The Willowell Land Parcel:
Designing Education with Permaculture

by
Emily Watson-Blagden

Hampshire College Division 3 Examination
Chair: Larry Winship
Members: Laura Wenk, Jono Neiger
School of Natural Science
May 20th, 2006
# The Willowell Land Parcel: Designing Education with Permaculture

## Table of Contents

**Introduction: An Invitation for Exploration**
- Permaculture: Basic Theory and Practice i
- The Evolution of a Thesis Project vi
- My Permaculture Design Process viii

## I. The Environmental Problem

- The Environmental Movement 1
- The Collapse Scenario 3
- Conclusions: A Call for Sustainable Education 6

## II. Environmental Education

- The Origins of Environmental Education 6
- Environmental Education, Defined 8
- Evolution of Environmental Education 9
- Environmental Education Successes and Failures 11
- Conclusions: A Call for Re-Visioning 14

## III. Re-Visioning Environmental Education

- EIC-Based Learning 15
- Place-Based Education 16
- Classic Environmental Education versus EIC-Based Learning 18
- Challenges and Potential Obstacles for EIC-Based Programs 24
- Conclusions: From Environmental Education to Education for Sustainability 29

## IV. Education for Sustainability

- Case Study: The Walden Project High School 32
- Walden Project Challenges and Potential Obstacles 37
- Beyond the Walden Project: The Center for Sustainability 39
- Designing Education with Permaculture 39
- Educational Design Principles 41

## Conclusions: Caterpillars and Butterflies 47

**Works Cited** 49

**Bibliography** 53

**Appendix A: Goals and Objectives** 60

**Appendix B: Design Concepts** 68
Introduction: An Invitation for Exploration

Imagine yourself walking south down a dirt road lined on either side by stately trees, pausing now and then to pick a berry, or examine one of the hundreds of herbs and flowers lining the path. It is mid-Fall, and the road you are walking on is carpeted with red and yellow leaves from aspens, red maples and oak. Today is open house day at the Willowell property, and you have come to see the unique educational preserve that you have heard so much about.

Suddenly you are in an orchard: above you arch plums, cherries, apples, mulberries, and many other fruit trees. A group of fifth and sixth graders works with the owner of a local apple orchard to prune some of the older trees and splice new grafts into others. At a nearby pond, third and fourth graders work with interns from the University of Vermont environmental studies program collecting water samples to take into the beautiful, round community building and examine under microscopes. Some students are harvesting kale and broccoli from the vast, undulating vegetable gardens surrounding the building and loading them into a van that will make a delivery to the local food shelf, while others pick the last of the tomatoes and carry them inside for the afternoon’s canning class with a representative from Green Mountain Gringo salsa and a couple of interested parents. A group of seventh graders can be seen at the edge of the native plant woodland, writing in their journals as part of a unit on Henry David Thoreau. The sounds of voices, birdsong, and rustling leaves fill the air….

You have stumbled into a vision held by a small group of people living in Addison County, Vermont. The location of this vision is a 230-acre located in the town of Monkton. At present, the educational preserve described above does not exist: the property in question is currently an undeveloped mixture of forest and farmland with no permanent structures. The property is owned by the Willowell Foundation, a small, private 509(c)(3) not-for-profit foundation committed to support of the arts, environmental conservation and positive land stewardship, and economic, environmental, and social sustainability. The purchase of the Willowell land, finalized in August 2005,
was the first major project undertaken by this five-year old, volunteer-operated foundation.

The Willowell Foundation hopes to transform the property into an “educational preserve” which it is calling the “Center for Sustainability,” which will be a hub of sustainable education initiatives for the region. Currently this educational vision takes the form of the Walden Project, a public, alternative high school program that holds classes on the Willowell land. The three school districts that send children to the Walden Project are in conversation with Willowell about bringing classes of regular public school children to the land to learn.

My thesis year project at Hampshire College has focused on creating and crystallizing a vision for sustainable education on the Willowell land. Using my background in experiential education and permaculture design, I have assisted the Willowell foundation in developing a vision for the sustainable use of their land in Monkton as an educational preserve. Working with neighbors, community members, the town of Monkton, educators from all three districts, not-for-profit board members, and students, I have explored the connection between permaculture land use planning and education for sustainability.

