides technical and financial assistance to owners of nonindustrial private forest land that are interested in conservation, restoration, and/or timber production. The Forest Stewardship Handbook contains all of the information that is needed by the forest landowner to participate in the program. Procedures for application, proposal and management plan content, forestry practices, cost-share rates, and more can be found within the Handbook.

Information and Technology: The I&T program provides the bulk of environmental education programming offered by the DOFAW. Staff manage the Project Learning Tree program; coordinate DOFAW's Youth Conservation Corps program and other youth conservation internship opportunities including the Student Conservation Association; participate in public outreach events, offer presentations for schools, universities, and civic clubs, lead field experiences; and engage in other events as requested.

The History of Environmental Education in Hawaii

Hawaii's conservation education ethic began with the first colonizers, the Polynesians. As with any landscape that evolved without humans, the arrival of humans dramatically modified the island ecosystems. The initial impact of humans on the natural environment included modifying the landscape for agricultural practices, housing, and cultural and practical gathering of resources to sustain line. These actions led to the extinction of a number of flightless birds, other animals, and plants.

The arrival of Europeans sounded the start of world import export and with this the exploitation of natural resources and the introduction of innumerable invasive species augmented the rate of extinction, land degradation, and insufficient water supplies in some areas.

In an attempt to repair the mismanaged and exploited resources, a number of restoration efforts took place on public and private lands. The Hawaii Division of Forestry and the Division of Fish and Game were established in the early 1900's. The Civilian Conservation

Corps outplanted numerous trees to improve the health of Hawaii's watersheds. A greater conservation and land ethic became engrained in this generation and water became recognized as one of Hawaii's most valuable natural resources.

1959 marked the Statehood of Hawaii and the Department of Land and Natural Resources was established. Hawaii's held a constitutional convention in 1978. At that meeting environmental education in schools was made a state constitutional requirement. In the early 1980's, The Hawaii Department of Education established an environmental education office.

The 1980's and 1990's marked a very active time for environmental education in Hawaii. Many governmental and private organizations including the DLNR developed and promoted environmental education and field opportunities for youth. A few of the notable resources developed/coordinated during this time include the: Ohia Project, a curriculum for grades K – 8 was developed by the Moanalua Gardens Foundation; the Hawai'i Environmental Education Association (HEEA), the DOFAW's Youth Conservation Corps, and the establishment of the Hawaii Nature Center.

In the early 2000's the No Child Left Behind Act was established, this has significantly impaired environmental education in Hawaii's public schools as they have shifted school time to English and math.

The HEEA (more information below) was a catalyst for communication and collaboration in the environmental community in the 1980's and 1990's dissolved in 2002. For a number of years, the organization was a leader in EE in the state. HEEA developed a strategic plan, hosted annual conferences, and served as the state affiliate for the national organization – the North American Association for Environmental Education (NAAEE). After HEEA dissolved, efforts of EE organizations in the early 2000's, although numerous, were fractured in structure and often reinvented the wheel. In 2010, the Division of Forestry and Wildlife reinvigorated the HEEA with funding from the USFS and support from 25 working group members representing 20 different organization.

Sub Issue: Select Local and National Educational Resources

There are a number of local and national Environmental education opportunities and resources that exist in Hawaii the DOFAW's mission and vision. Some notable programs and resources are detailed below.

Hawaii Environmental Education Alliance: The Hawaii Environmental Education Association, as described above, was created in 1987 to facilitate collaboration and communication among both formal and informal environmental educators. Their goal is to develop strategies and skills to develop a citizenry that understands the environment and is engaged in responsible environmental behavior. The newly reinvigorated Hawaii

Environmental Education Alliance (www.heea.org) has the goal to 1) provide support and guidance in the development of the statewide comprehensive environmental literacy plan and 2) populate and disseminate information about the on-line searchable database of state and national environmental education resources. Future goals include hosting conferences and registering as the affiliate for the nation organization, NAAEE.

Project Learning Tree: For more than 30 years, PLT (www.plt.org) has used the forest as a "window to the world" to increase students' understanding of our environment, to stimulate students' critical and creative thinking, to develop students' ability to make informed decisions on environmental issues, and to instill in students the commitment to take responsible action on behalf of the environment. The goals of PLT include:

- To develop students' awareness, appreciation, skills and commitment to address environmental issues.
- To provide a framework for students to apply scientific processes and higher order thinking skills to resolve environmental problems.
- To help students acquire an appreciation and tolerance of diverse viewpoints on environmental issues and develop attitudes and actions based on analysis and evaluation of the available information.
- To encourage creativity, originality and flexibility to resolve environmental problems and issues.
- To inspire and empower students to become responsible, productive and participatory members of society.

In Hawaii, PLT was coordinated by the United States Forest Service through 2008. In 2009, DOFAW became the State coordinator for the program. Since 2009 over 150 educators throughout the state have become certified PLT educators. Facilitators recognize the importance of place based learning in this and all programming. As such facilitators strive to connect the PLT materials with issues of local relevance and use local curricula including Hoike o Haleakala, the Ohia Project, and DOFAW developed materials to enhance the PLT offerings.

Additional Curricula used to enhance the PLT workshops:

Ohia Project - From 1986 to 1989, Moanalua Gardens Foundation (MGF), along with Bishop Museum and the Hawaii Department of Education (DOE), developed and disseminated the Ohia Project curriculum. The goal of the Ohia Project is to assist Hawaii schools in implementing effective environmental education curricula to aid teachers and students in making informed choices for our island environment. The Ohia Project is comprised of three guide books covering grades K-3, 4-6, and 7-8 and was an extremely

popular environmental education curriculum in Hawaii. Recently after its inception, more than one-third of the K-6 teachers in the state have been trained in its use. However, the Ohia Project is now out of print and the DOE has developed new content standards in each subject area to identify important ideas, concepts, issues, and skills to be learned by all students. The Ohia Project needs to be aligned to these new standards. Also, current scientific data and cultural traditions need to be integrated. For more information, visit: <http://www.mgf-hawaii.org/HTML/School/ohia.htm>.

Aloha Aina - The Aloha Aina project is designed to reconnect native Hawaiian traditional knowledge inherent in the Ahupuaa, or land division extending from the mountain to sea, to the 21st century education System. The program is coordinated by the Pacific American Foundation located in Oahu and the PAF hosts workshops to provide teachers with: a culture-place-based teacher's guide with standards-based lesson plans, activity sheets, and rubrics, CDs, a DVD and other resources; hands-on sessions to try the activities with other educators; pre-post tests to measure student achievement in core content area benchmarks; preview of field sites with partial-day field excursions. For more information visit: <http://alohaaina.thepaf.org>.

Hoike O Haleakala - This curricula is a multi-disciplinary, science-based environmental education curriculum designed to help sustain the native Hawaiian landscape and culture by helping students establish and deepen connections to the land and the culture it supports. The Hoike curriculum supports State of Hawaii high school educational standards, particularly in the science disciplines. Each activity is correlated to state science standards, offering educators a way to fulfill educational requirements using local ecosystems and issues as a context. These materials help bring science home for students while fostering a strong science background and critical-thinking skills. For more information visit: <http://www.hear.org/hoike>.

Navigating Change - The Teacher's Guide to Navigating Change is a five part, Hawai'i DOE Standards (HCPS 3) aligned curriculum for grades 4-5. The guide includes five units that are designed to help students explore their relationships to the environment and ways that they can "navigate change" in their own communities. The instructional activities focus on Hawai'i DOE science, social studies, and language arts standards as well as Na Honua Maui Ola, guidelines for culturally healthy and responsive learning environments in Hawai'i that were developed by the Native Hawaiian Education Council in partnership with the Ka Haka `Ula O Ke`elikolani, College of Hawaiian Language, UH-Hilo. <http://www.hawaiiatolls.org/teachers/NavChange.php>.

Each year for the past 2 years the program has promoted their curricula to the masses but also for a select region that serves as a demonstration site for education. The demonstration

site receives guidance for natural and cultural resource experts, teacher workshops, and the students are engaged in site visits. For year 3, the demonstration site for Navigating Change is the West Side of Oahu and the landscape to be featured is DOFAW's Kaena Point Natural Area Reserve.

Hawaii Experimental Tropical Forest: The goal of the Hawaii Experimental Tropical Forest: (HETF) is to connect scientists and the community with Hawaii's unique natural resources in order to more effectively engage in future conservation actions. The Mission of the Hawaii Experimental Tropical Forest (HETF) is to provide landscapes, facilities, and data/information for those wishing to conduct research and education activities contributing to a better understanding of the biological diversity and functioning of tropical forest and stream ecosystems and their management. Since the establishment of the HETF in 2007 plans have been underway to construct an education and science center at both the Laupahoehoe and Puu Waawaa Units of the HETF. As part of the process, the public is invited to participate in the planning of the education and science center at the Laupahoehoe Unit (LHH) of the HETF.

The Laupahoehoe Charter School conversion was just approved by the Hawaii DOE Charter School Review Panel and the Natural Inquirer. It will likely use the HETF extensively.

Children's Forests: HETF has the potential to be a valuable resource for the Children's Forests and the "Forest for every classroom" initiative. The concept of the Children's Forest is to give youth a role in planning & management. Currently there are 7 official Children's Forests. The DOFAW is interested in the possibility of pursuing this unique education and resource opportunity in the future and is fortunate to have the opportunity to learn from and potentially model itself after the existing Children's Forests. Potential resource partners include the Children's Forest in San Bernardino, CA and the Chugach in Alaska.

FOCUS: Forest Oceans Climate and Us (FOCUS) is a nationwide campaign in partnership with the U.S. Forest Service, the National Oceanic and Atmospheric Administration (NOAA), and the Wyland Foundation, which uses the beauty of art and the wonder of science to make kids aware of the shared relationship between the health of each ecosystem and the health of the planet. As Wayland is from Hawaii, DLNR- DOFAW would be a natural partner for this initiative.

Association of Fish and Wildlife Agencies (AFWA): The success of plant, animal, and insect species in Hawaii are inextricably linked as is ecosystem health. Another organization that the DOFAW works with is AFWA. In particular, the DOFAW is a partner for the Western AFWA study: "Improving conservation education and connecting families

to nature through programs targeting the wildlife values of the public” This project is intended to improve the conservation education efforts of state/province fish and wildlife agencies through development of more targeted educational initiatives that account for the wildlife values of the public. Building on existing agency programs and research supported by the 2003 Multistate Conservation Grant Program, the project will develop, implement, and evaluate (using focus groups) prototypical programs for connecting children/families to nature and promoting natural resource stewardship. The specific focus will be on enhancement of programs for connecting children/families to nature by taking into account variables such as changing wildlife values in the United States and barriers to participation in informal education programs. The project has a specific focus on populations that have been historically under-served by programs about nature and science.

Priority focus areas that the DOFAW will focus on in the next five years:

- A. Facilitate access to environmental education resources for educators, community members and youth.
- B. Evaluate and improve how the state connects with historically underserved populations.

Sub Issue: Environmental Education in Public Schools

Traditional Public Schools: No Child Left Behind (NCLB) legislation has fundamentally changed the way that education is delivered in this country. It has defined the core content that all students in the United States must learn to be considered proficient at each grade level. As of 2007, this includes content standards in reading, math and science. In many school districts, this has resulted in educators teaching only those subjects and the standards that are assessed in the national tests. This has led to a severe reduction of environmental education in schools. Upon graduation from high school, most students do not have an understanding of natural resource management, how their actions impact native ecosystems, or how Hawaii’s natural resources impact them.

This lack of awareness lends itself toward an attitude of apathy when confronted with land management issues at the policy making level. Curricula such as PLT that integrate math, language and science content with environmental studies should still be useful under No Child Left Behind, but substantial work in teacher-training and integration with school curricula will be necessary before teachers and administrators can master that approach.

Public Charter Schools: A small number of the public have vocalized their connection to and value of natural and cultural ecology education in Hawaii’s schools. Hawaii’s 31 Public Charter Schools offer educational programs reflective of the community from which they were established. These dynamic public charter schools are blending the historic and culturally diverse landscape of Hawaii’s past with innovation, new technologies and

academic excellence to allow the students in Hawaii's public charter school system to attain the skills and knowledge necessary to succeed in a global world while maintaining an appreciation and respect for the people, places and languages of Hawaii. Many charter schools integrate EE in their curricula.

Home Schools: Hawaii's homeschooler population is also growing in Hawaii. These educators are a regular presence at outreach events and educator workshops. Through a grant from the USFS, the DLNR-DOFAW in cooperation with the HEEA is developing a comprehensive list of accessible environmental education resources that often cross disciplines. Additionally, the DOFAW staff offers presentations to civic clubs and school groups. For example, staff may offer a presentation on wetlands to meet 3rd grade standards; forest products to impart information life cycles and the role of government to a 2nd grade class; natural and cultural coastal ecology to a 7th grade class studying native ecosystems. These offerings are typically by the request of a proactive teacher already promoting environmental literacy in their classroom. It is in the interest of the DOFAW to reach a broad audience so all teachers can better understand and articulate forestry, environmental, and conservation issues. Partnering with the state's teaching colleges would allow access to pre-service teaching communities and make environmental education opportunities and resources available to them.

The DOFAW professionals, including those in the state, private and industrial sectors, should be utilized to impart a cross-section of natural resource management knowledge. To some degree, PLT workshops accomplish this, but more can be accomplished by reaching the pre-service teaching communities that will ultimately be molding the minds of the next generation.

Priority focus area that the DOFAW will focus on in the next five years:

- A. Identify the best way to reach students, schools and parents with mission specific messages, opportunities and literature.
- B. Continue to coordinate and sustain the momentum of the reinvigorated Hawaii Environmental Education Alliance.
- C. Identify ways to connect with pre-service educators.

Sub Issue: Public Perceptions of Natural Resource Management

Hawaii is home to over 25% of the threatened and endangered species in the nation. 71 species or subspecies of Hawaiian birds disappeared before the arrival of Captain James Cook in 1778 and since then 24 more species have disappeared. 69% of the 35 remaining songbirds and perching birds are federally listed as endangered species, and 10 may be extinct. Native plants and insects are not faring any better. Despite this fact, there are

common and widespread misconceptions about the practice of conservation and natural resource management in Hawaii.

In Hawaii, like many states, there is an inherent mistrust of government. Conservation actions are often interpreted as actions to assert public limitations on publicly owned land. It has been commonly discussed among outreach staff and PR professionals in Hawaii's conservation and natural resource management circle that the best way to communicate with the public about the value of conservation is through things that they know: two key issues being health and economics. However, it is hard to put a value on the amount of carbon a tree sequesters, or the health of a watershed forested by natives versus a watershed forested by invasives.

Hawaii's current fiscal downturn has translated to a severe reduction in the capacity of the DLNR and partners to manage existing projects. For the Plant Extinction prevention program, this could mean the loss of another species. For the invasive species committees, this results in a constant state of playing "catch-up," having to respond reactively instead of proactively. These past couple years in particular, the DLNR's been competing for funding alongside children's health care programs and public education.

The DOFAW staff reach out to groups, including schools, civic organizations, churches and community organizations, giving audience members an opportunity to expand their knowledge and learn how to make sound decisions about the resources. However, staff are limited in their capacity to meet the needs of such groups due to other job duties. In summary, the natural resource management and conservation community must find more effective ways to positively promote and educate their members to be ambassadors for Hawaii's resources and the positive benefits that they contribute to the public.

Priority focus area that the DOFAW will focus on in the next five years:

- A. Assess the best methods for communicating the benefits of Hawaii's natural resource and the subsequent financial, health importance of natural resource management.

Sub Issue: Lack of Internal Communication Training for DOFAW Personnel

Natural resources managers are more often scientists than teachers. However, some of these scientists are well-spoken and all have knowledge of natural resource management subjects, including fire prevention, forest management, watershed protection and management, and forest health issues that students and the public often find very interesting. Although they will not likely be trained as formal classroom teachers, many could be trained to become excellent informal teachers, especially in the subject of environmental education. To have a strong base of statewide presenters would greatly facilitate environmental literacy in

Hawaii's classrooms and the community at large.

While the DOFAW has a small number of trained instructors/informal educators, the program is in its infancy and many more are needed. The DOFAW needs to focus on training more of its staff to be ambassadors, not only for the agency but also for the ecosystems and the protection of Hawaii's unique natural and cultural resources. The natural resources issues facing staff in Hawaii are often urgent and usually complex, so environmental education must be effective and consistent. Staff must be able to communicate effectively to the public about what natural and cultural resource management is to the State, how the public affects the natural world and how the natural world affects the public.

Priority focus area that the DOFAW will focus on in the next five years:

- A. Develop and present opportunities to train DOFAW and partner natural resource personnel to prepare and carry out forestry, environmental and conservation education and public relations programs.
- B. Provide opportunities for staff to learn about and train with social medial networking tools to facilitate the dissemination of natural resource knowledge to a broad group of constituents.
- C. Provide opportunities for staff to share their natural resource knowledge with carious community groups in informal, educational settings.

Sub Issue: Pending National Legislation that will Affect EE in Hawaii

Congress is currently involved in the process of bipartisan reform of the Elementary and Secondary Education (ESEA) Act. One proposed component of the reform of ESEA, also commonly referred to as the No Child Left Behind (NCLB) Act, is the No Child Left Inside Act (NCLI). On the NCLI website, the Congressional committee on Education and Labor features the following:

“One of the greatest challenges facing current and future generations is to build a more sustainable, energy-efficient world. By teaching students about the role of the environment as an important national resource, we can prepare them to take on critical issues – energy conservation, air pollution, climate change, wildlife protection – and become better stewards of the earth. Studies show that environmental education can help boost student achievement, build students’ critical thinking and social skills, improve student behavior, and can enhance teaching. And as more and more businesses ‘go green,’ environmental education will help prepare today’s students for the innovative, green jobs of tomorrow – strengthening our environment, our economy, and our competitiveness.”

The “No Child Left Inside” Act was introduced on Earth Day in 2007. As described earlier,

NCLB has fundamentally changed the way that education is delivered in this country. The Hawaii Department of Education has focused on NCLB and, unfortunately, reduced the focus on environmental education. In particular, administration abolished the EE program coordinator position. The public is recognizing that although EE is not currently in NCLB requirement, there is great importance of an environmentally literate citizenry. The NCLB Act would increase the value of and provide funding for EE in schools. The adoption of the current NCLB Act legislation would:

Help schools and states enhance and expand environmental education:

- Extends the National Environmental Education Act of 1990 (NEEA), which provides funding for teacher training and support programs.
- Helps states develop and implement state academic content standards, student academic achievement standards, and state curriculum frameworks in environmental education.
- Encourages the development of outdoor environmental education activities as a regular part of the curriculum.

Place qualified, expert teachers in the nation's classrooms:

- Creates opportunities for ongoing professional development for teachers such as distance learning programs and summer workshops.
- Gives more people a stake in creating the next generation of environmentally conscious students by connecting teachers and professionals from environmental fields.
- Encourages mid-career professionals in environmental fields to pursue careers in environmental education.

Strengthen and develop environmental literacy plans:

Creates the National Capacity Environmental Education Grant Program (NCEEG), competitive grants that are awarded to non-profits, state and local education agencies, and institutions of higher education to create and strengthen state environmental literacy plans. Funds could also be used to conduct studies on effective teaching models for environmental education, replicate or disseminate information about proven model environmental education programs, and develop methods to increase the number of K-12 environmental educators.