**Permaculture: Basic Theory and Practice**

I became involved with the Willowell Foundation’s land use vision in the summer of 2003, when I got a call from the director, Matt Schlein, Matt heard through our small-town grapevine that I had recently become certified as an apprentice permaculture designer through a program offered by the Living Routes organization in cooperation with the University of Massachusetts (Amherst). Matt had heard about permaculture and invited me out to the 2-year-old quarter-acre garden that Walden Project students had created on a leased property in Monkton—what is now the Willowell property—to give them some suggestions about how to incorporate permaculture into their garden design.

The Permaculture concept was created in Australia in the mid 1970s, the result of collaboration between Bill Mollison and David Holmgren,¹ It was meant as a positivist

response to the environmental crises facing modern society. The word “permaculture” comes from a contraction of permanent (sustainable) agriculture and permanent (sustainable) culture, suggesting the permaculture vision of using whole-systems thinking to create “consciously designed landscapes which mimic the patterns and relationships found in nature, while yielding an abundance of food, fiber and energy for provision of local needs.”

Though popularly known as a system of gardening, permaculture has developed into a comprehensive design system that is applied both to landscapes, physical and energetic resources, and human organizations. For some, permaculture also represents a counter-cultural lifestyle that exemplifies sustainability. As Australian permaculture designer Emma Chapman writes, “Its goals and priorities coincide with what many people see as the core requirements for sustainability.”

Permaculture design is defined as “the use of systems thinking and design principles that provide the organizing framework” for implementing the permaculture vision. It is traditionally applied to land stewardship, impacting nature as well as drawing on natural systems for inspiration. However, the permaculture design system is now being more broadly applied to other spheres including social structures, community living models, and individual lifestyles.

Permaculture design uses a set of specific ethical principles to provide an organizational framework to implement its vision of creating sustainable human living systems. Three major ethical principles guide its implementation: Earth Care, People Care, and Resource Share.

Earth Care involves several key elements: care for the soil out of which all food comes; stewardship of resources in order to leave them in better shape after use; preservation of biodiversity, and; demonstrating respect for the intrinsic value of all

---

2 Holmgren xv.
3 Holmgren xix.
4 Holmgren xix.
6 Holmgren xix.
7 Holmgren xix.
8 Holmgren xix.
living things by reducing our environmental impact. People Care defines permaculture as intrinsically human-centered, but encourages us to accept responsibility for our choices and lifestyles by using permaculture to improve our quality of life and the quality of the lives of others (both human and non-human). People Care also involves reducing our dependence on the global economy in order to limit our contribution to an unequal world. Finally, Resource Share encourages us to set limits to our own consumption and reduce our “ecological footprint” in order to aid in the distribution of surpluses and eliminate a world of “haves” and “have-nots.”

In addition to ethical principles, permaculture employs a specific set of design principles to provide a framework for implementing its vision. Design principles are defined as short statements used by designers to recall overarching design concepts in permaculture when considering the many options for designing living systems. Design principles find their scientific foundation in systems ecology, landscape geography and ethnobiology, as well as systems thinking. Though they are seen as universally applicable, their application is greatly variable according to individual situations and locations. The need for a clear set of design principles to guide the creation of sustainable living system is described beautifully by Holmgren:

The process of providing for people’s needs within ecological limits requires a cultural revolution. Inevitably such a revolution is fraught with many confusions, false leads, risks and inefficiencies. We appear to have little time to achieve this revolution. In this historical context, the idea of a simple set of guiding principles which have wide, even universal application is attractive.

Permaculture design principles are many and varied. Here, I briefly lay out five principles as defined in David Holmgren’s 2005 book *Permaculture: Principles and Pathways Beyond Sustainability*.

---

9 Holmgren xxx.
10 Holmgren xxx.
11 Holmgren xxv.
12 Holmgren xvii.
13 Holmgren xvii.
14 Holmgren xxv.
1. Use and Value Renewable Resources and Services: This principle encourages us to focus on renewable energy sources and services to provide for our needs.\textsuperscript{15}

2. Catch and Store Energy: This principle looks at capturing and storing energy over the long-term, as seen in the use of ponds to store water or the creation of insulating buildings to store heat.\textsuperscript{16}

3. Observe and Interact: This principle embodies the belief that protracted and thoughtful observation over time, in combination with interactive gathering of feedback, is necessary to determine the success or failure of a design choice.\textsuperscript{17}

4. Integrate Rather than Segregate: This principle explores the ways in which the needs of one design element can be met by the yields of another.\textsuperscript{18}

5. Use and Value Diversity: This principle focuses on the understanding that diversity allows us to meet our needs in multiple ways while protecting us against failures of critical systems.\textsuperscript{19}

The principles of ecological design used in permaculture have undergone many changes and re-visionings since their creation. Like many emerging fields, they have gone from extremely specific—i.e. focused primarily on gardening—to more general. Many permaculture design instructors adhere strictly to those outlined in Bill Mollison’s \textit{Introduction to Permaculture}, while others have created their own ways of describing and teaching them. The principles David Holmgren outlines in \textit{Permaculture: Principles and Pathways Beyond Sustainability} are very different from those taught by most permaculture teachers in their scope and generality.

While my original training adhered closely to the original design principles outlined in Mollison’s \textit{Introduction to Permaculture}, the scope of my study has since broadened to draw more heavily on Holmgren’s definitions because of their easy applicability to a wider spectrum of human activities beyond the agrarian: especially social structures such as community functionality, government, and my main interest, the educational system. I am also drawn to their holistic and accessible nature both for

\textsuperscript{15} Holmgren 94.

\textsuperscript{16} Holmgren 27.

\textsuperscript{17} Holmgren 13.

\textsuperscript{18} Holmgren 155.

\textsuperscript{19} Holmgren 203.
myself as an individual and for students. It is this cross-disciplinary applicability and accessibility, first exemplified for me when I advised Matt Schlein about using permaculture in the Walden Community Garden, which first interested me in exploring the topics of my thesis project.

**The Evolution of a Thesis Project**

Though I was only peripherally involved with the Walden Community Garden that first summer, I became intimately involved with the project during the summer of 2004 when I accepted a job as garden manager through the Willowell Foundation. As manager, I coordinated student and community volunteers in the planting, cultivation and harvest of the garden, in addition to donating over 800 pounds of produce to local charities.

At the end of the summer I returned to college satisfied with my work but uncertain whether there would ever again be a garden project: negotiations for purchase of the land that Willowell had been leasing for the past two years were not going well, and it looked as though the foundation wouldn’t be able to raise the money to buy the property. However, August 2005 saw the finalization of the purchase of the entire 230-acre land parcel by the Willowell Foundation. Though still under obligation to repay a 250-thousand dollar bank loan that helped to finance the purchase, the Willowell Foundation now owns the property indefinitely.

In the summer of 2005 I connected with the Willowell Foundation again, this time offering my services as a permacultural designer for the Willowell property. To begin, I submitted a formal project proposal that was accepted by the board. The goal of my project was to create a sustainable landscape design that would support the goals of Willowell and enable them to make informed choices about their use of the Willowell property. This design would integrate both wild areas and heavily cultivated spaces, in hopes that the land would produce many products and services to meet the needs of the Willowell community. I spent eight months, from fall 2005 to spring 2006, engaged in this design project.

I took on the project for several reasons. First, I perceived a real need for focus, direction, and material support in the fundraising efforts of the Willowell Foundation in preparation for the payoff of the loan that is due in August 2008. Flush with the
excitement of completing the first part of the fundraising process, in September 2005 Willo\nwell had barely begun fundraising efforts to provide for the loan payment. The\nfoundation had no website, no clear mission, no set of goals and objectives for their\neducational preserve, no visual representations of the property other than an out-of-date\nsurveyors map—in short, nothing that prospective donors could look at and say “yes, that\nis something I want to support.” As a permaculture designer, I found myself in a position\nboth to help Willowell coalesce a clear mission and set of goals and objectives for their\nwork as a foundation, and also to create for them a landscape design plan in the form of a\nset of maps and diagrams that could be used in fundraising efforts to effectively\ncommunicate their vision for the future and give donors something concrete to invest in.