Hawaii's Environmental Literacy Plan

The Department of Land and Natural Resources has worked with the Hawaii Department of

Education and Hawaii Environmental Education Alliance (HEEA) to develop a comprehensive environmental literacy plan (ELP) for the State of Hawaii. Hawaii's plan, titled "*Hawaii Environmental Literacy Plan – Help for Hawaii*" was initially developed in 2012 and revised and updated in 2015 (Sato and Staab 2015). The environmental literacy plan positions Hawaii to bring broad-based support for environmental education (EE) through national legislation, titled the "No Child Left Inside Act" (NCLI) reintroduced in congress in February 2015. The Hawaii plan promotes environmental learning and experiential education with an emphasis on outdoor settings. It is a framework to guide schools (PreK-12) and non-traditional educators in integrating place-based learning that is supported by community partners and will ensure that all students graduate as environmentally literate citizens. The Plan results in no new educational mandates, nor takes away from current educational programs.

Congress has mandated that each state will need its plan in place if the state is to be eligible for future federal funding. Now that this plan is in place and anticipating the "No Child Left Inside" act passing, the responsibility of the DLNR and, subsequently, DOFAW to support execution of the plan will increase.

Priority focus area that the DOFAW will focus on in the next five years:

- A. Continue to support national EE efforts that meet the DLNR's mission and vision.
- B. Sustain partnerships with DOE and HEEA and foster relationships with other relevant national and local organizations.
- C. Secure funding to implement the Hawaii Environmental Literacy Plan.
- D. Research and secure funding to implement NCLI legislation in the event it passes.

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HAWAII ENVIRONMENTAL LITERACY PLAN



HELP FOR HAWAII

Help For Hawaii



Credits

Project Manager

Michelle Gorham Jones - Hawai'i Department of Land and Natural Resources (DLNR),
Division of Forestry and Wildlife and Hawai'i Environmental Education Alliance (HEEA) Chair

Writers

Pauline Sato (lead) and Janice Staab - Mālama Learning Center

Editor

Audrey Enseki-Tom

Graphic Designer

Naomi Sodetani - Out of the Blue
Roger Osentoski, 2015 Revisions

Produced by

Hawai'i Environmental Education Alliance

Photo Credits

We appreciate the generosity and talent of the individuals and groups
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American Renaissance Academy
Claudia Christman

Sayo Costantino, Mālama Learning Center
Michelle Gorham Jones, Division of Forestry and Wildlife
Elizabeth Kumabe, Hanauma Bay Education Program
Harold Hungerford

Jeff Kuwabara, UH Marine Option Program
Kūhea Paracuelles, Haleakalā National Park

Matt Limtiaco, Navigating Change
Kōkua Hawai'i Foundation
P. Riel, Aka'ula School

Pauline Sato, Mālama Learning Center
Janice Staab, Mālama Learning Center
Sandy Webb, Mililani High School
Manuel Mejia, The Nature Conservancy



HEEA is a renewed collaborative effort among environmental educators in Hawai'i from all sectors (government, non-profit, business) to connect, network, and advance professionalism in the field, and to generate overall improvement of environmental education and environmental literacy in Hawai'i. HEEA is the local affiliate of the North American Association for Environmental Education, an organization that promotes environmental education in the United States as well as internationally. HEEA appreciates Hawai'i Department of Education's (HIDOE) leadership throughout its history.

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2010-2012 HEEA & HELP Advisory Council and HEEA Leadership Team*

Kūhea Asiu* National Park Service (NPS), Haleakalā National Park; Marie Ayabe*, NPS & HEEA intern 2012; Jennifer Barrett, University of Hawai'i, Sea Grant College Program; Rick Barboza, Hui Kū Maoli Ola and Papahāna Kūaola; Mililani Browning*, Hawai'i Department of Land and Natural Resources (DLNR); Shayna Carney*, US Fish and Wildlife Service (FWS); Liz Foote*, Coral Reef Alliance and Project S.E.A.-Link; Lissa Fox Strohecker, Maui Invasive Species Committee; Katie Friday, US Department of Agriculture (USDA) Forest Service; Ati Jeffers-Fabro, Hawai'i DLNR; Lisa Jeffers-Fabro, Island Pacific Academy; Nicole Galase, Hawai'i DLNR; Michelle Gorham Jones*, Hawai'i DLNR; Michelle Kapana Baird, Kaiser High School; Diana King; Melissa Kolonie, Hawai'i DLNR; Jacqueline Kozak Thiel, Hawai'i Invasive Species Council; Elizabeth Kumabe Maynard, University of Hawai'i (UH), Sea Grant College Program; Jeff Kuwabara, UH, Marine Option Program; Matt Limtiaco*, National Oceanic and Atmospheric Administration (NOAA); Richard MacKenzie, USDA Forest Service; Cindy McArthur, USDA Forest Service, National Partnership Office; Natalie McKinney, Kōkua Hawai'i Foundation; Colleen Murakami*, Hawai'i DOE; Jamie Nakama, Hawai'i Nature Center; Phyllis Nakasuji, Hawai'i DOE; Vicki Newberry, Aka'ula School; Maura O'Connor, Pacific American Foundation; Cheyenne Perry, Mauna Kea Watershed Partnership; Jennie Peterson, Hawai'i Nature Center; Pauline Sato, Mālama Learning Center and Mālama Hawai'i; Meredith Speicher*, NPS, Rivers, Trails and Conservation Assistance Program; Janice Staab*, Mālama Learning Center and Kapolei High School; Caroline Tucker, USFWS, Kīlauea Point National Wildlife Refuge; Sandy Webb, Mililani High School; Carlie Wiener, UH, Hawai'i Institute of Marine Biology

2013-2014 HELP Revision and HEEA Leadership Team*

Napua Burrows, Waihee Limu Restoration; Pauline Chinn, University of Hawaii; Billy DeCosta, Hawai'i DOE; Stephanie Ericksen, Hawai'i DLNR; Derek Esibill, NALU Studies; Liz Foote*, Coral Reef Alliance and Project S.E.A.-Link; Nākoa Goo*, NOAA; Chelsey Jay*, HEEA Intern (2013) and Mālama Learning Center; Michelle Gorham Jones*, Hawai'i DLNR; Natalie Hiwahiwa Joyce; Sabra Kauka, Island School; Gail Kuba, Hawai'i DOE; John Mitchell*, NOAA; Cindy McArthur, USDA Forest Service, National Partnership Office; Natalie McKinney, Kōkua Hawai'i Foundation; Camille Masutomi, Hawai'i DOE; Jamie Nakama, Hawai'i Nature Center; Jennie Peterson, Hawai'i Nature Center; Meredith Speicher*, NPS Rivers, Trails and Conservation Assistance Program; Janice Staab*, Art Explorium; Claire Steinemann*, HEEA Intern 2013/14; Sandy Webb, Hawai'i DOE; Marleen Zeug, Hawai'i DOE

* Members of the leadership team are masked by an “*”



Meeting Coordinators and Site Hosts

Mililani Browning, Bill DeCosta, Liz Foote, Michelle Gorham Jones, Kūhea Paracuelles,
 Sheri Saari, Meredith Speicher, Caroline Tucker
 Hālau Ho'olako at Kauhale 'Ōiwi o Pu'ukapu, Hawai'i DLNR - Division of Forestry and Wildlife,
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 ING Direct Café: Waikīkī, Kamehameha Schools, Kanu O Ka 'Āina, Kaumali'i Elementary School,
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Non-Discrimination Statement

We are an equal opportunity provider and employer.

Please see Appendix A for more information on how the HELP was created.



The Hawai'i Environmental Literacy Plan

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“In the end, we will conserve only what we love, we will love only what we understand, and we will understand only what we are taught.”

- Baba Dioum, African environmental professional, in a speech to the general assembly of the International Union for the Conservation of Nature in New Delhi, India, 1968.





HELP Executive Summary

Most parents of young children would probably agree that literacy is a top-of-mind issue. They would shudder to think of their children's future without being able to read, write, or think critically. But that is not enough in today's world where natural resources and long-term sustainability are at risk. Hawai'i needs its citizens to be environmentally literate as well.

The Hawai'i Environmental Literacy Plan (HELP) is written to support a growing movement – locally and nationally – to improve education in schools through environmental education (EE), which builds environmental literacy (EL). An environmentally literate person in Hawai'i is an informed, lifelong learner who values Hawaii's uniqueness, practices environmental stewardship, and lives sustainably. He or she makes daily choices to act in ways which, individually and collectively, positively affect the environment and his or her well-being.

This comprehensive, statewide plan sets meaningful and achievable goals that, if implemented through public and private partnerships, will lead to measurable success. The HELP sets six major goals:

opportunities for educators as well as internships for students, creating Sustainability Coordinator positions in school complex areas, establishing a holistic "Hawai'i Green Schools" program, and ensuring that every student has a meaningful EE experience at each grade level. The primary funding goal to implement this plan is \$4 million per year, which could be raised from a variety of sources if supported by the public.

A professionally conducted survey of more than 600 Hawai'i residents showed that ninety-three percent (93%) of respondents favored the teaching of EE in the public schools (see page 51). The Hawai'i Environmental Education Alliance (HEEA) hears their call, and with the support of the Hawai'i Department

Goal 1 – Integrate EE in K-12 Schools for Environmental Literacy

Goal 2 – Develop and Support Learning Environments that Promote Environmental Literacy

Goal 3 – Improve Professional Development for Environmental Literacy

Goal 4 – Monitor and Assess Environmental Literacy

Goal 5 – Make Environmental Education and Environmental Literacy a Statewide Priority

Goal 6 – Provide Sustainable Funding for Environmental Literacy

The plan supports every goal with objectives, and actions to achieve those objectives, which build upon the good work that is already in effect but is largely under-funded. Actions include aligning EE to standards, providing more professional development

of Education (HIDOE), DLNR, and all who are interested in this cause, will endeavor to ensure that high-quality EE will lead to environmental literacy – our children and environment deserve no less.

HELP Vision Statement

An environmentally literate person in Hawai'i is an informed, lifelong learner who values Hawaii's uniqueness, practices environmental stewardship, and lives sustainably.

An Informed Community

Communities that are informed have the knowledge and understanding to make educated choices about the environmental future of Hawai'i. Recognizing EL as a cornerstone of our children's education moves us closer toward developing a community of lifelong learners who are concerned about our local and global environment and therefore are effective in pursuing positive change. Well-informed communities understand complex issues and the need to balance environmental, cultural and economic factors when making decisions that affect their quality of life. These communities are known for having well-trained people working in jobs that are green, or good for the 'āina (land) and people.

Values the Uniqueness of Hawai'i

Hawai'i is recognized as one of the world's finest living laboratories for the study of how life forms evolved. The islands' isolation and great diversity of environmental conditions spawned more than 10,000 forms of native species found nowhere else. Our host culture, the Hawaiian culture, is integrally tied to nature and is centered on values including mālama (care for, protect), kuleana (responsibility), lōkahi (harmony), ola kino maika'i (healthy), pono

(goodness), imi 'ike (seeking knowledge), and aloha (love and compassion). If people understand and value the uniqueness of Hawai'i, they will protect it.

Practices Environmental Stewardship

Stewardship is action. When we move beyond knowing about our environment to caring for it, we become environmental stewards. Quality of life will be maintained through widespread community participation in efforts to improve our environment, whether it be restoring degraded ecosystems, rebuilding Hawaiian fishponds, recycling waste, reducing pollution, or planting gardens. People naturally care and make time for things that are important to them. This care must translate into individual and collective action toward addressing environmental challenges in our everyday decisions.

Lives Sustainably

Living sustainably means fulfilling our needs without jeopardizing the quality of life of others and future generations. Sustainability is life in balance, lōkahi. It means living efficiently, with thoughtfulness and respect towards the environment, and lessening the environmental costs of our lifestyles. It means relying less on imports and being able to produce

our own food and energy. Sustainability strikes a balance between the environment, economy, and society.

It is inspiring to remember that these islands once supported perhaps a million native Hawaiians living self-sufficiently before Western contact. Their cultural traditions and technologically advanced systems for environmental stewardship can help guide us toward a sustainable future.

To reflect the ground-breaking work initiated by the original HEEA and to honor those who have passed, this section is based on text from “Our Environmental Future: A Strategic Plan for Educating the People of Hawai‘i.” (Hawai‘i Environmental Education Association 1998)



HELP Key Themes

The Hawai'i Environmental Literacy Plan is based on the tenet that high-quality environmental education will lead to environmental literacy. In other words, if environmental literacy is the desired output, then environmental education is the desired input.

Key themes have guided the development of this plan. Some of the themes come from national efforts to improve the delivery of EE, which advise that to achieve excellence, EE should emphasize: (North American Association for Environmental Education 2004)

- **Questioning, analysis, and interpretation skills (fairness, accuracy)**
- **Knowledge of environmental processes and systems (physical, biological, and societal)**
- **Skills for understanding and addressing environmental issues (clarity, relevance, logical)**
- **Personal and civic responsibility (action orientation, global citizenship, service learning)**

Other themes promoted by this plan come from local interests in preserving our islands' unique biodiversity and living more sustainably, especially in light of the islands' isolation.

- **Understanding the uniqueness and vulnerability of the Hawaiian Islands (biogeography, native ecosystems, threats of invasive species and climate change, multi-faceted cultures, human impact, agricultural advantages, and finite land and water resources)**
- **The concept that the land, sea, and people are interconnected (the Hawaiian *ahupua'a*)**
- **Knowing where we get our fresh water, our food, our energy, and where our wastes go**
- **Hawaii's dependency on outside resources and our need to become more self-sufficient**

Additionally, the following themes come from respecting and gaining guidance from our host culture:

- **Hawaiian values of *aloha 'āina* (love for the land), *mālama 'āina* (caring for the land), *kuleana* (rights and responsibility), *kōkua* (helping one another), *lōkahi* (harmony), *imi 'ike* (seeking knowledge)**
- ***Ho'owaiwai* – to enrich and bring prosperity; taking care of *wai* (water/wealth) is a shared *kuleana* because it affects us all; let our relationships with the environment and each other enrich us.**
- ***Ma ka hana ka 'ike* – learn by doing; true understanding (literacy) comes from immersion and direct experience.**
- ***He wa'a he moku, he moku he wa'a* (the canoe is an island, the island is a canoe) – We must live on these islands as if we were on a canoe, caring for our limited resources and one another, and moving in one direction, together.**



Introduction

What is Environmental Literacy?

As the term “literacy” has evolved to mean more than the ability to read and write, so, too, has the understanding that “environmental literacy” means more than reading and writing about the environment. According to the Environmental Education & Training Partnership, environmentally literate people know that their daily choices affect the environment, how those choices can help or harm the environment, and what they need to do – individually or as part of a community – to keep the environment healthy and sustain its resources so that people can enjoy a good quality of life for themselves and their children. (Environmental Education & Training Partnership 2011)

Environmentally literate people understand the systems of the natural world and the interrelationships between living and non-living things. They know where their fresh water, food and energy come from, and where their wastes go. They understand the natural and cultural histories of where they live and act in ways to preserve what is special and unique. They are able to make responsible decisions based on scientific, aesthetic, cultural, and ethical considerations.

Perhaps most importantly, environmentally literate people think critically. They ask questions – seeking and evaluating information about processes and systems that comprise the living and built environment – and develop answers that lead to positive action. They are motivated, empowered, and committed to fulfill their *kuleana*.

Environmental literacy benefits the entire community. It helps improve people’s health through efforts to

provide clean air, land, and water. It strengthens the economy by supporting sustainable industries (e.g. agriculture, natural resources conservation, alternative energy, waste management, green construction), and a green workforce. It also helps other businesses become environmentally and socially responsible in their day-to-day practices. Like literacy, environmental literacy is something we should all strive to achieve.

Why Environmental Literacy?

The current world population of more than 7 billion is projected to reach 9.05 billion by the middle of the 21st century and almost 11 billion by 2100, according to the United Nation’s “2012 Revision of World Population Prospects.” (United Nations 2014) With a growing population, the strain on limited resources could, as it often does, lead to conflict, violence, and even wars. Higher levels of EL could ease that strain.

Undoubtedly, “in the coming decades, the American public will need to understand complex environmental issues, assess risk, evaluate proposed environmental plans and understand how individual decisions affect the environment at local and global scales.”(The National Environmental Education & Training Foundation 2005, 80)

For Hawai‘i, EL is no less important. With global communications at our fingertips, it may be easy to forget on a day-to-day basis that we live on islands. But we must all recognize and respect the fact that we do live on the most isolated set of islands on Earth – and that we must think and behave as island people. This means that we must care for our limited

***Environmental literacy** is the possession of **knowledge** about the **environment** and issues related to it, along with the **ability** to:*

- *discern credible information from misinformation,*
- *communicate ideas in effective ways, and*
- *translate attitudes and values into daily actions which, individually and collectively, affect the environment and one's well-being in positive ways.*

resources wisely, minimize our wastes as there is no place to throw it “away,” and treat each other with care and *aloha*, as we are all “in it” together.

By achieving EL, the people of Hawai‘i can, like the native Hawaiian community that thrived in these islands more than a thousand years ago, be good stewards of the land and sea. We can meet our responsibility to leave these islands in better shape for future generations. (See the Appendix B for more information on why EL is important to Hawai‘i.)

Educational Benefits of Environmental Literacy

EL is good not just for the environment, but also for education. A study of 40 schools (15 elementary, 13 middle, and 12 high schools) across the United States that used a specific area of EE – using the environment as an integrating context for learning (EIC) – found that students learned more effectively within an environment-based context than within a traditional educational framework. The report concluded that the benefits of EIC programs 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; and,
- Greater pride and ownership in accomplishments.

The report went on to say that “students exposed to programs using EIC approaches often become enthusiastic, self-motivated learners. In addition to traditional subject-matter knowledge and basic life skills, EIC students gain a wealth of added educational benefits, including: a comprehensive understanding of the world; advanced thinking skills leading to discovery and real-world problem-solving; and, awareness and appreciation of the diversity of viewpoints within a democratic society.” The evidence presented comes from site visits to the 40 study schools, interviews with more than 400 students and 250 teachers and administrators; four different surveys of the educators; and comparative studies of standardized test scores, GPAs, and attitudinal measures. (Lieberman and Hoody 1998, 2)

Environmental Education may be a key part of the solution to keep students interested in school. By using more hands-on kinesthetic learning, which is central to EE, Hawaii’s troubling high school drop-out rates (particularly for boys) could be reduced. (Moore 2011)

How Do We Achieve Environmental Literacy?

Plain and simple – EL is achieved by teaching and doing. We know it will be challenging and will take



a concerted and collaborative effort given our current position. The National Environmental Education and Training Foundation (NEETF) conducted 10 years of surveys that yielded disturbing profiles of the American public. It found that the “average American adult, regardless of age, income, or level of education, mostly fails to grasp essential aspects of environmental science, important cause/effect relationships, or even basic concepts such as runoff pollution, power generation and fuel use, or water flow patterns.” (The National Environmental Education & Training Foundation 2005, 7-8) NEETF estimated that “only 1 to 2% of adults in America have sufficient environmental knowledge and skill to be considered environmentally literate. This means: a) most graduating 12th graders lack basic environmental literacy, and b) most adult decision-makers, whether business leaders, elected officials, or community volunteers, are also lacking in real environmental education and literacy.” (Ibid., 57)

Various definitions of environmental education are shared in a subsequent section, but suffice it to say here that EE is more than “nature studies.” The main goal of EE is for people of all ages to know enough about environmental science and related social issues to make sound and well-reasoned environmental decisions. (The National Environmental Education & Training Foundation 2002, 5)

EE can occur in schools but need not be limited there. As the environment can be thought of as everything around us, EE can be taught all around us. And it can be taught and learned at all ages. Adult EE is critical especially in light of the decision-making power that adults have in their daily choices, be they personal, political, or related to business, community, and/or culture.