Second, I saw an opportunity to support the Willowell Foundation’s sustainable\nuse of a huge piece of property that might otherwise have gone the way of many other\nlarge properties in Addison County and been subdivided and developed into Vermont’s\nown version of rural suburban hell. I say “hell,” here, in reference to the ecological and\ncommunal toll that such development has had and is having on the county in which the\nWillowell land is located. Additionally, the property has been farmed using destructive\nmethods—heavy machinery in the wrong places and times, and overgrazing—since the\nlate 1800s. As Willowell’s land use planner, I would be in the position to make\nrecommendations and suggestions for a more sustainable land use ethic.

Third, I share with the Willowell Foundation a deep commitment to\nsustainability—both in land use and in education. I believe deeply in the authentic,\nenvironmentally-informed education that the Walden Project shares with its students on\nthe Willowell land. To have a part to play in the future of the Walden Project, as well as\nthe opportunity to create ways to get more students out of the traditional classroom and\ninto the fields and woods of the Willowell property is very important to me. This project\nrepresents my contribution to that effort and my initial explorations in defining my own\neducational philosophy.

---

My Permaculture Design Process

The framework I used to apply permaculture design ethics and principles to the Willowell property is from the Conway School of Landscape Design’s design process, adapted by professional permaculture designers Dave Jacke and Jono Neiger and passed on to me both during my permaculture design course and during my fall semester permaculture design apprenticeship with Jono Neiger.

The first step of the ecological design process is to create an accurate base map of the property that the designer is working with. I spent the first month of the fall semester constructing this base map, using a 1994 surveyor’s map, tax maps, aerial photographs, and a tape measure out in the field. I used this map to create other maps of aspects of site analysis, such as water and vegetation.

Concurrently, I spent the first part of semester engaged in a goals articulation process with the five members of the Willowell Foundation board. The purpose of clearly defining goals and objectives prior to embarking on a design project is to make sure to design a site according to what the clients want. As Dave Jacke puts it, “the key thing to remember here is that how we define a problem will determine a set of solutions we find for that problem.”

To create the goals and objectives, I asked each of the five members of the board of directors of Willowell a series of detailed questions to determine their shared vision for the land. From these interviews, I constructed a comprehensive set of Goals and Objectives that I would later use as a framework around which to construct a permaculture design plan for the property. This document also helped me narrow my field of inquiry to focus on gathering information pertinent to aspects that Willowell was interested in.

Following the creation of the Goals and Objectives, I began the comprehensive process of site analysis and assessment that took the first five months of my thesis year to complete. During this time, I investigated the site in minute detail: land use history, regulatory and zoning restrictions, climate and landform, topography, water flows, vegetation and wildlife use, and access and circulation. This information was summarized and organized in the form of six maps, each detailing a particular aspect of the site.

---

22 See Appendix A.
analysis, as well as an overall summary map which condensed the most important information about the site onto one visual. At the conclusion of this process, I had a wealth of information stored in visual and written form about the factors at work on the Willowell Property.

During the months that I was conducting site analysis, I also mentored a Walden Project student in sustainable landscape design methods and practices, taught a two-hour wildlife biology class specific to the Willowell land at the Walden Project, consulted with other Walden Project students in the design of a berry garden and orchard that the students will be planting in the spring of 2006 as part of their ecology and agriculture class, and guest-presented my findings at numerous private and community meetings related to the Willowell land parcel.

The spring semester of my thesis year focused on the cumulative phase of the design process: the creation of a dynamic, long-term ecological landscape design for the Willowell educational preserve. This design takes three forms: first, a comprehensive land use planning design for the whole property that generally outlines the functions of specific areas onsite and activities appropriate to them; second, an in-depth design for the 10-acre area where Willowell hopes to have a community building; and third, an architectural concept sketch of a potential community building. Written summary information,23 plant species lists,24 and a timeline/list of priorities to assist in implementation25 accompany these visuals.

The first part of the final design process involved the creation of design concepts to describe both the overall site and the community building area. As described by Dave Jacke, “the design concept is the big idea that integrates the site, the goals, and the garden inhabitants into a unified whole, resolving the key issues and challenges this integration presents.”26 These concepts take the form of a few cohesive, present tense sentences that describe the vision for the area that is used to make design choices.27 The second part of

23 See Appendix D.
24 See Appendix E.
25 See Appendix F.
27 See Appendix B.
the design process was one of sketching, testing and retesting ideas to consider all of the information gathered during site analysis and assessment and to finally arrive at the final design.