What is HELP and Why Have It?

EE could continue and EL could potentially be achieved without this plan. However, having a comprehensive, statewide plan that sets meaningful and achievable goals and is implemented with resources and funding provided through public and private partnerships will surely increase the chances of success. This plan is written at a time of great interest in changing the status quo of education both locally and nationally. Through the Aloha + Challenge, the Ige administration, all 4 mayors and partners from across sectors are working to achieve six interconnected sustainability targets by 2030. One of which is the green workforce and education target.

The US Department of Education’s “Blueprint for Education” emphasizes “strengthening instruction in literacy and in science, technology, engineering, and mathematics, aligned with improved standards that build toward college- and career-readiness.” The Blueprint also outlines “competitive grants to states, high-need districts, and nonprofit partners to strengthen the teaching and learning of arts, foreign languages, history and civics, financial literacy, environmental education, and other subjects.” (US Department of Education 2010, 18)



For HIDEOE, the HELP can assist in implementing key instructional areas including STEM (Science, Technology, Engineering, & Math) education, multicultural education, service learning, and College and Career Readiness.

For the HIBOE, the HELP showcases a summary of the state of environmental literacy, challenges to overcome, a collective goals. This background can serve as a guide in supporting both the BOE and DOE in creating an environmental literacy policy.

While the HELP focuses on public education, private and independent schools will also benefit from increased statewide attention on EE and EL and the improved curricula and programs that will result. EE providers, which serve public and private schools, will offer improved and more expansive programs. Businesses interested in sustainability and building Hawaii's green economy will also benefit by having environmentally literate employees who are critical thinkers and problem solvers.

Summary

Every problem and every challenge is an opportunity. The starting point is awareness and education. From awareness comes understanding, from understanding comes concern, and from concern comes action, resulting in positive change.

With this in mind, a coalition of concerned people, including educators and representatives from business, governmental agencies and community organizations, has joined in discussions to produce this plan.

This is not a final product. Instead, it is meant to be a living, evolving plan that is only as good as the will and commitment of those who read it. HEEA has accepted the leadership role for writing this plan. The implementation of it will require everyone's help – not just HEEA, the HIDEOE, the Legislature, etc. – but all who have the good fortune of living here. We invite you to join the effort to make environmental education a part of everyone's life in 21st century Hawai'i.

Get Inspired! Get Informed! Get Environmentally Literate!



While learning about and within the environment has been a part of many cultures for a long time, EE as a field of study began a relatively short time ago in the 1970s.



What is **Environmental** Education?

Among several definitions of EE, the following is among the simplest:

“Environmental education 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.”

— North American Association for Environmental Education 2011

EE is characterized by some essential elements and perspectives. It is a practice that:

- Is based on knowledge about ecological and social systems, drawing on disciplines in the natural sciences, social sciences, and humanities.
- Reaches beyond biological and physical phenomena to consider social, economic, political, technological, cultural, historical, moral, and aesthetic aspects of environmental issues.
- Acknowledges that understanding the feelings, values, attitudes, and perceptions at the heart of environmental issues is essential to exploring, analyzing, and resolving these issues.
- Emphasizes critical thinking and problem-solving skills needed for informed, well-reasoned personal decisions and public action. (Archie 2001)

EE is grounded in real-life processes and issues that require integrating multiple subject areas to arrive at responsible actions that benefit the communities in which we live. This concept of working toward solutions is important for education as a whole. Professor Dubanoski of the University of Hawai‘i at Mānoa wrote, “Education in a democratic society should ensure that students develop a profound sense of social and personal responsibility. Through course materials and hands-on experiences, students learn to appreciate the importance of working toward common goals and the value of caring for their community.” (Dubanoski 2011)



Some may wonder whether EE is inclusive of economics and sustainability. The answer is a resounding “Yes!” “Environmental education recognizes the importance of viewing the environment within the context of human influences, incorporating an examination of economics, culture, political structure, and social equity as well as natural processes and systems. The goal of environmental education is to develop an environmentally literate citizenry.” (North American Association for Environmental Education 2004, 1)

EE’s emphasis on problem-solving and action exemplifies its strong connection to the field of service learning. Service learning “can be defined as a research-based teaching method where guided or classroom learning is applied through action that addresses an authentic community need in a process that allows for youth initiative and provides structured time for reflection on the service experience and demonstration of acquired skills and knowledge.” (Kaye 2010, 9) Rather than separate fields, EE and service learning are “symbiotically” entwined.

Lastly, EE is not the same as environmental advocacy. The goal as an environmental educator is to provide accurate, balanced, and effective instruction and not to promote a particular view about environmental conditions, issues, or actions. (North American Association for Environmental Education 2010, 12) At the same time, students should not be discouraged from being advocates after studying an issue and using critical thinking skills to understand it, for this could be the action resulting from EE and service learning.

For an excellent overview of EE, please refer to the NAAEE’s “Guidelines for the Preparation and Professional Development of Environmental Educators,” pages 2-4.¹

Current Status of EE in Hawaii's K-12 Public Schools



Hawaii's schools have a long history of providing opportunities to use EE within the existing system. However, EE in public schools today has changed drastically since the 1980s when district science resource teachers were funded by the HIDOE on every island to connect schools to science and EE resources.

Funding was also available through the HIDOE to fund field trips, professional development and curriculum development. Unfortunately, these funds generally do not exist anymore, leaving educators on their own to teach EE.

Despite these challenges, several strong EE programs in public schools persevere. For example, Mililani High School's Science Learning Center in Central O'ahu houses Hui Mālama O Mililani, which links science to service learning as part of regular classes as well as extra-curricular opportunities. Students have contributed to habitat restoration and monitoring efforts as well as campus landscape improvements.

At Kalani High School located in East O'ahu, the Kipuka Kalani 'iki Sustainability Program is growing. It teaches various aspects of sustainability including food production, alternative energy, electric vehicle technologies, financial planning, and wellness. They run this program on a "low-to-no budget," fueled by community volunteers and lots of administrative and staff support.

Also in East O'ahu, Kaiser High School's Ho'olōkahi Voyaging Program is an elective course with a focus on Polynesian voyaging. For more than 15 years, this Program has engaged students in hands-on projects that have included learning the traditional art of carving a double-hull canoe, removing

invasive alien *limu* (seaweed), and restoring native Hawaiian coastal plants.

Charter schools are also pushing ahead with EE. At the University Laboratory School in Honolulu, Project Pono is a program designed to develop, support, and actualize student commitment to environmental stewardship and service learning. Students have led several initiatives such as "food and family nights" featuring locally grown foods, recycling and CFL bulb-exchange events, and peace gardens featuring native Hawaiian plants and aquaponic systems.

At Aka'ula School, a small, independent school on the island of Moloka'i, 5th-to-8th grade students embark on a year-long guided inquiry of an environmental issue of their choosing. Students write research questions, interview community members, collect and analyze data, and propose possible solutions, some of which are actually implemented. They report their findings at a community-wide, student-sponsored symposium modeled after professional conferences.

Further, the HIDOE supported EE through the Learn and Serve America School-Based Program, which ran several projects with selected K-12 complexes across the State. The four focus areas of this program are education, public safety, environmental and human needs. Many of the school projects focused

on environmental concerns and included field trips, thanks to funding for substitute teachers and buses. Although the Learn and Serve America School-Based Program is no longer funded, HIDOE has funding for a Middle School Environmental STEM service learning project, Stewards of the Islands, until June 2013. HIDOE also partners with Youth Service Hawai'i (YSH), a nonprofit which supports service learning projects and conducts state-wide conferences to showcase student/school projects that actively engage learners through EE. In a joint partnership, HIDOE and YSH are establishing a Learn and Serve Cadre and statewide network to build sustainability and continuity of the Learn and Serve Program.



PALS for Afterschool Literacy Support) is an after-school program that utilizes the community and nature as a starting point for interaction between students and teachers. PALS partners with cultural-education organizations and serves approximately 90 students and 14 teachers at three schools: Makaha Elementary, Wai'anae Elementary, and Nānākuli Elementary. All schools are located along the Wai'anae Coast on the island of O'ahu. The Sierra Club High School Hikers program aims to

create strong environmental advocates by providing opportunities for local high school students to become educated about Hawaii's fragile ecosystem and to get involved in its protection. This volunteer-based extra-curricular program relies on at least one teacher advisor for each school and has been operating consistently for 40 years!

These are just a few examples of good EE in our schools. They seem to indicate that there are perhaps more organizations than ever before providing EE programs, experiences, and resources to students, teachers, and communities in Hawai'i. Nevertheless, a primary concern shared by the HEEA, HIDOE, and others is that these efforts are not coordinated or provided adequately throughout the State, leaving large gaps and many students not served.

Needs

In December of 2009, 36 groups that provide EE services in Hawai'i completed a survey to express what they thought were the most pressing EE needs in Hawai'i's schools. (See Appendix C for list of groups surveyed.) Below are the needs as adapted from "Partnerships in Environmental Education," a Master's Thesis from the University of Hawai'i - Mānoa (Staab 2010):

More Outdoor Opportunities for Students and Teachers

Engaging people in the environment would teach them EE values and create a natural concern about threats to the environment. People in Hawai'i also need better access to native ecosystems in order to understand their uniqueness. Every island has a multitude of outdoor spaces that could enhance classroom curricula, but the lack of funding for field trips is a formidable obstacle. Funding for buses and substitute teachers is necessary to facilitate these

trips. If field trips are not possible, a lesser yet still important way of providing outdoor opportunities for students is through school gardens and other outdoor classrooms on campus.

Better Integration of EE into the Classroom

The current emphasis on compliance with No Child Left Behind requirements does not support time for outdoor learning, and teachers are finding it difficult to incorporate EE into the school day if it is perceived as a separate subject. However, real-world conservation issues, critical thinking, and problem-solving skills could fit within science and social

12) Part of the reason for this is that EE training opportunities are few and far between. In Hawai'i, EE teacher training is occasionally offered by groups such as the Hawai'i Nature Center, Pacific American Foundation, Hawai'i DLNR, Papahānaumokuākea Marine National Monument, and HIDOE. Yet there is no consistent training that is accessible statewide, nor is there an "EE 101" type of program for pre-service and in-service teachers that provides the basics for delivering high-quality EE. Opportunities for professional development are random; some are offered for credit (which may apply toward achieving a higher pay scale or for relicensing) and others, not.



studies subjects. With proper training, teachers could use EE and service learning techniques to meet standards while keeping students interested in school.

Training Teachers in EE and EL

Although more than half of the United States' teachers say they teach environmental subjects, only 10% of teachers have had specific training in environmental science or related courses. (The National Environmental Education & Training Foundation 2005,

Building Student Understanding of the Environment in Relation to Their Community

Today's urbanized students have become increasingly disconnected from the environment. They can, however, become aware and engaged with proper guidance. Students are eager to integrate sustainable practices and habits like recycling into their home lives. They also become much more engaged when learning about something in their "backyard." Increasing environmental awareness and involve-

ment among our youth are important factors in the adoption of *pono* practices at home. Helping them make connections between their individual lives and the larger world is an important part of EE.

Building Sustainability into Career Pathways

Developing career pathways through training programs is not a new concept, but applying it to the growing field of sustainability and EE is relatively novel. Students are not usually exposed to career options related to the environment. Fortunately, sustainability can be (and in some cases, is being) integrated into current career pathways such as Arts & Communications; Business, Management & Technology; Health Services; Industrial & Engineering Technology; Natural Resources; and Public & Human Resources. Introducing students to green jobs within these career pathways can help them see that commitment to sustainability is not just about volunteering, but that paid positions do exist for creative and innovative minds that help solve environmental issues.

Opportunities

HIDOE's Strategic Plan

Training educators to integrate EE in schools can help the HIDOE's Strategic Plan (Hawai'i Department of Education 2011) succeed. Significant progress is needed to close the gaps between the educational achievements of Hawaii's youth as compared to other states, as well as between different student groups defined by geography, race/ethnicity, income, special education status, and English language proficiency. EE in schools can help to lessen the disparities. In a 2002 nationwide study of EE, 93% of educators with students in environment-based programs reported that children

read and wrote better as a result of the EE integration into their schools. (The National Environmental Education & Training Foundation 2005, 73) The technique of learning by doing – *ma ka hana ka 'ike* – is particularly effective with learners who struggle with “book learning.” EE's hands-on, experiential nature can make math and science more relevant and appealing, which can encourage students to study advanced math and science in high school.

HIDOE's School Sustainability Policy

School campuses can provide outstanding EE opportunities. According to NEETF's report, “Environmental Literacy in America,” students on campus can be exposed to many practical aspects of environmental education and conservation on a day-to-day basis, and can apply this knowledge to life outside of school. The HIDOE appears to agree. In November 2010, the HIDOE Board of Education amended its Energy Conservation Policy, making it a Sustainability Policy (Facilities and Support Services, No. 6710). This Policy states the HIDOE's commitment to supporting sustainability concepts and practices at schools. It boldly states that the HIDOE “has a fundamental responsibility to educate students about sustainability and to model sustainability.” In reference to facilities, the Policy outlines guidelines that:

- Maximize Hawaii's natural environment and ensure the lowest environmental impact
- Incorporate energy efficiency and conservation measures whenever possible
- Reduce water consumption
- Support on-site renewable energy and clean energy goals
- Promote the longevity and responsible

procurement of facilities, equipment, and vehicles

- Promote material conservation and recycling
- Incorporate the importance of sustainability and environmental stewardship in the classroom and convey it at the faculty and staff level, and
- Encourage local partners to collaborate on projects.

(See the Appendix D for the full language of the Policy.)

Private Institution Partners

Being more agile than a government-run program, private educational institutions have begun to integrate EE into their daily practices. Moreover, some of these institutions have started offering their programs to public schools. For example, Punahou School's Luke Center for Public Service in Honolulu offers EE programs every summer to public and private school students. It also partners with Kōkua Hawai'i Foundation to host an annual service-learning workshop for teachers from public and private schools, with themes such as reducing single-use plastics and improving Hawaii's health and well-being. On Kaua'i, Kamehameha Schools has partnered with the Waipā Foundation to incorporate hands-on education in the process of restoring Waipā as a Native Hawaiian learning center and community center. They offer culturally relevant teaching to both public and private schools and also work to restore the health of the *ahupua'a*.

University of Hawai'i

In 2009, the University of Hawai'i (UH), HIDOE, and the Governor of the State of Hawai'i signed



a Memorandum of Agreement to “Significantly Improve Student Achievement in Hawai'i by Using American Recovery and Reinvestment Act Resources to Advance Education Reform.” In this document, the University agrees to “cooperate with DOE on planning and implementing a common reform agenda (for example, curriculum development, teacher training and degree attainment)” (Governor of the State of Hawai'i, Department of Education, University of Hawai'i 2009) as well as track and report data. Progress toward these goals is evident in departments such as the UH College of Education, where teachers are being trained to integrate EE through voyaging, STEM, and multicultural education. The UH has vast potential to strengthen EE not only at K-12 schools but also within its own programs.

Hawaii's Growing Green Economy

The Memorandum of Agreement referenced above states rather emphatically, “our most important public investment is in a workforce that has the capacity to innovate and is globally competitive.” (Ibid., 1) Green jobs are more than buzz words. Hawai'i is poised to be a leader in greening its economy, not only because it is a good thing to do, but because it is necessary for our sustainability and survival. Solar, wind, ocean, and geothermal energy are all possible in Hawai'i. Agriculture and aquaculture are as important today as they were hundreds of years ago. Conservation of natural resources and rare and endangered species and ecosystems is our responsibility. And managing Hawaii's waste through reduction and recycling is no longer a choice but a necessity. These needs and more create countless opportunities for jobs and partnerships with schools to build a green workforce that is globally competitive.

GOAL 1

Integrate EE in K-12 Schools for Environmental Literacy

Teachers across the nation recognize the importance of using EE in their classrooms to enhance student learning. However, without an integrated plan and coordinated efforts with other teachers, many do not succeed in implementing EE.

According to the report, Environmental Literacy in America, a study in 2000 by the NAAEE and the Environmental Literacy Council “found that 61% of public school teachers say they include environmental topics in their curricula. Nearly half of all K-12 teachers indicated they teach EE during the school year, but most devote fewer than 50 hours to it per year. The true figure may be considerably less than that.” (The National Environmental Education & Training Foundation 2005, 68)



Also, EE cannot succeed without buy-in from school administration and staff. Compliance with No Child Left Behind, Annual Yearly Progress (AYP) goals,

and HIDOE's Strategic Plan are the top priorities for schools. Environmental educators must acknowledge this reality and demonstrate how teaching EE is not separate from, but integral to, achieving priority goals.

Trained environmental educators can teach across disciplines, linking the methods and content of natural and social sciences, arts, mathematics, and language arts to help learners fully understand and address complex environmental issues. In its guidelines for professional development, NAAEE advises

that “environmental educators need the ability and the commitment to keep the whole picture in mind as they guide students toward environmental literacy.” (North American Association for Environmental Education, 2010, p. 4)

Passing the Grade in HIDOE

For teachers to be able to devote as much time to EE as they say they would like to, it must be integrated into other, if not all, subject areas. Fortunately, this is not difficult to do. Several states like Kansas, Pennsylvania, and Maryland have already aligned their public school standards to include EE.

NAAEE offers support for this process. Its publication, *Excellence in Environmental Education: Guidelines for Learning K-12*, attempts to make it easier to align EE with school standards. It sets benchmarks for achievement in the fourth, eighth, and twelfth grades, and provides students, parents, educators, home schoolers, policy makers, and the public with a set of common, voluntary guidelines for EE.

In terms of mandated guidelines, HIDOE currently adheres to the Hawai'i Content and Performance Standards III (HCPS III)² for grades K-12, except for the recent adoption of the Common Core State Standards³ in math and language arts used in nearly all states in the nation. (Also at the national level, the Next Generation of Science Standards⁴ is

currently in progress.) When HCPS III was written, a science standard called “Mālama I Ka ‘Āina” (caring for the land) was taken out. That standard connected formal to informal science knowledge, supported systems thinking, and encouraged teachers to engage students in problem solving and civic action for the common good.

Despite that loss, EE is still very relevant and readily integrated into classrooms in a holistic approach. For instance, HIDOE’s General Learner Outcomes use terms that are synonymous with those used in EE, such as “self-directed learner,” “community contributor,” “complex thinker,” and “effective communicator.” (See Appendix D) This is a good entry way for EE into the curriculum.

In addition, EE appears to have a firm seat in the *Hawai‘i Guidelines for Culturally Healthy and Responsive Learning Environments, Nā Honua Maui Ola*. Although not mandated, it is used by the HIDOE to support subject areas such as Hawaiian Studies. This document addresses education from a Hawaiian cultural perspective. It provides the framework for a comprehensive support system (including educators, administrators, and community members) for student-centered learning environments in a wide variety of settings, not just schools. “They support the practices and learning experiences that foster and shape the development of its learners to become responsible, capable, caring, healthy (spiritual, mental/intellectual, emotional, physical, and social) human beings who have a strong cultural identity and sense of place”. (Native Hawaiian Education Council, 2002)

EE provides an excellent means of helping students master a number of educational standards in several

content areas. Further, EE is a subject that lends itself to the development of units of instruction that are interdisciplinary, place-based, hands-on and culturally responsive. Rather than being viewed as an “add on” to often over-burdened educators, EE can provide a lens through which students can be motivated to learn reading, math and science. For example, EE could facilitate the instruction of the Common Core State Language Arts “anchor” standards, Common Core State Mathematics “anchor” standards, and benchmarks in the Hawai‘i Content and Performance Standards in six different content areas (science, math, language arts, social studies, physical education and health).

HEEA has completed a preliminary analysis of numerous standard requirements by grade level that address the application of Common Core State Standards, HIDOE Content and Performance Standards and General Learner Outcomes, and Nā Honua Maui Ola through EE. This resource, available on the HEEA website (www.heea.org), can assist educators in understanding how to engage students in EE to help students achieve educational learning standards.





Private and Independent Schools

Private and independent schools are, in many ways, laying the groundwork for integrating environmental sustainability into schools. The National Association of Independent Schools (NAIS) states clearly on its website:

“Schools need to work toward environmental sustainability by becoming more green, reducing school and personal carbon footprints, promoting a commitment to life-long environmental responsibility, and incorporating environmental education into the curriculum.” (National Association of Independent Schools 2011)

In 2010, the NAIS board of trustees approved “Principles of Good Practice for Environmental Sustainability,” which emphasizes an interdisciplinary and holistic approach for schools committed to environmental sustainability. One of the principles is “Incorporate environmental sustainability into all aspects of their institutions, including curriculum; professional development; student and residential life; physical operations, procurement, construction, and renovations; and dining services.” (Ibid) (See Appendix F for full list of Principles.)

Another initiative of private and independent schools via the Hawai‘i Association of Independent Schools (HAIS) and the Hawai‘i Community Foundation is creating “Schools of the Future”⁵ to transform learning environments and teaching strategies to better prepare students for work and citizenship in the 21st century. This effort is bolstered by research by Tony Wagner from the Harvard Graduate School of Education. He interviewed 600 chief executive officers and asked them the same essential question: “Which qualities will our graduates need in the 21st century for success in college, careers, and citizenship?”



Their responses led him to develop the following list of Seven Survival Skills:

- Critical thinking and problem-solving
- Collaboration across networks and leading by influence
- Agility and adaptability
- Initiative and entrepreneurship
- Effective oral and written communication
- Accessing and analyzing information
- Curiosity and imagination (Witt and Orvis (2010, 6)

Wagner has been to Hawai'i on several occasions to work on improving education in the State. He has worked with the HIDOE as well as the HAIS. Wagner's "Seven Survival Skills" are clearly in step with EE techniques.

Key Techniques for Providing Quality EE

Effectively integrating EE into K-12 schools to achieve EL will require attention to key themes and techniques, some of which are particularly relevant to Hawaii's natural, cultural, social, and political environment.

Practicing Critical Thinking Skills

If there is one area that EE strives to bolster first and foremost, it is critical thinking. And as critical thinking and inquiry are familiar and important processes to teachers and principals, it behooves EE practitioners to integrate these skills into their programs.

According to Professor Dubanoski (2011) of the University of Hawai'i, "There are a number of skills that students need to become valued members of a democratic society. Critical thinking is one of these skills. It enables students to think for themselves rather than depending solely on authority figures. . .

. Critical thinking is a way of analyzing an issue in a more logical and reasoned way. It is this skill that will assist citizens to make wise and humane decisions when faced with a host of competing solutions to a community problem."

Studies show that EE in classrooms can enhance critical thinking skills in students. For example, educational researchers studied the effects of a curriculum called Investigating and Evaluating Environmental Issues and Actions (IEEIA) that was used in a public school on the island of Moloka'i for five years. In critical thinking tests, the 66 students in grades five and six who participated in the curriculum scored significantly higher than the students who did not participate in the EE curriculum." In general, the quantitative data indicate that students who were involved in the IEEIA program were more skilled in the use of critical thinking and other cognitive strategies than were their non-IEEIA peers. IEEIA students also appear to be more knowledgeable about ecology, the environment, and environmental issues. Thus, it appears that the IEEIA program, as it is used in this instructional setting, promotes critical thinking and cognitive abilities." (Hungerford, Cheak and Volk 2002)

Emphasizing Service Learning

As described in an earlier chapter, EE and service learning are closely linked. Service learning can be viewed as having five stages: investigation, preparation and planning, action, reflection, and demonstration. (Kaye 2010, 15) There are also different kinds of service that can be pursued: direct service, indirect service, advocacy, and research. Service learning succeeds in part by ensuring that youth have a voice in shaping their service experiences and take initiative in the learning process. Without some form of service learning, EE would likely fall short.



What is Technology?

A common definition of technology is “the practical application of knowledge.” All knowledge (social, environmental, economic) can be incorporated into technology. Many hundreds of years before the invention of computers and robots, Native Hawaiians advanced the use of technology through developments such as the network of *‘auwai* (ditch) systems created to move freshwater to their crops, or the *loko i‘a* (fishpond) systems used for aquaculture.

Bolstering STEM (Science, Technology, Engineering and Math) Education

The acronym STEM stands for “Science, Technology, Engineering, and Mathematics.” The four parts of STEM traditionally have been taught separately as independent subjects. Conversely, the STEM approach to teaching takes the subject areas of math and science and incorporates technology and engineering into the curricula. It also encourages discovery, creativity, and innovation, which are integral to the real-world problem-solving process.

Some educators believe that in order to authentically engage students in real-world problem solving, they must understand the context of the problems they seek to solve. This contextual understanding is based in social studies. Thus, they propose adding social studies to the traditional narrative of STEM and expanding the acronym to STEMS. (Halagao and O’Neill 2011) Teaching from a STEMS perspective entails place-based, project-based learning where students are involved in designing solutions to real-world problems using integrated content knowledge from multiple disciplines, including but not limited to science, engineering, math, technology, social studies, language arts and art. (O’Neill 2011)

In recent years, STEM education has moved to the forefront as more people in business and govern-

ment have recognized the need for students to develop “21st Century skills” to compete in the global workforce. Hawaii’s government has supported the development of several new STEM-based programs. Likewise, nonprofit organizations such as isisHawaii have partnered with educators and industry professionals to excite students about STEM, which is closely connected with EE.

Opportunities abound for students to take part in STEM or STEMS through environmental project-based learning. For example, after studying invasive weed species in native forests, students can investigate the best ways to control the problem using technology.

Using Current and Emerging Media and Technology

EE readily lends itself to practicing basic media and technology skills. For instance, in studying stream health, students can learn to use devices for testing water quality, Global Positioning System and Geographic Information System for mapping, and the Internet for gathering environmental data. The Internet can also expedite comparisons of stream health across communities, states, and even countries, and facilitate discussions about related issues and solutions. The Global Rivers Environmental Education Network program (GREEN) is a prime example of



such a program. It provides opportunities for young people to learn more about the watersheds they live in and to use their findings to create lasting solutions for pressing water-quality issues.⁶

Making Education Place-, Culture-, and Community-Based

EE is inherently place-based. In Hawai'i, it can easily be culture-based too. Place-based lessons founded upon Hawaiian values such as *mālama* and *kūleana* can orient science education to sustainability, a fundamental cultural goal. Learning about Hawaii's environment creates great opportunities for students to study a place, its cultural significance and related cultural practices, and use this knowledge as a springboard for scientific exploration and experiments. This teaching methodology is espoused by Pauline Chinn, Professor at the University of Hawai'i. She asserts that teachers often transform their instruction when they recognize that students' informal and non-formal knowledge and practices are resources for science education. (Chinn 2011)

The Pacific American Foundation (PAF), a leader in the development of place- and culture-based curricula, provides materials on such subjects as Hawaiian fishponds and *ahupua'a*. PAF has partnered with the Polynesian Voyaging Society and the University of Hawai'i College of Education to develop curricula

that will be used for the upcoming statewide and worldwide voyages of Hōkūle'a, the iconic Polynesian double-hulled voyaging canoe. The curricula emphasizes that voyaging is as much about navigating a path toward one's future as it is about navigating a course to a place on a map.

Closer to home, other place-based learning opportunities can be found in school gardens. These are especially helpful for young children. If a child can learn to care for a place in her backyard, then she will be better able to care for a place far away, which is important in the global society of the 21st century.

The Hawaiian saying, "*A 'ohe pau ka 'ike i ka hālau ho'okahi*, All knowledge is not taught in the same school," (Pukui 1983, No. 203) is truly appropriate within the context of EE. Community-based education, a foundation of EE and service learning, can be incorporated into curricula using the world outside the classroom as the textbook. It can make learning real to students, increasing their motivation and improving their attitudes toward education. It can also prepare students for life after graduation, connect them to people who hire employees, and influence them to pursue higher education.

Involving Multiple Generations

Children absorb values from their parents and extended family. It is therefore important to include the 'ohana (family) in EE programs. Intergenerational involvement across cultures builds civic responsibility and societal appreciation and understanding of the environment.

In Hawai'i, *kūpuna* (elders), whether of Hawaiian or other ancestry, are held in high regard. Their knowledge of the islands' history and how resources were cared for is vital to perpetuating respect for culture



and the environment. The Nā Honua Maui Ola Guidelines provide particularly salient support for this concept as it shifts the focus from teaching and learning about Hawaiian cultural heritage to teaching and learning through Hawaiian language and culture. *Kūpuna* may serve as the best sources for this method of education.

Voyaging education is a clear example of inter-generational involvement in EE. The science and art of Polynesian voyaging, which rely on signs in nature rather than modern navigational instruments, were passed down by very wise elders. Had they not been, today they would be lost. To ensure the continuation of Polynesian voyaging, navigators must train young people and inspire them to become teachers. This cyclical process not only ensures that knowledge is carried forward, but that cultural values and pride endure.

Connecting to Health and Wellness

EE can promote healthy eating habits and daily physical activity, which are fundamental to the HIDEOE's Wellness Guidelines. From growing food, to eating fresh, to exercising in nature, the health and wellness aspects of EE also support the endeavors of pediatric health care providers who are very concerned about the rise in childhood obesity. They are part of the Hawai'i 5-2-1-0 Initiative which fights childhood obesity by promoting healthy eating and active living through a coordinated, collaborative, locally relevant health education campaign.⁷

Further, the link between EE and health and wellness may run even deeper. In his book, "Last Child in the Woods," Richard Louv uses the term "nature deficit disorder" to explain the many problems stemming from children spending less time outdoors. (Louv 2005) These problems include obesity, depression, and attention deficit disorder. EE can get students outdoors to help counteract such conditions and introduce them to healthier lifestyles.

Linking EE with Environmental Justice

According to the U.S. Environmental Protection Agency, "For far too long, many minority, low-

income, tribal, and indigenous people in the United States have experienced higher levels of environmental pollution and other social and economic burdens. . . These burdens have led to poorer health outcomes, as well as fewer financial or advocacy opportunities to pursue many productive activities, including “greening” their communities.” (US Environmental Protection Agency 2011) Poorer academic achievement also is not uncommon for underserved communities.

EE can be used to help disadvantaged students “close the achievement gap” while addressing environmental burdens in their communities. Using real-life examples, EE can motivate these students to learn about the environmental problems that may impact their daily lives, and challenge them to devise potential community-based solutions. Success with these kinds of exercises will prepare students in underserved areas to participate in efforts to achieve environmental justice in their communities.

Embedding Sustainability in Career Pathways Hawai‘i will not be able to meet its energy independence, food security, and conservation goals without a workforce educated in broad sustainability issues and specific technological skills. “Green,” or *‘āina*-based jobs are anticipated to grow in number and importance in Hawai‘i, according to the Hawai‘i Department of Labor and Industrial Relations. The Hawai‘i Workforce Development Council published a “Green Workforce Report” showing that between 2010 and 2012, employer worksites project the number of green jobs to increase by 26% to 14,048, accounting for 2.9% of total employment. (State of Hawai‘i, Department of Labor and Industrial Relations 2010, 5) EE in schools can help students prepare to meet this increase in workforce demand as well as to create new jobs through “eco-preneurship.”



As a step toward meeting future careers and providing workforce readiness related to the environment, HDOE established the Natural Resources career pathways, one of six career pathways that students may select and fulfill with elective courses. The other career pathways are Arts & Communications; Business, Management & Technology; Health Services; Industrial & Engineering Technology; and Public & Human Resources. As green careers encompass jobs with a sustainability focus in nearly all career pathways, it would be most effective to integrate sustainability into all career pathways.

Another option for learning about green careers is offered by Mālama Learning Center, a nonprofit organization that has partnered with Leeward Community College's Hālau 'Ike O Pu'uloa to create the "Hawai'i Green Collar Institute." The Institute introduces high school and college students, educators, and job-seekers to the array of green jobs currently available and needed in Hawai'i.

Developing Partnerships

Partnerships with government agencies, nonprofit organizations and businesses are key to achieving meaningful EE and service learning. Partnerships



help prepare students for college and career-readiness by providing them with resources, classroom speakers, mentors, and job training. Successful relationships ensure that all partners benefit and that communication is two-way and on-going. Creating partnerships is not a new concept to HDOE nor most any school. Still, gaining new community partners requires continuous outreach as potential

partners may not know how to initiate or coordinate contact with schools.

Fortunately, Hawai'i has a healthy supply of environmental professionals employed in federal, state and county governments, institutions of higher learning, nonprofit organizations, and businesses. While these individuals are not usually educators, they still represent educational resources for out-of-school programs. With proper training, they could be excellent mentors for students needing guidance in activities such as senior projects and science fair projects.

The more partnerships that a school makes, the more resources will be available to support EE, service learning, and other projects.

Tools to Improve Access to Resources

There are abundant EE resources available to educators, many at no cost. The HEEA website (www.heea.org) has a searchable database that includes curricula, classroom materials, field trip sites, project ideas, community partners, and grant opportunities. Teachers can search the website based on their subject area, class size, grade level, the type of resources or experience they need, and many other criteria such as opportunities for community service. Teachers can also create pages for schools on this site so they can share their school's EE activities. In addition to the website, HEEA provides island representatives who can answer questions and make connections to groups that can be helpful partners.



Objective 1:

Align environmental education with HIDOE Standards (HCPSIII, Common Core, Next Generation Science), Na Honua Mauli Ola Guidelines, and STEM at every grade level. level.

Actions:

- Bring together a group of diverse formal educators familiar with DOE standards, STEM, NGSS, and Nā Honua Mauli Ola guidelines to make a comprehensive list of how environmental education aligns with the standards and guidelines. Include Excellence in Environmental Education: guidelines for Learning K-12.
- Publish the comprehensive list on HIDOE, HEEA and other relevant websites and promote its use by educators
- Align HELP to DOE strategic plan

Objective 2:

Use place-based science, community-based education, service learning, and environmental health activities to reach all students particularly those that are underserved.

Actions:

- Utilize the Nā Honua Mauli Ola guidelines when reaching the larger native Hawaiian learning community, including kāpuna, family and other community members.
- Target schools in the HIDOE Zones of School Innovation to provide environmental education that is comprehensive, standards- based and assessment-driven.
- Work with community leaders of immigrant communities from Pacific Islands to connect them to caring for Hawaii's environment.
- Support the continuation and expansion of school garden programs so that more students may have an opportunity to learn from that setting.
- Partner with the Hawai'i 5-2-1-0 Initiative to integrate environmental education in to their campaign and involve families.
- Build and maintain collaborations to K-12 initiatives (Exemplary State STEM program, Global Natural History Day Project, exemplary charter school environmental education programs)

Objective 3:

Increase the availability of green/sustainability career education for students starting from elementary school.

Actions:

- Work with HDOE to embed and maintain sustainability in career pathways.
- Partner with the University of Hawai'i and other institutions of higher learning to provide sustainability learning opportunities and role models.
- Collaborate with CTE (Career and Technical Education) programs to promote "green" careers.
- Partner with UH and other higher education institutions to offer PD courses to DOE teachers at little or no cost.

Objective 4:

Improve educators' access to environmental education resources.

Actions:

- Utilize the HEEA website as a tool to access resources in schools.
- Provide information on environmental education resources through professional development opportunities (see Goal 3).

Objective 5:

Develop partnerships with government agencies, non-profit organizations, and businesses that are willing to work with schools and young people.

Actions:

- Collect information and photos on case studies; make a video highlighting the value of such partnerships.
- Encourage the development of more environmental education-based service learning opportunities with partners.
- Utilize HEEA's network of island representatives to conduct outreach to government agencies, non-profit organizations and businesses to inform them of school needs in their area.
- Identify and advertize hands-on projects with faculty and graduate students from the University of Hawaii and other institutions of higher learning, private and NGO organizations, government and public sector partnerships that engage K-12 students in relevant research.

GOAL 2

Develop and Support Learning Environments that Promote Environmental Literacy

The natural environment is arguably the best classroom for teaching EE. Nevertheless, effective outdoor classrooms can also be located on school campuses. These spaces offer nearly all students multiple opportunities to learn EE outdoors.

School Garden as a Curriculum

School gardens, especially in urban areas, can serve as the first step in immersing children in nature. According to the Center for Ecoliteracy, “Tracing the paths food follows from the seed in the soil, to the vegetable on the vine, to the meal in the cafeteria teaches basic ecological literacy concepts—the flow of energy from the sun to plants and animals, planetary cycles of water and weather, the interdependent web of relations embodied in every bite we take. . . . Gardens support different learning styles; children who aren’t engaged in the classroom often become leaders in the garden.” (Stone 2009, 23)

Gardens can grow vegetables, native Hawaiian plants, and ethnobotanical plants. Peace gardens can serve as physical spaces for experiencing peace and practicing conflict resolution, while benches encourage sitting, talking, and feeling relaxed. To support gardens, schools can set up nurseries to learn how to grow starter plants. They can create aquaponic (hydroponic + aquaculture) systems to grow plants and fish in a closed loop system. They can also make compost piles or vermicomposting (worm) bins that process food scraps from cafeterias. Cafeterias, in turn, can support the “eating fresh” concept by serving more locally grown foods.

School gardens may also provide vehicles for students to learn about the negative impacts of invasive species, which is a reality for both small and large-scale farmers. Realizing this will help young students – our future farmers and leaders – to understand the importance and benefits of partnering with others in the community who have an interest in invasive species – its prevention, early detection, and response.

Studies show that students who garden experience positive growth in “self-esteem, attitudes toward school and the environment, social development, physical and psychological health, creative thinking and problem solving, and effective learning of science and a variety of other academic subjects.” (Lewis n.d., 1) A great local example of this is the curriculum used by Kōkua Hawai‘i Foundation, AINA IS (Actively Integrating Nutrition & Agriculture in Schools), which links growing food in school gardens to lessons on nutrition.

The Hawai‘i Farm to School and School Garden Hui (HFSSGH) is in the process of creating a Garden Teacher Training and Certification Program, a Garden Basics Course Training for Classroom Teachers Grades K-8, and a Pre-K Training Program for Educators.

Greening Schools

There is a growing movement to make schools green. According to a 2006 report on the greening of American schools, on average, green schools save \$100,000 per year on operating costs. Green schools use 33% less energy and 32% less water than conventionally constructed schools. Building high-performance school buildings is more fiscally prudent and lower risk than building conventional, inefficient, and unhealthy school buildings. (Kats 2006, 2)

professional guidance, the task can be daunting. Partnering with organizations and businesses that run green programs can reduce hesitation and infuse the retrofitting process with learning opportunities for the entire community.