I presented the final design, as well as the site analysis and assessment information, at three separate events. The first was a two-hour professional design presentation for the Willowell board of directors and staff, which took place in early March in Lincoln, Vermont.28 The second was a presentation to a CAD drafting class29 at the Vergennes Union High School in Vergennes, Vermont, which has taken on as its capstone project the design of the Willowell community building. The third was an informal presentation at a gathering30 of educators and administrators from the three school districts surrounding the Willowell land, and focused on place-based education opportunities offered at the property (both current and potential).

In addition to encouraging me to explore the permaculture concepts described in the previous sections as they relate to a particular piece of land, the creation of a permaculture design for an educational preserve has encouraged me to explore my ideas and beliefs about environmental education and the beneficial nature of incorporating diverse and seemingly unrelated disciplines such as permaculture into the environmental education curriculum. This paper explores the intersections between environment and education in the context of the Willowell Foundation and its programs on the Willowell property.

In I. The Environmental Problem, I explore my own awareness of the present day environmental crisis in the context of the environmental movement. Then, I consider the possibility of the collapse of Industrial civilization as a result of “unintentional ecological suicide.”31 I go on to identify the need for long-term, consistent education focused on sustainability in preparing humanity to deal with present and future environmental and social challenges regardless of whether a collapse scenario occurs.

---

29 See Appendix C, “CAD drafting” presentation notes, and Appendix D (disc), “CAD drafting” PowerPoint presentation.
30 See Appendix C, “Center for Sustainability” presentation notes.
In II. Environmental Education, I consider the definition of classic
environmental education, its history as an educational pedagogy, its successes and
failures in advancing its stated goals, and the reasons behind its failures.

In III. Re-Visioning Environmental Education, I move on to consider the
successes and failures of "re-visionings" of classic environmental education such as EIC-
based learning and Place-Based education—both in comparison with classic
environmental education and on their own. To close, I recognize that EIC-based learning
is not a final solution for providing holistic education for sustainability, and call for a
broadening of the scope of EIC-based programs using input from other educational
pedagogies as well as other fields of study not traditionally related to sustainability.

In IV. Education for Sustainability, I discuss the Walden Project high school as
a case study of an environmental education pedagogy alternative to both classic
environmental education and EIC-based programs that also attempts to educate for
sustainability. I evaluate its successes and failures in this attempt, and describe its place
within the larger context of Willowell programs. I then consider how permaculture
principles can be used as a framework to expand education for sustainability on the
Willowell property and create an educational preserve as good or better than that
currently envisioned by Willowell.
I. The Environmental Problem

My thesis, like all ideas, grows out of the several key assumptions that I hold about the world. It is from these fundamental beliefs that my explorations of the intersection between our environmental ethic and our educational system grow. The core of these beliefs is this: Human action, and specifically human action within mainstream American society, is directly and indirectly impacting the environment of the earth in multiple negative ways, including: global climate change, the results of which we see today melting arctic ice sheets, rising sea levels, fluctuating temperatures, increasingly frequent extreme weather events; species and ecosystems disappearing at an exponential rate; and the deteriorating quality of our water, food, habitat, society, and even our own bodies.

The Environmental Movement

Since the 1960s, awareness of this issue has gradually become part of mainstream discourse as the environmental movement transitioned from the wilderness conservation writings of a few isolated individuals to an organized force. Many cite Rachel Carson’s 1962 book *Silent Spring* as the pivotal point that marked the birth of the environmental movement. In *Silent Spring*, Carson described how pesticides and insecticides such as DDT contaminate the environment and poison wildlife, resulting in a “silent spring” without insects and birds. She also discussed how such chemicals enter the food chain and are stored in the fat cells of humans and animals, resulting in greater cancer risks. *Silent Spring* led to “a new public awareness” of human effects on the environment, and engendered a debate over how human behavior should be regulated in order to protect the environment.