Locally, green school programs have many supporters including the Kōkua Hawai'i Foundation, The GreenHouse, , Hawai'i Charter Schools Network, US Green Building Council (USGBC)–Hawai'i Chapter, UH Master Gardener program, International School

Hawai'i Farm to School and School Garden Hui

The mission of the Hui is to advance the statewide school garden and farm-to-school movement in order to inspire and empower Hawaii's people to take an active and conscious role in restoring our relationship to food, farming, and the environment; improving student health; and raising academic achievement. HFSSGH works with schools, educators, students, policy makers, and their community partners through the School Garden Networks on Kaua'i, O'ahu, Moloka'i, Maui, and Hawai'i.



Greening schools is directly in line with HIDOE's Sustainability Policy (see page 17), which has been implemented in several schools. For example, 'Ewa Makai Middle School in Leeward O'ahu is HIDOE's first entire school campus to be designated as a LEED (Leadership in Energy and Environmental Design) Silver project. Opened in 2011, the school conserves energy by using natural day light and occupancy sensors that control lighting and plumbing fixtures. Recycled materials were used for construction and a special storm-water-runoff collection system was installed. Facilities staff ride adult-sized tricycles to save energy and get exercise.

Most schools are not new, however, and retrofitting existing schools to be green is not simple. Without

Peace Gardens, Blue Planet Foundation, Recycle Hawai'i, Earth-Friendly Schools Hawai'i, Kaulunani, and HFSSGH. These organizations can provide expertise to interested schools and link green programs to curricula in all subjects including STEM. Nationally, Green Ribbon Schools and the USBGC's Center for Green Schools are very useful resources.

While more studies are needed, greening of schools is believed to be good not only for the environment, but also for academic performance. Some green building experts believe, based on reports from green schools, that "a 3-5% improvement in learning ability and test scores in green schools appears reasonable and conservative. It makes sense that a school specifically designed to be healthy, and



characterized by more daylighting, less toxic materials, improved ventilation and acoustics, better light quality and improved air quality would provide a better study and learning environment.” (Ibid., 12)

The US Department of Education supports the concept of greening schools and launched, in April 2011, a Green Ribbon Schools recognition program⁸, which HIDOE has joined. A statewide “Hawai‘i Green Schools” (working title) program, could greatly boost the green schools movement in Hawai‘i. Filled with models for sustainability, this program could encourage schools to adopt a broad range of practices:

Classroom Conservation Actions

Everything from turning lights and fans off when not needed, to reusing and minimizing use of resources (e.g. paper), to purchasing materials with recycled content can be taught as conservation practices.

Green Design and Conservation Landscaping

The number of schools obtaining LEED and other certifications is growing. Every school facility improvement presents an opportunity to be green. This includes landscaping decisions to select native Hawaiian plants and vegetation that does not consume a lot of water.

School Yard Habitats and Gardens

Schools can develop habitat areas and/or gardens on their grounds as ways to educate students in science, math, social studies, art, health and more. Across the country, these types of programs are proving memorable and effective for students. They also connect EE to agriculture, which is key to reaching sustainability.

Recycling and Waste Reduction Programs

As an island state, recycling and waste reduction must be priorities and where better to teach this than in the schools? Schools can implement campus-wide recycling programs for paper, aluminum, plastic, and other recyclable items, and purchase items made from recycled materials. Also, schools can institute policies to reduce one-time-use items, which are contributing to our landfill and marine debris problems. Waste reduction programs save schools money while recycling programs generate funds and motivate students to think about innovative solutions to Hawaii’s waste problem.

Energy and Water Conservation Programs

Energy and water-use audits and rain-water catchment systems are great ways to involve students in relevant campus projects. They can be easily incorporated into curricula and can also lead to significant savings in utility costs. Groups like the Blue Planet Foundation and Sustainable UH have begun to work with schools across the State on energy auditing and related job training.

Green Cleaning

School facilities personnel can make a huge contribution toward protecting human health as well as protecting the environment through their purchasing choices. They should look for products that are safe (non-carcinogenic, non-irritating to eyes and skin, non-flammable, non-reactive, and free of Volatile Organic Compounds as well as fragrances and dyes). Preferably, products should be biodegradable, multi-purpose, made from renewable resources, and sold with reduced packaging.

A Serenity Garden

At Alvah Scott Elementary School on O‘ahu, gardens are tied to behavior and health. Students in grades K-6 have learned to go to the “serenity” garden when they feel stressed. There, they watch and feed the fish and tend to the plants, becoming more centered, focused, and ready to learn.

EE Curricula

In addition to the curriculum ideas mentioned previously, schools can tap into a multitude of existing EE curricula and lesson plans, especially those made for Hawai‘i, and integrate them throughout the school year at all grade levels.

Service Learning

Students and community members can join together to conduct service learning projects both on and off campus. These projects benefit the community while furthering the environmental education of participants.

Tracking Green Activities and “Certification”

Global and national programs have already been created to certify green schools all over the world. Certification can connect schools to a larger network of support for green programs. It can also provide opportunities for schools to shine as leaders in Hawaii’s green future.

An effective way of making real change at schools and assisting teachers would be to create a Sustainability Coordinator position in each HIDOE complex area, along with a statewide position to connect these Coordinators. As Educator/Resource personnel, the Sustainability Coordinators would provide support to teachers and administrators and ensure that each school is working toward meeting the guidelines of Sustainability Policy 6710 as well as a Hawai‘i Green Schools initiative. They also would help to connect all of the green efforts throughout their complex areas into integrated, long-term programs.

Given the HIDOE’s budget constraints, putting a Sustainability Coordinator in every complex area could appear as a luxury. However, in the long run it could actually serve as a significant money-saving step as the more schools become green, the more money they will save (e.g. lower energy and water costs and waste disposal fees). An alternative would be to explore whether other entities (public or private) could hire and “loan” these Sustainability Coordinators to the HIDOE for 3-5 years, which would give the HIDOE time to build capacity from within.





Get Students Outside

EE experts agree that outdoor experiences are critical to building EL. “Experiences outside the classroom are an important instructional strategy for engaging students in direct discovery of the world around them. This awareness of their local community can prompt a personal commitment to apply skills and knowledge in pursuit of environmental quality and quality of life.” (North American Association for Environmental Education 2010, 4)

Taking students off campus and outdoors exposes them to environments that they may not have visited before, even if they are in their own “backyard.” Hawai‘i abounds with diverse outdoor classrooms year-round. A public beach, tidepool, stream, or park, or a privately run farm, *lo‘i*, or fishpond can be a wonderful field site for place-based learning. Any number of activities can be done – water quality samples can be taken and compared, invasive species can be removed and replaced with native plants, fishpond rock walls can be rebuilt, and *kalo* (taro) can be harvested and made into *poi*. EE techniques can focus on developing conservation plans that involve conducting historical research and community interviews, documenting progress, and thinking critically about solving problems.

Hawai‘i is fortunate that many informal environmental education venues have identified education as a prime mission. Their staff members tend to be talented, enthusiastic, and eager to work with students. Whether they are nature centers, zoos, aquaria, museums, arboreta, botanical gardens, parks, or voyaging canoes, they provide rich learning environments in which EE can shine.

Hawai‘i has several parks under the National Park Service (NPS) that are exceptional places for EE.

With the NPS's new "Call to Action: Preparing for a Second Century of Stewardship and Engagement," their goals to "connect people to parks" and "advance the education mission" of the NPS will surely boost EE and EL in Hawai'i. (National Park Service 2011, 5)

Extended-stay opportunities like multi-day or overnight camps can have a huge impact on students as individuals and together as classes. They provide young people with opportunities to be away from everything in their home and school environments and to focus on themselves and their relationships with classmates and the natural environment. Many studies have shown that these programs expose students to "challenging situations which thereby increases their self-confidence and self-efficacy. The challenging and unpredictable nature of wilderness environments require participants to modify their own behavior, thus enhancing their self-control and independence" (Rickinson, et al. 2011, 32)

Several camps such as Camp HR Erdman and Camp Timberline on O'ahu, the Hawai'i Nature Center on Maui, and Kōke'e Discovery Center on Kaua'i are open to students and in need of more guests. Additional school trips to these camps can be funded by using the green school projects listed above as fundraisers. For example, The Early School on O'ahu uses money earned from recycling to fund two camping trips for the school's families each year.

Access to Conservation Areas

Field sites where native ecosystem restoration or cultural site preservation are goals can be extremely engaging and enriching for students. These "living laboratories" connect learning across all subjects and relate lessons to first-hand experiences. Involving students in field projects such as invasive species removal and native plant restoration exposes them to real-life issues and challenges. These opportunities can deepen their under-

standing of the threats to Hawaii's native ecosystems and heighten their commitment to work toward solutions.

Teachers need assistance connecting with landowners and natural resources managers, not only to gain access to Hawaii's conservation areas but also for guidance in protecting those areas. Some of the more vulnerable protected areas have plants and animals that exist nowhere else in the world. Access to these places, which are often in more remote, difficult-to-reach locations, should be limited to small groups in order to minimize negative impacts. By working in outdoor areas and being able to conduct field experiments or see changes in places over time, students will learn how they can have an impact on the larger community and on globally important conservation efforts.



Objective 1:

Encourage schools to work with students to establish and maintain a garden used as a curriculum.

Actions:

- Create and design an environmental education curriculum framework that applies to different grade levels for teachers to readily utilize (on going).
- Encourage new partners (organizations, parents, and other community members) to volunteer to assist students in creating and maintaining gardens as classrooms.
 - Establish and maintain security and maintenance issues.
 - Create a network for funding possibilities via after school programs.

Objective 2:

Create and implement a coordinated “Hawai’i Green Schools” program (working title).

Actions:

- Connect schools and programs involved in greening of schools and work toward establishing a collaborative and coordinated “Hawai’i Green Schools” Program.
- Create and fund one Community Coordinator position per HIDOE Complex Area and one statewide Community Coordinator position to support the programming at a statewide and local level.

Objective 3:

Provide educators with ongoing access to meaningful, hands-on outdoor learning activities.

Actions:

- Assist schools in creating place-based on-campus outdoor environmental education activities that can be accessed by students of different abilities.
- Establish positions for HIDOE Community Coordinators to network; establish and maintain community relationships with resource managers, environmental education organizations and field study sites.
- Inform teachers about field trips, study sites and funding opportunities in their school, complex areas, and across the state through an up to date HEEA website.
- Utilize meaningful and relevant technological tools to enhance hands-on environmental discoveries (ie. probes; sensors; temperature gauges, etc.)

Objective 4:

Provide extended-stay experiential opportunities to every school.

Actions:

- Assist organizations that provide extended-stay environmental education programs in reaching out to schools and provide quality experiences.
- Identify gap areas where extended-stay programs are not available to local students and work with groups to find resources that will assist in creating affordable opportunities.

GOAL 3

Improve Educator Professional Development for Environmental Literacy

This chapter relies heavily on an important document produced by the North American Association for Environmental Education (NAAEE) as part of the National Project for Excellence in Environmental Education. *Guidelines for the Preparation and Professional Development of Environmental Educators* was first produced in 2000 and updated in 2010 by a collaborative team of experienced environmental educators across the United States.

One of the key “take home” points of *Guidelines* is the need for environmental educators to demonstrate professionalism. Criticism about EE is usually founded on sentiments that EE is advocacy-based rather than fair and balanced when dealing with controversial environmental issues. These issues can be complex and multifaceted, eliciting deep feelings and strong opinions and emotions. Good environmental educators “incorporate differing perspectives and points of view evenhandedly and respectfully and present information with intellectual honesty. They involve learners in critical evaluation of data, results, models, conclusions, and opinions. Fairness and accuracy are watchwords for instruction.” (North American Association for Environmental Education 2010, 4)

As environmental educators work in a variety of settings and jobs (e.g. public and private classrooms, nature centers, museums, parks, universities, natural resource agencies, cultural organizations, eco-tour businesses, churches, and social service organizations), there is no one way to approach professional development. However, *Guidelines* outlines the

experiences and learning that will help educators deliver instruction that effectively fosters EL.

Whether a pre-service or in-service teacher, or non-formal educator, a good environmental educator should show competency in each of the six themes and general guidelines presented below. (Ibid., 6-7)

Theme One: Environmental Literacy

Educators must be competent in the skills and knowledge outlined in *Excellence in Environmental Education, Guidelines for Learning K–12*:

- Questioning, analysis, and interpretation skills
- Knowledge of environmental processes and systems
- Skills for understanding and addressing environmental issues
- Personal and civic responsibility

Theme Two: Foundations of Environmental Education

Educators must have a basic understanding of the

goals, theory, practice, and history of the field of EE, including:

- Fundamental characteristics and goals of EE
- How EE is implemented
- The evolution of the field

Theme Three: Professional Responsibilities of the Environmental Educator

Educators must understand and accept the responsibilities associated with practicing environmental education, which include:

- Exemplary EE practice
- Emphasis on education, not advocacy
- Ongoing learning and professional development

Theme Four: Planning and Implementing Environmental Education

Educators must combine these fundamentals of high-quality education with the unique features of EE to design and implement effective instruction:

- Knowledge of learners
- Knowledge of instructional methodologies
- Planning for instruction
- Knowledge of EE materials and resources
- Technologies that assist learning
- Settings for instruction
- Curriculum planning

Theme Five: Fostering Learning

Educators must enable learners to engage in open inquiry and investigation, especially when considering environmental issues that are controversial and

require students to seriously reflect on their own and others' perspectives. Educators should provide:

- A climate for learning about and exploring the environment
- An inclusive and collaborative learning environment
- Flexible and responsive instruction

Theme Six: Assessment and Evaluation

Environmental educators must possess the following knowledge and abilities, along with commitment to make assessment and evaluation integral to instruction and programs.

- Learner outcomes
- Assessment that is part of instruction
- Improving instruction
- Evaluating programs

The NEETF survey in 2005 found that with only 13% of colleges/schools of education providing courses on the environment, many K-12 teachers start their careers with little or no training in EE. (The National Environmental Education & Training Foundation 2005) To address this gap, the University of Wisconsin Stevens Point, for example, offers online courses on Environmental Education.⁹

What the NAAEE guidelines do not emphasize, yet is critical in Hawai'i, is a framework for professional development that is oriented to a Hawaiian cultural model of sustainability proposed by Pauline Chinn, Professor at the University of Hawai'i at Mānoa, College of Education. This model includes four elements: (1) a Hawaiian sense of place, (2) *mālama*, active care for a familiar place, (3) *kuleana*, responsibility, and (4) active inquiry situated in real-world issues. (Chinn 2011, 2)

Status of EE Professional Development in Hawai'i

After reading through *Guidelines for the Preparation and Professional Development of Environmental Educators*, the obvious questions are, "How do environmental educators acquire professional development to meet the recommendations in *Guidelines*?" and "What training opportunities are available in Hawai'i and what needs to be developed?" Hawai'i is fortunate to have a number of training opportunities available to educators. They range from one-day workshops to full semester courses, to resources available on-line.

These are some examples:

- Hawai'i DLNR – Project Learning Tree
- Hawai'i Farm to School and School Garden Hui – workshops and conferences
- Hawai'i Green Collar Institute – educator sessions
- Hawai'i Nature Center – workshops
- Hawai'i Science Teachers Association – workshops and conferences
- HIDOE – Environmental Service Learning, STEM, and Project Inspire marine science courses (online professional development)
- Kohala Center - Meaningful Outdoor Experiences for Students
- Kōkua Hawai'i Foundation's 'ĀINA IS – workshops and conferences
- Navigating Change – educator workshops
- Pacific American Foundation – Aloha 'Āina workshops
- Papahānaumokuākea `Ahahui Alaka`i - educator sessions
- Punahou School - Luke Center Service

Learning Teacher Institute

- University of Hawai'i, College of Education - Mālama i ka 'āina course

An exciting new professional development project, The Mau School of Voyaging: Cultivating Teachers as Navigators and Navigators as Teachers, seeks to strengthen science, mathematics and social studies instruction by promoting STEMS and culture-based education. This new project links the University of Hawai'i College of Education with the Polynesian Voyaging Society and selected charter schools.

In support of HIDOE's Common Education Agenda and Race to the Top plan, University of Hawai'i at Mānoa faculty members from the College of Education, the School of Ocean and Earth Science and Technology, and the Physics Department have begun initial planning for the creation of a STEMS certificate that would be offered through the College of Education in partnership with multiple departments on the Mānoa campus.

In addition, The Kohala Center, the Mala'ai Culinary Garden of the Waimea Middle School, and the University of Hawai'i Manoa Extension are partnering to develop a School Learning Garden professional development curriculum and training program Ku'Aina Pa for K-8 teachers. This will be a year-long Pilot Program beginning in June 2012.

The overarching goals of this program are to build capacity, skill levels, and knowledge in school garden educators in the areas of learning theory and application, food and nutrition, connections and integration of STEM and HCPS to curriculum development, strengthen organic gardening skills and knowledge, integrate education for sustainability



concepts, and build capacity to form school and community partnerships that will sustain programs.

EE Certification

Farther up the training ladder is the possibility of earning certification in EE – for individual educators or for high-quality EE programs. The concept of EE certification for educators has been explored by individual states as well as the NAAEE and the Environmental Education and Training Partnership (EETAP). Hawai'i currently does not have a certification program for environmental educators.

As of April 2011, seven states offer EE certification: Arizona, Colorado, Georgia, Kentucky, Maryland, North Carolina, and Utah (per NAAEE website)¹⁰. Their certification programs vary in terms of structure, content, time commitment, and cost, but they share a common set of “core competencies” for demonstrated proficiency in EE (based on NAAEE’s professional development guidelines). A prime example is provided by the North Carolina Office of EE and Public Affairs, which serves both formal and non-formal educators through the same program and has certified more than 900 environmental educators.

While it may seem an obvious next step to create an EE certification program for Hawai'i, it would be wise to review research on the pros and cons of developing such a program. An important consideration is

that HIDOE currently does not recognize certification in EE, therefore possessing such certification will not affect “highly qualified teacher” status.

Research on EE certification was published by the Environmental Education Association of Oregon for NAAEE. The nation-wide study produced the following findings (Environmental Education Association of Oregon 2004, 4):

- A majority of respondents support certification, although this support varies and seems stronger among certified practitioners.
- Support for certification is inconsistent among employers of non-formal environmental educators and depends on such variables as cost, time, and perceived return on investment.
- Although interest is high, several barriers limit the development of certification programs at colleges and universities, including cost and lack of faculty resources.

A similar study was released in Pennsylvania revealed results similar to the national study (The Pennsylvania Association of Environmental Educators and The Pennsylvania Center for Environmental Education 2011). While non-formal EE practitioners saw certification as important to



their individual careers, they viewed it as even more important to the field as a whole. Simply put, these are the basic questions:

- Are certification programs effective in terms of benefiting the learner?
- What specific elements are needed in a certification program to ensure it is rigorous and valuable enough to gain the support of employers and potential applicants?
- What organizations, partnerships and resources should be involved in developing the certification program to make it relevant and valuable?
- Who should organize and teach such a program in Hawai'i?
- Should the Hawai'i program be accredited by an outside agency? If so, who?
- What is the most effective and viable method of assessing candidates for certification?
- How can a certification program be self-sustaining?