The late 1960s and early 1970s saw a flurry of legislation and federal involvement in environmental protection. After the release of *Silent Spring*, President John F Kennedy calling for an investigation into the truth of Carson’s claims—and, when these were confirmed correct,
to the banning of DDT and numerous other harmful chemicals.\textsuperscript{6} The Endangered Species Preservation Act of 1966 required the cataloging of endangered and threatened species as well as their protection.\textsuperscript{7} In 1969, the National Environmental Protection Act (NEPA) was written into law, mandating policies of environmental protection in all federal government branches.\textsuperscript{8} In 1970, the Environmental Protection Agency (EPA) was established by President Richard Nixon to oversee all tasks related to the environment.\textsuperscript{9}

The 1970s was a time of grassroots organization and international cooperation and organization in the environmental movement. Environmental groups such as Greenpeace and Friends of the Earth were established in the 1970s, which focused on issues such as threatened wildlife species and the fur trade.\textsuperscript{10} In 1972, the first of the United Nations Conferences on the Human Environment (commonly known as the Earth Summits) was held in Stockholm, Sweden.\textsuperscript{11} Over 100 nations attended, bringing their awareness of and concern about environmental problems. The conference resulted in the creation of an “Action Plan for the Human Environment” and the “26 Principles of the Declaration of the United Nations Conference on the Human Environment,” as well as the establishment an Environmental Fund and the United Nations Environment Programme (UNEP).\textsuperscript{12}

The 1980s saw small steps for environmentalism at the same time as increased awareness of environmental degradation. The distraction of the Cold War rendered the 1982 Earth Summit ineffective, according to some.\textsuperscript{13} However, the outcry over environmental problems increased exponentially and was heard from scientists, politicians, outdoor enthusiasts, and the general public. Awareness of ozone depletion was a major focus of 1980s environmentalism.\textsuperscript{14} In 1983, the UN General Assembly created the UN World Commission on Environment and Development. Its chairperson, Dr. Gro Harlem Brundtland, issued a report titled \textit{Our Common...}

\begin{itemize}
\item \textsuperscript{6} Reynolds.
\item \textsuperscript{7} Jeremiah Hall, “History of the Environmental Movement” (Montanans for Multiple Uses, 2005), viewed April 2005, \url{http://www.mtmultipleuse.org/ENDANGERED/esahistory.htm}
\item \textsuperscript{8} Hall.
\item \textsuperscript{9} Hall.
\item \textsuperscript{10} Reynolds.
\item \textsuperscript{11} Reynolds.
\item \textsuperscript{12} Reynolds.
\item \textsuperscript{13} Reynolds.
\item \textsuperscript{14} Reynolds.
\end{itemize}
Future in 1987, which first used the term “sustainable development.”\textsuperscript{15} The report defines sustainability as “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs,”\textsuperscript{16} and focused on the problem of combining economic growth and environmental protection.\textsuperscript{17}

Sustainability has since been defined in various ways since this first application. In the introduction to \textit{Permaculture: Principles and Pathways Beyond Sustainability}, David Holmgren gives a particularly clear and concise definition of a sustainable society: “…it must have the capacity (proven only with historical hindsight) to reproduce itself down the generations while providing human material needs without cataclysmic and long-term breakdown.”\textsuperscript{18} Defining sustainability at all called into question larger social structures such as the global capitalist economy.

In the 1990s, global warming became a major focus of the environmental movement. This concern resulted in the creation of the Kyoto Protocol, which was introduced at the 1992 Earth Summit in Rio, Brazil. It required signing countries to cut their carbon dioxide emissions by only 5% over a four-period, 2008-2012.\textsuperscript{19} But some developed countries, including the United States, refused to sign the Kyoto Protocol out of concern for the economic costs of reducing emissions.\textsuperscript{20}

Though the environmental movement has identified the fact that humans are causing environmental problems that make the planet increasingly inhospitable for life, present-day industrial civilizations like the United States continue to undermine their chances for continued survival and instead move towards a cultural collapse caused by what some call “unintentional ecological suicide.”\textsuperscript{21}

\textbf{The Collapse Scenario}

The collapse scenario hypothesized as a possible future for industrial civilization relies on historical evidence of other cultural collapses. In this usage, collapse does not mean the minor