Exploring these questions would be a prudent part of any step toward developing an EE certification program for educators.

GOAL THREE

Objectives

Objective 1:

Increase the availability of environmental education professional development opportunities in Hawai'i that emphasize environmental literacy and a Hawaiian cultural model of sustainability.

Actions:

- Inventory professional development opportunities in Hawai'i.
- Make professional development opportunities accessible on heea.org.
- Conduct a PD needs assessment among pre-service, in-service, and non-formal education.
- Research various structures for PD that are offered by other states and countries.
- Provide alternate training (e.g online classes, workshops, conferences,) to met the varying needs of a wide range of educators on all islands.

Objective 2:

Increase the attendance and diversity of pre-service, in-service, non-formal, and community educators at environmental education professional development opportunities in Hawai'i.

Actions:

- Promote professional development incentives such as stipends, PD credit, or air transport (as well as substitutes for teacher) during environmental education workshop days that fall on regular school days.
- Align the HIDEOE's offerings of professional development in environmental education through partners such as HIDEOE and HIAS.

Objective 3:

Establish an environmental education certification program in Hawai'i, should there be a demonstrated need and interest among potential applicants and instructors.

Actions:

- HEEA will serve as the local certification lead and work with NAAEE to evaluate the effectiveness and impact of existing environmental educator certification programs and establish a Hawaii Certification program based on resulting data and local needs.
- Work with the Hawaii DOE to ensure certification is approved by DOE.

GOAL 4

Monitor and Assess Environmental Literacy

This chapter addresses the fundamental question: “How do we know if our efforts are working?” The prevailing methods of educational monitoring and assessment often involve some form of testing. However, just as teaching EE should not be limited to lessons on paper and in classrooms, neither should evaluating EL be confined to those parameters.

Formal Education

At the public school level, it would be wise to conduct monitoring and assessment of EL through existing means rather than create a new layer of expectations and responsibilities, which implies more time and money – luxuries that educators and administrators simply do not have. The HIDOE conducts the “Hawai’i State Assessment” (standardized testing) from October to May of each year for grades 3-8 and 10 in reading and mathematics and for grades 4, 8, and 10 in science. Hawaiian Language Immersion Program students in grades 3 and 4 participate in a portfolio assessment based on their classroom work. Scores are reported at the end of each school year and these scores are used to determine a school’s Adequate Yearly Progress (AYP).

As of school year 2010-2011, assessments are done online. The Data for School Improvement (DSI) system, while still relatively new, has great potential in providing teachers and administrators with online formative assessment tools and data to drive instruction. These are common tools for all public schools.

Hawaii’s educators also use many other indicators (e.g. student class work, homework assignments, projects, portfolios, teacher observation, interviews) to gauge the quality of students’ accomplishments.

Educators often use rubrics that set expectations to assess learner outcomes. Schools evaluate each student’s academic, social, and personal development four times a year. Parent-teacher conferences, and sometimes parent-teacher-student conferences, augment the written report cards. Standards-based report cards, specifically describing standard achievement relative to the State standards, are now being used for elementary students and in development for secondary students. (Hawai’i Department of Education 2011)

High school graduation: High school graduation is a culminating assessment. Graduation requirements have changed in recent years and may change even more in the future. For the graduating classes of 2010 through 2015, the HIDOE public high school graduation requirements include 22 credits for the High School Diploma or 24 credits for the Board of Education Recognition Diploma. The High School Diploma is “issued to students who have met all graduation requirements.” The Board of Education Recognition Diploma is awarded to graduates who complete other curriculum requirements, earn a minimum 3.0 grade point average (GPA), and successfully complete a senior project. The Certificate of Completion is “issued to a student with a disability who completes all the requirements set



by program.” Hawai’i does not require students to pass a high school exit exam in order to graduate. (Hawai’i Department of Education 2011)

In September 2011, new graduation requirements were adopted by the State Board of Education, which oversees all of Hawai’i’s public schools. The tougher requirements (i.e. required math and science courses) for a single Hawai’i High School Diploma were critical components of Hawai’i’s Race to the Top plan and the HIDOE 2011-18 Strategic Plan. As of graduating class of 2016 (incoming freshmen in the 2012-2013 school year), graduates must earn

fields, as many would welcome volunteer help and could provide mentors.

With regard to EL, the recommendations in *Excellence in Environmental Education, Guidelines for Learning K-12* are in line with HIDOE’s vision of a high school graduate (see sidebar below). These recommendations state that “by the end of twelfth grade, learners . . . should possess the basic skills and dispositions they need to understand and act on environmental problems and issues as responsible citizens—and to continue the learning process throughout their lives. In the ninth through

The HIDOE’s Vision of a High School Graduate:

All public high school graduates will:

- Realize their individual goals and aspirations;
- Possess the attitudes, knowledge, and skills necessary to contribute positively and compete in a global society;
- Exercise the rights and responsibilities of citizenship; and
- Pursue post-secondary education and/or careers.

- Board policy 4540 passed September 2011

24 total credits: four English credits; four social studies credits; three math credits; three science credits; two credits in world language, fine arts or career and technical education; one credit in physical education; half a credit in health; half a credit in personal transition plan; and six elective credits, including the option of a senior project.

Although senior projects will be an elective and not a requirement, this still creates boundless opportunities to integrate EE into coursework. Students looking for senior project ideas could make great connections by talking to groups working in EE-related

twelfth grades, environmental education can promote active and responsible citizenship by challenging learners to hone and apply problem-solving, analysis, persuasive communication, and other higher level skills—often in real-world contexts.” (North American Association for Environmental Education 2004, 3)

In June 2011, the State of Maryland took the bold step of being the first in the country to approve an Environmental Literacy Graduation Requirement. The Maryland Board of Education voted in favor of requiring public schools to infuse core subjects

with lessons about conservation, smart growth, and the health of the natural world. The new Requirement was explained in a press release that said, “Local school systems will have the ability to shape their programs to be relevant to their county, but all will align with standards set by the State. Every five years, the local school systems will report to the State to guarantee that students are meeting the requirements.” The release went on to say that the new Requirement would not necessitate additional courses and the State could implement the Requirement without additional funding or staff. (Maryland Department of Natural Resources 2011)

HEEA and partners continue to work with the Hawai‘i DOE and BOE to incorporate environmental literacy in educational policy.



Non-formal Education

A key to improving the EL of students is ensuring that the EE programs in which they participate are of high quality and accomplishing their goals. This applies to all EE programs, including non-formal environmental education providers such as nature and learning centers, zoos, aquaria, after-school programs, and natural/cultural resource-protection agencies and organizations.

These non-formal providers are integral to the EE landscape in Hawai‘i, yet there is no standard method used to evaluate their respective programs. It is therefore difficult to compare whatever data is collected. There are, however, examples of how assessment can be tied to HIDOE benchmarks. The Pacific American Foundation developed such an assessment tool for its Aloha‘Āina program, which uses pre- and post- online tests to evaluate students in grades 3-8.

In general, EE providers in Hawai‘i and across the United States are not adequately trained to conduct evaluations of their programs on more than a cursory level. Occasionally, in-person training courses are conducted by the National Conservation Training Center (NCTC) and NAAEE. EE providers may also access assessment tools in two NAAEE resources: *Excellence in Environmental Education, Guidelines for Learning K-12*, and *Evaluating Your Environmental Education Programs, a workbook for practitioners*. Still, it is highly recommended that non-formal EE providers have affordable access to ongoing training in program evaluation.



Objective 1:

Develop tools that collect Environmental Literacy assessment data in HIDOE K-12 settings on a schedule consistent with existing assessments and share these tools with independent schools.

Actions:

- Create a working group to review a existing assessment tools, structures, systems, and survey.
- Collect and analyze data and compile findings into a report on progress and achievement on a regular bass (e.g. every two or three years).
- Monitor progress toward goals outlines in the HELP and modify or adapt the plan as appropriate every three to five years.

Objective 2:

Support HIDOE in reaching benchmark for on-time high school graduation rates through environmental education.

Actions:

- Align environmental education programs with science standards and methodologies.
- Infuse environmental education opportunities with service learning.
- Work with HEEA and others to provide resources support for senior projects (e.g. mentors, project ideas, supplies).
- Utilize the HEEA website for sharing information on senior projects, mentors, and community service opportunities.
- Analyze the implementation and results of a new graduation requirements for Environmental Literacy in other states.

Objective 3:

The “Hawaii Green Schools” program will monitor the achievements of participating schools each year.

Actions:

- Collect data on successful school-based models that incorporate practices in outdoor learning, green-schools-based, and high quality environmental education. Pending Goal 2, Objective 2 and results from GS partners.
- Use data and online tools to recognize exemplary Hawai'i Green Schools and to motivate other schools to take part. Pending Goal 2 & results from GS partners.

Objective 4:

Provide training and other support to enable educators to effectively evaluate environmental education programs.

Actions:

- Partner with the NCTC/NAAEE/HANO or other organizations to run capacity building course in Hawai'i.
- Establish partnerships with institutions of higher education so that graduate degree candidates can support EE evaluation.

Objective 5:

Evaluate HELP implementation.

Actions:

- Develop a survey tool to evaluate HELP implementation.
- Disseminate HELP survey to HEEA EE partners and support them in its completion.
- Broadly share results of survey to guide decision making, fund development, etc.

GOAL 5

Make Environmental Education and Environmental Literacy a Statewide Priority

Hawai'i residents are very supportive of including environmental studies in the public school curriculum, based on responses to a Mālama Hawai'i research survey of about 600 residents in 2000¹¹.

As the graphic facing shows, 93% of respondents were in favor of teaching EE in HIDOE schools (73% strongly in favor.) This is consistent with national research conducted by the National Environmental Education and Training Foundation and Roper Starch Worldwide in 1997. That study revealed that 95% of adults and 96% of parents support the practice of teaching school children about the environment. (The National Environmental Education & Training Foundation 2005, 65)

While the Mālama Hawai'i survey was conducted more than 10 years ago and the same question has likely not been asked in a similar market research survey, there is no notable reason to believe that the public's sentiment has reversed. If anything, with more attention focused on being "green" today, public support is potentially even stronger. Yet, this strong public support has not translated into making EE a statewide priority backed by appropriate funding. How do we significantly elevate the importance of EE in the minds of Hawaii's leaders and the public? Making EE and EL statewide priorities will not be easy, given many other pressing issues such as unemployment, homelessness, traffic congestion, crime and violence, illegal drugs, and the high cost of living. The key will be to link EE and EL to alleviating these issues – a goal that is within our

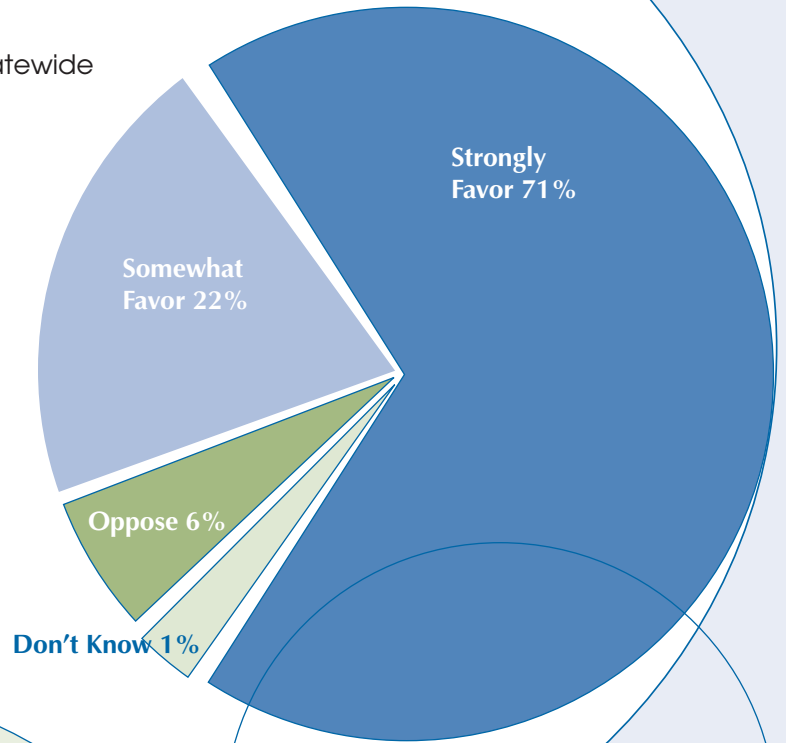
reach. For example, with stronger EL, planners and developers would be better able to plan developments so that they meet community needs for new housing and roadways without degrading the environment. Rather, the developments would be designed to enhance residents' quality of life.

Another example would be engaging youth at vulnerable ages in quality EE programs that connect them to their culture and environment and teach them to be respectful of their home and those around them. These kinds of EE programs could help reduce the potential for crime, violence, and drug use. Further, as described in Goal 1, EL can lead to green careers and green businesses as well as businesses in all sectors striving to become sustainable, thereby creating green jobs. It can also inspire individuals to become "eco-preneurs" who add new lines of work to Hawaii's job market.

Another key to elevating the status of EE can be found in the responses to a particular question in the Mālama Hawai'i opinion survey. The question was aimed at finding incentives that would motivate adults to take part in environmental activities. Out of the five options listed, including "discount coupons redeemable at local malls and supermarkets; environmental activities taking place in your

"Favor or oppose adding environmental education to DOE curriculum?"

Base = 604 statewide

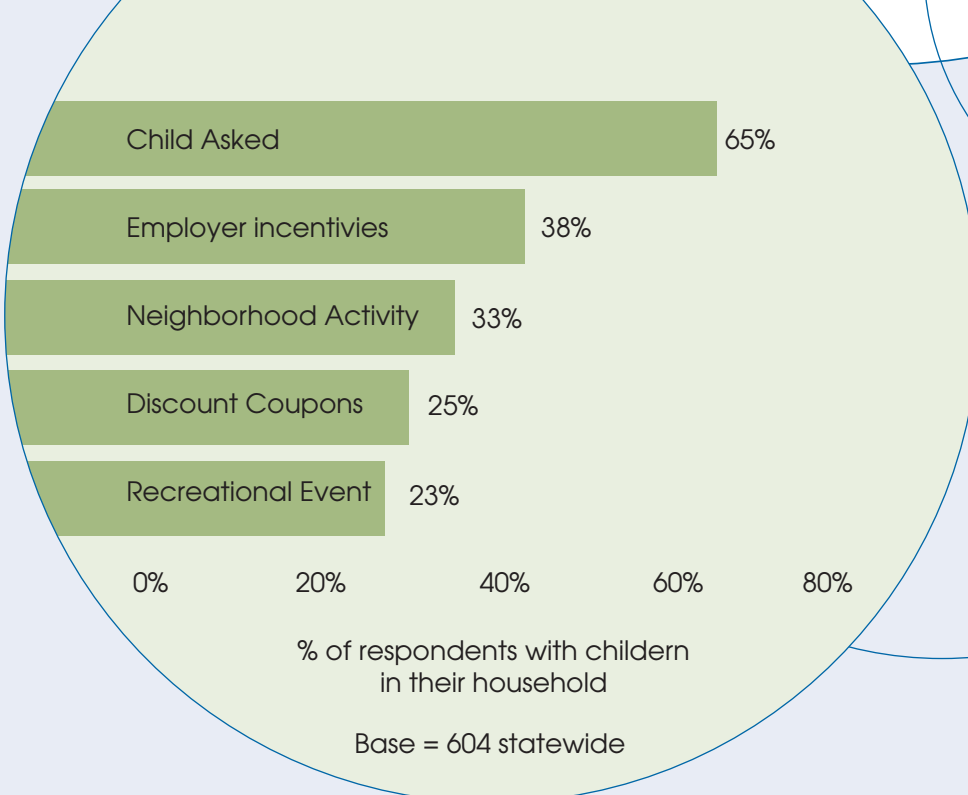


Mālama Hawai'i survey:

In response to the question "Would you favor or oppose adding environmental education to the public school curriculum?" over nine-in-ten (93%) favored the teaching of environmental education in HIDOE schools.

INCENTIVE TO PARTICIPATE

% Saying Definitely Motivate...



neighborhood; a recreational event like a food fair or fun run; and your employer gave you incentives such as more time off or more ‘comp’ time,” the most popular motivational factor by far was “your children asked you to participate in an environmental activity.” Sixty-five percent (65%) of the respondents with children under 18 years said that they would be “definitely motivated” to take part if their children asked them to. By comparison, well under half of residents (38%) said they would “definitely” be motivated by work-based incentives, followed by even lower percentages for other incentives. (See chart on previous page).

Based on these responses, children appear to be highly influential in persuading parents to take part in environmental activities. This broadens the role of EE to encompass its indirect influences in changing people’s behavior. By teaching students quality EE, parents can be reached with key



EE Leadership

HEEA plans to play a critical leadership role in advancing the HELP and EE/EL in general. It will serve as the main voice for EE in Hawai‘i while highlighting the good work that its partners do on a day-to-day basis. In addition, with enough funding, HEEA could lead an educational/social marketing campaign to promote the benefits of EL and explain why it must be a priority for our future. HEEA would work to garner resources from public and private partners to make it a multi-year, multi-media campaign.



Ultimately, it appears that to become a statewide priority, some form of legislation needs to be passed in the State Legislature. Moreover, the logical focus of this legislation appears to be the implementation and funding of the HELP. Getting to this point will require significant outreach to build widespread community support, while at the same time making one-on-one contact with legislators. It will also require good communication and collaboration with the HIDEOE and HAIS.

messages and activities. There are a number of programs in Hawai‘i that are reaching out to families through EE and opportunities to expand awareness in this way could help strengthen their voice.

Objectives

Objective 1:

Raise public opinion of environmental education and environmental literacy as not only a good idea but something that the public should fund adequately.

Actions:

- Utilize the HEEA Network and resources for networking, outreach and leadership statewide.
- Conduct a multi-media educational/social marketing efforts that include outreach to schools, families, and legislators (on-going).
- Build support for legislation that will implement and fund the HELP gaps in collaboration with partners, including the HIDOE and HAIS.



GOAL 6

Provide Sustainable Funding for Environmental Literacy

While teaching environmental and sustainability education does not need to cost a lot of money, there are certain types of expenses that, if allowable, would enhance EL. For example, field trips enable students to relate EL to “real world” experiences outside of school.

Education providers, particularly those in the non-profit sector, also need financial support so that they may continue to provide services for those field trips. Oftentimes, these providers rely solely on grants in order to partially or fully subsidize their programs, and that can lead to instability and discontinuation of good programs. Providing internships is another effective EE strategy that can be expanded with increased funding. Internships connect students to “real work” experiences and can be especially helpful in building green career pathways. Other funding needs relate to professional development (as discussed under Goal 3).

Private and public grants will likely continue to be the lifeblood of EE for the immediate future. EE professionals, however, must look at income generation as well as legislation on local and national levels in order to acquire more sustainable and dedicated funding.

The Real Costs

Funding for Field Trips

From a high of \$900,000 in the 1980s, the statewide budget for field trips provided by the HIDOE has essentially been reduced to zero (Murakami 2011). This means that schools and teachers need to find funds from their already-stretched school budgets or

raise money from outside sources to conduct field trips. There are three primary costs for field trips: (1) transportation (bus rental), (2) substitute teachers, and (3) site-visit program fees, if applicable. Supplies may also be needed. A single field trip, depending on the island, could cost from \$350 to \$800 just for transportation and substitute teacher expenses.

Fortunately, there are groups like the Kōkua Hawai‘i Foundation that provide financial support to educators, public and private, who want to take their students on field trips. KHF offers up to \$1,000/school/year (applications are required). The City and County of Honolulu’s ‘ōpala program also provides funds to schools on O‘ahu for field trips related to waste reduction and recycling. On Maui, Haleakalā National Park, with support from the Hawai‘i Natural History Association, provides funding to local schools for bus transportation so that students may enjoy and learn from one of the nation’s greatest natural treasures. There should be more programs like these.

Funding for EE Providers

Environmental Education providers that are primarily nonprofit organizations find it difficult to charge schools fees that are high enough to cover the real costs of running programs - schools simply cannot pay that much. It is often the norm for these

nonprofit groups to charge 50% or less of the costs while relying heavily on grants and donations to make up the balance. For example, the real cost of providing a short, hands-on activity on campus may be \$200, but the service provider might hesitate to charge more than \$100, if anything.

As many who fundraise know, most grant makers do not support on-going programs no matter how successful they are, which creates a dilemma for program providers. Should they continue to provide the program by charging higher fees – and perhaps lose the audiences they serve – or discontinue the program and continually start new programs? Schools need to be able to pay as much of the true costs of services as possible in order to sustain the services, and school budgets need to allow them the flexibility to do that.

Funding for Student Internships and Mentorships

Internships are highly valuable in helping students gain hands-on, in-depth experience in any field. EE internship opportunities are available with nonprofits, government agencies, and businesses but there are not enough to meet the growing demand. For example, Kupu Hawai'i, a nonprofit organization that runs the Hawai'i Youth Conservation Corps program, typically has more than 900 applicants for approximately 300 summer internship positions; these positions are offered on various islands and funded by AmeriCorps. Kupu Hawai'i also has a limited number of internships for college students interested in clean energy and waste reduction; these internships are supported through a partnership with the US Environmental Protection Agency.

While not all internships need to be paid, offering a wage or stipend is clearly an incentive, especially



Ka Hana No'eau

is a program in North Kohala, Hawai'i Island, conducted by Partners in Development. The nonprofit has developed innovative mentoring programs for Hawaiian youth that meld traditional knowledge with contemporary technologies. Traditional Hawaiian products and crafts have been slowly disappearing due to fewer opportunities for adolescents to learn the skills necessary to produce them.

Ka Hana No'eau brings an older generation of craftsmen and practitioners, and puts them together with young students in a unique mentoring program that will preserve traditional knowledge, products, and skills. An important and major portion of the program is an entrepreneurial component that introduces students to the marketing possibilities that their newly acquired skills produce.

- Partners in Development Foundation

to attract students who are depended upon to support their families financially, even in small ways. Nonprofit organizations usually raise funds for paid internships through grants, which is a year-by-year approach and rarely sustainable in the long term. Paid internships can cost from \$1,000 - \$3,000 per summer plus administrative and other costs like travel and supplies. Longer-term internships cost proportionately more. Currently, full-time AmeriCorps positions cost sponsoring organizations around \$10,000 per year and provide participants with modest living allowances and educational awards for college expenses.

Funding for Professional Development

Professional development for environmental educators, as discussed under Goal 3, can take many forms. Traditionally, workshops spanning one day to one week have worked well to introduce educators to new topics and curricula for their toolkits.



Groups that offer these workshops include State agencies like the Hawai'i DLNR and HIDOE, and nonprofit organizations like the Pacific American Foundation, Hawai'i Nature Center, Kohala Center, and Mālama Learning Center.

Some universities and colleges such as the University of Hawai'i College of Education and Chaminade University have offered in-person and online courses as well.

Costs related to professional development are shouldered by both the provider and the participants. The planning, preparation, and implementation of a workshop plus facility, supply and transportation fees can be considerable. Program registration fees can run over \$100 per session and even if fees are heavily subsidized by grants, educators are usually required to pay some amount to reserve their space.

Funding for Sustainability Coordinators

As described in Chapter 2, having community Coordinators in all 15 HIDOE complex areas and one position at the statewide level would be a high-leverage strategy to catapult EE toward equipping generations of students with EL.

Funding for an Educational Campaign

Estimating the cost of an educational/social marketing campaign to promote EE and EL would be a wild guess without having a clear plan. However, such a campaign could easily run into tens of thousands of dollars in real and in-kind costs to cover coordination, market research, materials development, media buys, event sponsorship, evaluation/monitoring, and other expenses.

Sustainable Funding Opportunities

Generating and securing long-term, on-going, sustainable funding for EE and EL in these difficult economic times is certainly a formidable challenge. Nevertheless, without setting ambitious goals, EE and EL will remain low priorities, which our society cannot afford.

Grants programs are standard and important mechanisms for funding. Funding from grants can be directed to schools and individual teachers to enhance EL through field trips, programs by EE providers, and professional development. Grants can also support summer EE internships and mentorships for students.

While government funding, especially at the state level, is tight, the passage of the "No Child Left Inside Act" could channel significant federal dollars to Hawai'i for EE and EL efforts that are in line with the Hawai'i Environmental Literacy Plan.

A new option could be creating a centralized grants program specifically for EE and EL. Funding could be sought from both public and private sources, including



Wonderful Worms

Fourth graders at Hōkūlani Elementary School in Honolulu take pride in their valuable worms! After years of working and learning with individual classroom worm bins, they went big-time with guidance from Waikiki Worm Company as part of the City's Recycling Teaching Partners program. The newly installed "Pipeline" worm bin is 18 feet long and turns the school's cafeteria food waste into "vermicast," a nutrient-rich soil fertilizer which nourishes the school's garden projects. What's vermicast? It's worm poop, and it does wonders in your garden. It will also be turning a profit; the vermicast will be sold to raise funds for school programs. Who knew that the uneaten food from the cafeteria could be such great fun, a great resource and a great educational tool?

- City and County of Honolulu 2009

the federal, state and county governments, foundations, and businesses. A matching program (e.g. \$2 from government per every \$1 from private resources) could be pursued based on existing models (e.g. Hawai'i Natural Areas Partnership Program¹²). State legislation may be required to allow such a program to proceed and to provide matching public funds. Guidance and leadership would be required from legislators and government officials as well as groups such as the Hawai'i Community Foundation that have expertise in grant-making.

One of the major logistical challenges of such a grants program would be administration. Given that most of the individual grants would likely be small, it would be best to have a streamlined system with a simple application, selection, and reporting process. Working through a private entity with reach on each island rather than through government may allow this process to succeed.

Depending entirely on grants, however, is not a viable way to sustain programs. Exciting alternatives are being tested where students can be part of income-generating projects that give them hands-on

experience and feed money back into the program. One example of this is the Ka Hana No'eau program of the Partners in Development Foundation (see inset on page 00).

Schools, nonprofits, and businesses could partner to specialize in creating different products that the public would buy, such as nutrient-rich soil fertilizers, seed packets, plants, healthy snacks, and cookbooks. With some creativity and business savvy, the potential would be great. The key would be to have technical support to create and manage the program, ensuring that the funds raised are put back into the program and that student learning does not become secondary to sales. Students should be part of the sales team so that they may learn business and marketing skills along with EL.

This approach to income generation may be a new concept for teachers and other educators. Sharing successful experiences and innovative ideas on a common website, such as www.heea.org, could help facilitate its growth.

Objectives

PRIMARY GOAL: Generate \$4 million per year to support environmental education and environmental literacy in Hawai'i.

Objective 1:

Create 16 K-12 community coordinator positions: 1 statewide position and 15 Complex Area positions. Funding includes a median salary of \$60k + fringe (51%) + \$40k to \$60k in program operating expenses for a total of \$150k/staff.

Actions:

- Define and create a position description for the Statewide Community Coordinator position. Position will be part of the Community Area Support Team and assist the HDOE Superintendent's office.
- Engage the county, State and Federal agencies to assess connections that would fund or leverage funding for Community Coordinator positions.
- Create and pilot complex area Community Coordinator positions in two Complex Areas for 2016/17 school year - \$300,000 for staff and program expenses.
- Develop a guidebook of implementation procedures and processes for phasing in Complex Area Community Coordinators.

Objective 2:

Promote best practices to support environmental education.

Actions:

- Restore the budget for field trips for HI schools (or HIDOE schools) statewide to 1 million per year on a need based, case by case basis (on-going).
- Create a pool of \$500k per year to be used by public schools statewide to support environmental education services by private providers, particularly nonprofit groups, which produce high quality environmental education.
- Collaborate with partners across sectors to evaluate the funding available for paid environmental internships to assess if programs collectively are meeting the goal of \$500,000 available for K-12 students. See Goal 4, Objective 5.
- Green Schools cost-savings are allocated to support environmental education.

Objective 3:

Provide high quality professional development opportunities to educators so they can excel in teaching and become certified in environmental education, if they so choose.

Actions:

- Provide \$425,000 in funding per year to support high quality professional development for traditional and non-traditional educators involved in environmental education.
- Secure \$50,000 to develop an environmental education certification program for Hawai'i.
- Provide \$25,000 for HEEA to administer the environmental education certification annually.

Objective 4:

Create an education/social media campaign to make environmental education and environmental literacy top priorities for Hawai'i.

Actions:

- Build community and political support for local legislation that supports securing annual funding as detailed in the implementation plan.
- Work with appropriate officials to pass and allocate funding for federal "No Child Left Inside" or other funding to implement the HELP.

Objective 5:

Establish a centralized public/private funding mechanism(s) to collect, manage, and distribute funds.

Actions:

- HEEA and DOE partners work jointly to determine a strategy and process to collect and distribute funds.

HELP Implementation Timeline

Goals	Objectives
<div> <div>Goal 1</div> <div>Integrate environmental education in K-12 Schools for Environmental Literacy</div> </div>	<div> <div>Objective 1:</div> <div>Align environmental education with HIDOE Standards (HCPSIII, Common Core, Next Generation Science), Na Honua Maui Ola Guidelines, and STEM at every grade level.</div> </div>
	<div> <div>Objective 2:</div> <div>Use place-based science, community-based education, service learning, and environmental health activities to reach all students particularly those that are underserved.</div> </div>
	<div> <div>Objective 3:</div> <div>Increase the availability of green/sustainability career education for students starting from elementary school.</div> </div>
	<div> <div>Objective 4:</div> <div>Improve educators’ access to environmental education resources.</div> </div>
	<div> <div>Objective 5:</div> <div>Develop partnerships with government agencies, non-profit organizations, and businesses that are willing to work with schools and young people.</div> </div>

Actions	2012	2013	2014	2015	2016	2017	2018
<ul style="list-style-type: none"> - Bring together a group of diverse formal educators familiar with DOE standards, STEM, NGSS, and Nā Honua Maui Ola guidelines to make a comprehensive list of how environmental education aligns with the standards and guidelines. Include Excellence in Environmental Education: guidelines for Learning K-12. - Publish the comprehensive list on HIDEOE, HEEA and other relevant websites and promote its use by educators - Align HELP to DOE strategic plan 	●						
<ul style="list-style-type: none"> - Utilize the Nā Honua Maui Ola guidelines when reaching the larger native Hawaiian learning community, including kāpuna, family and other community members. - Target schools in the HIDEOE Zones of School Innovation to provide environmental education that is comprehensive, standards- based and assessment-driven. - Work with community leaders of immigrant communities from Pacific Islands to connect them to caring for Hawaii's environment. - Support the continuation and expansion of school garden programs so that more students may have an opportunity to learn from that setting. - Partner with the Hawaii'i 5-2-1-0 Initiative to integrate environmental education in to their campaign and involve families. - Build and maintain collaborations to K-12 initiatives (Exemplary State STEM program, Global Natural History Day Project, exemplary charter school environmental education programs) 	●	●	●	●	●	●	●
<ul style="list-style-type: none"> - Work with HDOE to embed and maintain sustainability in career pathways. - Partner with the University of Hawaii'i and other institutions of higher learning to provide sustainability learning opportunities and role models. - Collaborate with CTE (Career and Technical Education) programs to promote "green" careers. - Partner with UH and other higher education institutions to offer PD courses to DOE teachers at little or no cost. 	●	●	●	●	●	●	●
<ul style="list-style-type: none"> - Utilize the HEEA website as a tool to access resources in schools. - Provide information on environmental education resources through professional development opportunities (see Goal 3). 	●	●	●	●	●	●	●
<ul style="list-style-type: none"> - Collect information and photos on case studies; make a video highlighting the value of such partnerships. - Encourage the development of more environmental education-based service learning opportunities with partners. - Utilize HEEA's network of island representatives to conduct outreach to government agencies, non-profit organizations and businesses to inform them of school needs in their area. - Identify and advertize hands-on projects with faculty and graduate students from the University of Hawaii and other institutions of higher learning, private and NGO organizations, government and public sector partnerships that engage K-12 students in relevant research. 		●	●	●	●	●	●

HELP Implementation Timeline

Goals	Objectives
Goal 2 Develop and Support Learning Environments that Promote Environmental Literacy	Objective 1: Encourage schools to work with students to establish and maintain a garden used as a curriculum.
	Objective 2: Create and implement a coordinated “Hawai’i Green Schools” program (working title).
	Objective 3: Provide educators with ongoing access to meaningful, hands-on outdoor learning activities.
	Objective 4: Provide extended-stay experiential opportunities to every school.
Goal 3 Improve educator professional development as it relates to Environmental Literacy	Objective 1: Increase the availability of environmental education professional development opportunities in Hawaii that emphasize environmental literacy and a Hawaiian cultural model of sustainability.
	Objective 2: Increase the attendance and diversity of pre-service, in-service, non-formal, and community educators at environmental education professional development opportunities in Hawai’i.
	Objective 3: Establish an environmental education certification program in Hawai’i, should there be a demonstrated need and interest among potential applicants and instructors.

Actions	2012	2013	2014	2015	2016	2017	2018
<ul style="list-style-type: none"> - Create and design an environmental education garden curriculum framework that applies to different grade levels for teachers to readily utilize (on going). 	●	●	●	●	●	●	●
<ul style="list-style-type: none"> - Encourage new partners (organizations, parents, and other community members) to volunteer to assist students in creating and maintaining gardens as classrooms. <ul style="list-style-type: none"> - Establish and maintain security and maintenance issues. - Create a network for funding possibilities via after school programs. 	●	●	●	●	●	●	●
<ul style="list-style-type: none"> - Connect schools and programs involved in greening of schools and work toward establishing a collaborative and coordinated "Hawaii Green Schools" Program. 						●	●
<ul style="list-style-type: none"> - Create and fund one Community Coordinator position per HIDOE Complex Area and one statewide Community Coordinator position to support the programming at a statewide and local level. 						●	●
<ul style="list-style-type: none"> - Assist schools in creating place-based on-campus outdoor environmental education activities that can be accessed by students of different abilities. 				●	●	●	●
<ul style="list-style-type: none"> - Establish positions for HIDOE Community Coordinators to network; establish and maintain community relationships with resource managers, environmental education organizations and field study sites. 				●	●	●	●
<ul style="list-style-type: none"> - Inform teachers about field trips, study sites and funding opportunities in their school, complex areas, and across the state through an up to date HEEA website. 	●	●	●	●	●	●	●
<ul style="list-style-type: none"> - Utilize meaningful and relevant technological tools to enhance hands-on environmental discoveries (ie. probes; sensors; temperature gauges, etc.) 	●	●	●	●	●	●	●
<ul style="list-style-type: none"> - Assist organizations that provide extended-stay environmental education programs in reaching out to schools and provide quality experiences. 	●	●	●	●	●	●	●
<ul style="list-style-type: none"> - Identify gap areas where extended-stay programs are not available to local students and work with groups to find resources that will assist in creating affordable opportunities. 			●	●	●	●	●
<ul style="list-style-type: none"> - Inventory professional development opportunities in Hawaii. 	●				●		
<ul style="list-style-type: none"> - Make professional development opportunities accessible on heea.org. 	●	●	●	●	●	●	●
<ul style="list-style-type: none"> - Conduct a PD needs assessment among pre-service, in-service, and non-formal education. 			●	●			
<ul style="list-style-type: none"> - Research various structures for PD that are offered by other states and countries. 			●	●			
<ul style="list-style-type: none"> - Provide alternate training (e.g online classes, workshops, conferences,) to meet the varying needs of a wide range of educators on all islands. 			●	●	●	●	●
<ul style="list-style-type: none"> - Promote professional development incentives such as stipends, PD credit, or air transport (as well as substitutes for teacher) during environmental education workshop days that fall on regular school days. 		●	●	●	●	●	●
<ul style="list-style-type: none"> - Align the HIDOE's offerings of professional development in environmental education through partners such as HIDOE and HIAS. 				●	●	●	●
<ul style="list-style-type: none"> - HEEA will serve as the local certification lead and work with NAAEE to evaluate the effectiveness and impact of existing environmental educator certification programs and establish a Hawaii Certification program based on resulting data and local needs. 					●	●	●
<ul style="list-style-type: none"> - Work with the Hawaii DOE to ensure certification is approved by DOE. 					●	●	●

HELP Implementation Timeline

Goals	Objectives
Goal 4 Monitor and Assess Environmental Literacy	Objective 1: Develop tools that collect Environmental Literacy assessment data in HIDOE K-12 settings on a schedule consistent with existing assessments and share these tools with independent schools.
	Objective 2: Support HIDOE in reaching benchmark for on-time high school graduation rates through environmental education.
	Objective 3: The “Hawaii Green Schools” program will monitor the achievements of participating schools each year.
	Objective 4: Provide training and other support to enable educators to effectively evaluate environmental education programs.
	Objective 5: Evaluate HELP implementation.
Goal 5 Make Environmental Education and Environmental Literacy a Statewide Priority	Objective 1: Raise public opinion of environmental education and environmental literacy as not only a good idea but something that the public should fund adequately.

Actions	2012	2013	2014	2015	2016	2017	2018
<ul style="list-style-type: none"> - Create a working group to review a existing assessment tools, structures, systems, and survey. - Collect and analyze data and compile findings into a report on progress and achievement on a regular bass (e.g. every two or three years.). - Monitor progress toward goals outlines in the HELP and modify or adapt the plan as appropriate every three to five years. 				●	●	●	●
<ul style="list-style-type: none"> - Align environmental education programs with science standards and methodologies. - Infuse environmental education opportunities with service learning. - Work with HEEA and others to provide resources support for senior projects (e.g. mentors, project ideas, supplies). - Utilize the HEEA website for sharing information on senior projects, mentors, and community service opportunities. - Analyze the implementation and results of a new graduation requirements for Environmental Literacy in other states. 	●	●	●	●	●	●	●
<ul style="list-style-type: none"> - Collect data on successful school-based models that incorporate practices in outdoor learning, green-schools-based, and high quality environmental education. Pending Goal 2, Objective 2 and results from GS partners. - Use data and online tools to recognize exemplary Hawaii Green Schools and to motivate other schools to take part. Pending Goal 2 & results from GS partners. 				●	●	●	●
<ul style="list-style-type: none"> - Partner with the NCTC/NAAEE/HANO or other organizations to run capacity building course in Hawai'i. - Establish partnerships with institutions of higher education so that graduate degree candidates can support EE evaluation. 			●	●	●	●	●
<ul style="list-style-type: none"> - Develop a survey tool to evaluate HELP implementation. - Disseminate HELP survey to HEEA EE partners and support them in its completion. - Broadly share results of survey to guide decision making, fund development, etc. 					●	●	●
<ul style="list-style-type: none"> - Utilize the HEEA Network and resources for networking, outreach and leadership statewide. - Conduct a multi-media educational/social marketing efforts that include outreach to schools, families, and legislators (on-going). - Build support for legislation that will implement and fund the HELP gaps in collaboration with partners, including the HIDOE and HAIS. 	●	●	●	●	●	●	●

HELP Implementation Timeline

Goals	Objectives
<div> <div>Goal 6</div> <div>Provide Sustainable Funding for Environmental Literacy</div> </div>	<div>Objective 1:</div> <div>Create 16 K-12 community coordinator positions: 1 statewide position and 15 Complex Area positions. Funding includes a median salary of \$60k + fringe (51%) + \$40k to \$60k in program operating expenses for a total of \$150k/staff.</div>
	<div>Objective 2:</div> <div>Promote best practices to support environmental education.</div>
	<div>Objective 3:</div> <div>Provide high quality professional development opportunities to educators so they can excel in teaching and become certified in environmental education, if they so choose.</div>
	<div>Objective 4:</div> <div>Create an education/social media campaign to make environmental education and environmental literacy top priorities for Hawaii.</div>
	<div>Objective 5:</div> <div>Establish a centralized public/private funding mechanism(s) to collect, manage, and distribute funds.</div>

Actions

	2012	2013	2014	2015	2016	2017	2018
<ul style="list-style-type: none"> - Define and create a position description for the Statewide Community Coordinator position. Position will be part of the Community Area Support Team and assist the HDOE Superintendent's office. - Engage the county, State and Federal agencies to assess connections that would fund or leverage funding for Community Coordinator positions. - Create and pilot complex area Community Coordinator positions in two Complex Areas for 2016/17 school year - \$300,000 for staff and program expenses. - Develop a guidebook of implementation procedures and processes for phasing in Complex Area Community Coordinators. 				●	●	●	●
<ul style="list-style-type: none"> - Restore the budget for field trips for HI schools (or HIDOE schools) statewide to 1 million per year on a need based, case by case basis (on-going). - Create a pool of \$500k per year to be used by public schools statewide to support environmental education services by private providers, particularly nonprofit groups, which produce high quality environmental education. - Collaborate with partners across sectors to evaluate the funding available for paid environmental internships to assess if programs collectively are meeting the goal of \$500,000 available for K-12 students. See Goal 4, Objective 5. - Green Schools cost-savings are allocated to support environmental education. 					●	●	●
<ul style="list-style-type: none"> - Provide \$425,000 in funding per year to support high quality professional development for traditional and non-traditional educators involved in environmental education. - Secure \$50,000 to develop an environmental education certification program for Hawai'i. - Provide \$25,000 for HEEA to administer the environmental education certification annually. 						●	●
<ul style="list-style-type: none"> - Build community and political support for local legislation that supports securing annual funding as detailed in the implementation plan. - Work with appropriate officials to pass and allocate funding for federal "No Child Left Inside" or other funding to implement the HELP. 	●	●	●	●	●	●	●
<ul style="list-style-type: none"> - HEEA and DOE partners work jointly to determine a strategy and process to collect and distribute funds. 			●	●	●	●	●

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http://www.ymcahonolulu.org/camp_erdman

Camp Timberline
www.camptimberline.com

Center for Ecoliteracy
www.ecoliteracy.org

City and County of Honolulu WasteLine
http://www.opala.org/solid_waste/news/Wasteline.html

Earth Force
www.earthforce.org

Earth-Friendly Schools Hawai'i
http://www.recyclehawaii.org/index.php?option=com_content&task=view&id=81

Green Ribbon Schools
www.greenribbonschools.org; FB: edgreenribbonschools

Green Schools Initiative
www.greenschools.net

Hawai'i 5-2-1-0 Initiative
<http://www.hawaii5210.com>

Hawai'i Public Charter Schools Network
<http://www.hawaiicharterschools.com/>

Hawai'i Department of Education
<http://doe.k12.hi.us/>

Common Education Agenda
<http://hawaiiidoereform.org/Common-Agenda>

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<http://hawaiiidoereform.org/Reports>

Hawai'i DLNR – Project Learning Tree
<http://hawaii.gov/dlnr/dofaw/PLT>

Hawai'i Environmental Education Association
www.heea.org

Hawai'i Farm to School and School Garden Hui
http://web.me.com/kokuahawaii/HFSSGHui/Hawaii_Farm_to_School_&_School_Garden_Hui.html

Hawai'i Green Collar Institute
<http://hawaiigreencollarinstitute.blogspot.com/>

Hawai'i Green Growth: Aloha + Challenge
<http://hawaiigreengrowth.org/priorities>

Hawai'i Nature Center
<http://hawaiinaturecenter.org>

Hawai'i Science Teachers Association
<http://hasta.wildapricot.org/>

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<http://www.isishawaii.org/>

Kaulunani Urban and Community Forestry Program
<http://www.kaulunani.org/> or dlnr.hawaii.gov/doFAW/lap/Kaulunani

Kohala Center
<http://www.kohalacenter.org>

Kōkua Hawai'i Foundation's 'Aina In Schools
<http://kokuahawaiifoundation.org/schoolprograms/ainainschools/>

Kupu Hawai'i
www.kupuhawaii.org

Māla'ai: The Culinary Garden of Waimea Middle School
<http://malaai.org/>

Mālama Hawai'i
www.malamahawaii.org

Mālama I Ka 'Āina
<http://malama.hawaii.edu/>

Mālama Learning Center
www.malamalearningcenter.org

Nā Honua Maui Ola
<http://www.olelo.hawaii.edu/olelo/nhmo.php>

National Park Service – Call to Action Initiative
<http://www.nps.gov/calltoaction/>

National Environmental Education Training Program
www2.epa.gov/education/national-environment-education-training-program

Navigating Change
<http://www.hawaiianatolls.org/teachers/NavChange.php>

North American Association for Environmental Education
www.naaee.net

Pacific American Foundation
<http://www.pacificamerican.foundation/>

PALS (Program for Afterschool Literacy Support)
www.palshawaii.org

Papahānaumokuākea `Ahahui Alaka`i
http://www.papahanaumokuakea.gov/education/teachers_midway.html

Partners in Development Foundation
<http://www.pidfoundation.org/>

Project Learning Tree
www.plt.org

Punahou School Luke Center Service Learning Teacher Institute
www.punahou.edu/luke-center-for-public-service/index.aspx

Recycle Hawai'i
<http://www.recyclehawaii.org/>

Schools of the Future
<http://futureschools.ning.com>

Sustainable UH
www.hawaii.edu/sustainability/

The Green House
<http://thegreenhousehawaii.com/thegreenhouse.html>

The National Environmental Education and Training Foundation
<http://www.neefusa.org/>

University of Hawai'i Master Gardener Program
<http://www.ctahr.hawaii.edu/UHMG/>

University of Wisconsin Stevens Point Environmental Education Online Courses
<http://www.uwsp.edu/natres/eetap/>

USGBC Center for Green Schools
www.centerforgreenschools.org

Youth Service Hawai'i
<http://youthservicehawaii.ning.com/>

¹See <http://eelinked.naaee.net/n/guidelines/>

²See <http://standardstoolkit.k12.hi.us/index.html>*

³See <http://www.corestandards.org/>

⁴See <http://www.achieve.org/next-generation-science-standards>

⁵See <http://futureschools.ning.com/>

⁶See www.earthforce.org/GREEN**

⁷See <http://www.hawaii5210.com>

⁸See <http://www.ed.gov/news/press-releases/departments-education-starts-award-green-schools>

⁹See <http://www.uwsp.edu/natres/eetap/>

¹⁰See <http://www.naaee.net/programs/certification>

¹¹The Mālama Hawai'i statewide telephone survey, "Public Attitudes Toward Environmental Conservation," was conducted by Ward Research in October 2000 with 608 residents. The maximum sampling error is +3.9% at the 95% confidence level.

¹²The Natural Area Partnership Program (NAPP) was established in 1991 by the State Legislature and the Governor authorizing the Department of Land & Natural Resources (DLNR) to "provide state funds for the management of private lands that are dedicated to conservation." See: <http://hawaii.gov/dlnr/dofaw/napp/about-napp>.

* At the time of original publication, this source was available. Similar content can now be found at www.hawaiipublicschool.org

** At the time of original publication, this source was available. The site www.earthforce.org is live, but the program GREEN is not a live link as of June 2015.

HELP APPENDICES



Appendix A



How was HELP created?

Environmental Literacy Plans have been completed or are in process in 47 states (as of this writing) partly due to the anticipated federal legislation dubbed the “No Child Left Inside” Act (reauthorization of the Elementary and Secondary Education Act). The Act, if passed, would provide federal funding to implement Environmental Literacy Plans that are approved by state boards of education. As such, ELPs emphasize public education. The structure and content of ELPs have not been strictly dictated, however, ELPs would need to follow guidelines developed by the North American Association of Education. (See: <http://eelinked.naee.net/n/elp>)

Recognizing the need for Hawai‘i to have its own ELP, the Hawai‘i Environmental Education Alliance (HEEA) launched the development of the Hawai‘i Environmental Literacy Plan (HELP) in 2010 supported by a grant from the US Forest Service, administered by the Hawai‘i Department of Land and Natural Resources (DLNR). HEEA formed a HELP subcommittee among its Advisory Council, which issued a request for proposals to develop the plan. Mālama Learning Center, a non-profit organization, was selected to write the plan beginning in January 2011.

The process to develop this plan has included several steps, starting with a meeting with HIDOE staff focused on EE at a statewide level. The HELP subcommittee has since worked closely together and engaged the larger HEEA advisory group at its quarterly meetings.

Public comment on initial ideas for the HELP was sought through in-person meetings during March 2011 on the islands of Hawai‘i, Maui, O‘ahu, and Kaua‘i, facilitated by Meredith Speicher of the National Park Service’s Rivers, Trails, and Conservation Assistance Program and Michelle Jones of the Hawai‘i DLNR. These meetings brought people together in engaged discussions over more than two hours. An online survey was also created, and nearly 60 people from a variety of organizations responded to it. The in-person and on-line responses provided a rich array of ideas and recommendations that have provided depth and guidance for this document.

Public review of the draft document occurred in August 2011 and a second draft was developed and further reviewed by the HEEA advisory group and HIDOE. With much helpful feedback, the final draft was produced in January 2012.

Appendix B



Why Environmental Literacy in Hawai'i?

Hawai'i, though isolated in geography, is part of the global community. We are the “gateway to the Pacific,” the “bridge between East and West”, the “melting pot.” Those who live here know it is special for its gifts in nature, culture, and people. Hawai'i is a place of amazing environmental diversity, with sunny beaches and snow-capped mountains, bogs with miniature forests and groves of huge koa trees, arid deserts and lush rainforests, the planet's most active volcano and tallest sea cliffs. Formed in mid-Pacific isolation during the past 100 million years, the islands produced unique forms of life, endemic species found nowhere else on earth. Over 100 bird species, 1,000 plants and 1,000 snails, and perhaps 10,000 insect species have evolved by adapting to the great range of environmental conditions on land. In the ocean, the story is equally amazing. More than 25% of the marine life in Hawaiian waters is endemic to these islands, which is a very high percentage considering the ability of things to move far distances via the ocean. In the absence of people, island ecosystems that formed over millions of years achieved a natural balance where change occurred as a slow, gradual process. Fortunately, we can still see examples of this balance and amazing biodiversity in the northwestern Hawaiian Islands, the Papahānaumokuākea Marine National Monument.

However, human presence has greatly accelerated this rate of change. Nearly 2,000 years ago, the first Polynesian voyagers to these islands began the introduction of alien plants and animals for their survival. During the past two centuries, other cultures followed and brought hundreds of vertebrate animals and thousands of new insects and plants, some as “stowaways.” Some of these introductions have created severe threats to the islands' native flora and fauna.

The increasing human population in Hawai'i, currently at roughly 1.3 million, has many fine assets. It represents a uniquely blended culture and lifestyle -- the Hawai'i we know and love today. But with the coming of people is the inevitable change in the environment and great challenges: an overtapped supply of freshwater that is being overused and contaminated; streams and wetlands being degraded; beautiful beaches attracting too many people; overflowing landfills and illegal dumping; coral reefs hampered by siltation, invasive species, and overfishing; and diverse native forests disappearing under the impacts of invasive species, poor agricultural practices, logging, fires, and urbanization.

The original life forms of Hawai'i are under siege, and their island home is the nation's capitol for endangered and extinct species. Watersheds and natural areas, including public parks, are suffering from underfunding for management. Our energy resources are still largely based on imported petroleum. And while there is a resurgence of interest in local and diversified agriculture and becoming more food secure, farmers face a tough future of high costs for land, water, and personnel as well as the threat of invasive species.

Add to all this – the impact of climate change. Scientists have already documented in Hawai‘i increased surface air temperatures, decreased rainfall and stream flows, increased rain intensity, sea-level rise, rising sea surface temperatures, and ocean acidification. Because changes in Hawaii’s climate will continue and intensify, scientists anticipate growing impacts to water resources, forests, marine systems, the economy, and coastal communities¹, Island communities across the globe are experiencing these same impacts.

To help solve these challenges that Hawaii’s people face now and into the future, we will need an environmentally literate populace that is informed and prepared to make important decisions for the benefit of our communities.

(To reflect the ground-breaking work of HEEA’s past and to honor those who have passed, this section is based on text from: “Our Environmental Future: A Strategic Plan for Educating the People of Hawai‘i” by Hawai‘i Environmental Education Association, 1998.)

¹Hawai‘i Statewide Assessment of Forest Conditions and Resource Strategy 2010, p.137.

Appendix C



Groups Surveyed for “Partnerships in Environmental Education,” a Master’s Thesis from the University of Hawai‘i -Mānoa (Staab, 2009)

City and County of Honolulu, Department of Environmental Services, Recycling Branch
 Conservation Council for Hawai‘i
 Coordinating Group on Alien Pest Species (CGAPS)
 County of Kaua‘i Solid Waste Division
 Environment Hawai‘i, Inc.
 Halau Kū Māna
 Hawai‘i Department of Health, Food and Drug Branch
 Hawai‘i Department of Land and Natural Resources- Division of Forestry and Wildlife
 Hawaiian Ecosystems at Risk project (HEAR)
 Hawaiian Electric Company
 Hawai‘i Ecotourism Association
 Hanauma Bay Education Program: University of Hawai‘i Sea Grant
 Hawai‘i Wildlife Center
 Kaua‘i Invasive Species Committee
 Kōkua Hawai‘i Foundation
 Mālama Hawai‘i
 Mālama Learning Center
 MA‘O Organic Farms
 Maui Invasive Species Committee
 NatureTalks
 Navigating Change
 Papahāna Kūaola
 The Nature Conservancy
 The Volcano Art Center
 University of Hawai‘i, Center for Conservation Research & Training
 University of Hawai‘i, College of Education, Curriculum Research & Development Group
 University of Hawai‘i, Hawai‘i Institute of Marine Biology
 University of Hawai‘i at Mānoa Environmental Center
 University of Hawai‘i, Marine Option Program
 US Army, O‘ahu Army Natural Resources Program
 US Department of Agriculture, Natural Resources Conservation Service
 US Environmental Protection Agency
 Volcano Art Center
 Waikīkī Aquarium
 Waimomi Pearl Region 21 Service Leadership
 Windward Ahupua‘a Alliance

Appendix D



Hawai'i Department of Education Guidelines and Policies Related to Environmental Education

GENERAL LEARNER OUTCOMES

All public school students and employees are:

- Self-directed Learners;
- Community Contributors;
- Complex Thinkers;
- Quality Producers;
- Effective Communicators; and
- Effective and Ethical Users of Technology.

THE DEPARTMENT OF EDUCATION'S VISION IS THAT ALL PUBLIC SCHOOL GRADUATES WILL:

- Realize their individual goals and aspirations;
- Possess the attitudes, knowledge, and skills necessary to contribute positively and compete in a global society;
- Exercise the rights and responsibilities of citizenship; and
- Pursue post-secondary education and/or careers.

BOARD OF EDUCATION SUSTAINABILITY POLICY #6710

Title: Energy Conservation

Series : 6000 Series – Office of Fiscal Services & Office of School Facilities and Support Services

The Board of Education (Board) is committed to supporting sustainability in the Department of Education. Sustainability is the long-term maintenance of the well being of humankind, which in turn depends on the well being of the natural world and the responsible use of natural resources. The Board recognizes that schools play an integral part in educating and exposing students to sustainability concepts and sustainable practices.

The Department of Education (Department) has a fundamental responsibility to educate students about sustainability and to model sustainability. The Department shall establish regulations or guidelines to implement this policy. The regulations or guidelines shall include, but shall not be limited to:

-
1. establishing standards for facilities that ensure schools and Department facilities are designed and operated in a manner that maximizes Hawaii's natural environment and
 2. ensures the lowest environmental impact possible; incorporating energy efficiency and conservation measures whenever possible;
 3. reducing water consumption across facilities and utilizing grey water/storm water when possible;
 4. utilizing on-site renewable energy and adopting a series of clean energy goals that guides DOE to 90% Clean Energy by 2040:
 - 25% clean energy by 2015
 - 40% clean energy by 2020
 - 80% clean energy by 2030
 - 90% clean energy by 2040
 5. promoting the longevity and responsible procurement of facilities, equipment and vehicles;
 6. promoting material conservation and recycling across facilities;
 7. incorporating the importance of sustainability and environmental stewardship at the classroom level;
 8. conveying the mission of sustainability and environmental stewardship at the faculty and staff level;
 9. working with local partners to collaborate on projects, as well as informing the public on the efforts being made by the Department; and
 10. developing and implementing a plan for measuring implementation of the sustainability policy.

Approved: 7/17/80

Amended: 12/07 and 11/10

WELLNESS GUIDELINES

(Implements Board of Education Policy #1110-6)

The Wellness Guidelines are based upon the following principles:

- Healthy students are better able to learn;
- Eating habits and active lifestyles that are developed in childhood will affect health throughout life;
- All children deserve nutritious and safely prepared food;
- Standards based Health Education, including a focus on skills and knowledge relating to nutrition; and
- Standards based Physical Education as well as daily physical activity.

Appendix E



National Association of Independent Schools Principles of Good Practice for Environmental Sustainability

Approved by the NAIS board of trustees, 2010 Published: March 12, 2010,

Updated: August 30, 2010

Schools committed to environmental sustainability emphasize an interdisciplinary and holistic approach to fostering the knowledge, skills, and attitudes needed to build a sustainable world for present and future generations. Such schools:

1. Demonstrate a commitment to sustainability through their mission, strategic planning, and administration.
2. Incorporate environmental sustainability into all aspects of their institutions, including curriculum; professional development; student and residential life; physical operations, procurement, construction, and renovations; and dining services.
3. Encourage and enlist parents to support sustainability policies and practices that uniquely reflect institutional and educational philosophies.
4. Collaborate with external communities to advance environmental sustainability efforts.
5. Institutionalize recognition and assessment of their sustainability efforts by regularly demonstrating achievements to stakeholders.

<http://www.nais.org/environmental/seriesdoc.cfm?ItemNumber=153194&sn.itemnumber=153590>



HELP FOR HAWAII



HEEA

Hawai'i Environmental Education Alliance

HAWAII ENVIRONMENTAL EDUCATION ALLIANCE