\textsuperscript{15} Reynolds.
\textsuperscript{17} Reynolds.
\textsuperscript{18} Holmgren xxx.
\textsuperscript{19} Reynolds.
\textsuperscript{20} Reynolds.
\textsuperscript{21} Diamond.
ups and downs experienced in a sustaining culture but is “a drastic decrease in human population size and/or political/economic/social complexity, over a considerable area, for an extended time,” with the added factor of a decrease in energy complexity (as in a descent from a high-energy use culture to a low energy-use culture). By this definition, past advanced societies such as the Maya of Central America, the Myceneans of Greece, the Minoans of Crete, and Easter Island in the Pacific Ocean can be considered “victims of full-fledged collapses.” The collapse of these civilizations has been partially or fully blamed on unintended “ecocide” in recent years, a claim confirmed in discoveries by palynologists, paleontologists, climatologists, historians, and archaeologists.22

In his 2005 book **Collapse: How Societies Choose to Fail or Succeed**, Pulitzer Prize-winning author Jared Diamond identifies eight environmental categories in which the above-mentioned societies undermined themselves: habitat destruction and deforestation, water management problems, soil problems, over-fishing, over-hunting, human population growth, increased per-capita human impact, and the effects of introduced animal and plant species on native species.23 Diamond goes on to describe the general trend that these societies followed in their collapse:

Population growth forced people to adopt intensified means of agricultural production (such as irrigation, double-cropping, or terracing), and to expand farming from the prime lands first chosen onto more marginal land, in order to feed the growing number of hungry mouths. Unsustainable practices led to environmental damage of one or more of the eight types just listed, resulting in agriculturally marginal lands having to be abandoned again. Consequences for society included food shortages, starvation, wars among too many people fighting for too few resources, and overthrows of governing elites by disillusioned masses. Eventually, population decreased through starvation, war, or disease, and society lost some of the political, economic, and cultural complexity that it had developed at its peak.24

While some societies experienced a slow decline, others declined rapidly after reaching a “peak” of power and population (the modern Soviet Union is cited by Diamond as an example of this rapid decline).25

---

22 Diamond.  
23 Diamond.  
24 Diamond.  
25 Diamond.  
26 Diamond.
The risk of a collapse scenario brought on by ecological destruction is of great concern today. It is especially concerning because, in addition to the eight identified by Diamond, three additional environmental problems face today’s society: toxic chemical buildup in the environment, human-caused climate change, and, perhaps the most revolutionary, the approaching end of cheap, petroleum-based energy.27 Some argue that the use of cheap fossil fuels beginning in the industrial age is the primary enabler for the current globalized society that we see today.28 Some scientists29 have long asserted that global oil production has peaked and will soon enter decline, removing the foundation upon which Industrial society is built and hastening some form of descent to a low-energy society.30

The process with which this collapse will occur is uncertain and could be anything from benign to cataclysmic.31 In past, worst-case scenarios of complete cultural collapse, entire societies either emigrated somewhere else or perished.32 Obviously, though, this trajectory is not the only one that past societies followed—different societies experienced different degrees of collapse in different ways, while many never experienced collapse at all.33 Diamond, for one, believes that “a future of significantly lower living standards, chronically higher risks, and the undermining of what we now consider some of our key values”34 are more likely than an overall “doomsday” scenario. Others expect a smooth and benign ride down into a world of “green technology.” Still others believe that our technology will advance us beyond the laws that govern all other life forms, enabling human life to continue at its present level of consumption and rate of growth.35

Regardless of whether the future scenario is one of “breakdown” or “breakthrough” (and it may differ extremely from place to place), members of the human species will require creativity, participative skills, competence, resilience, moderation, flexibility, a sense of responsibility and ethics in order to handle the transition while supporting each other and their

27 Diamond; Holmgren xvi.
28 Holmgren xvi.
29 Geophysicist Dr. M. King Hubbert was the first scientist to hypothesize that oil production had peaked.
30 Holmgren xxix.
31 Diamond; Holmgren xvi.
32 Diamond.
33 Diamond.
34 Diamond.
35 P. Hawken, A. Lovins and H. Lovins, Natural Capitalism: Creating the Next Industrial Revolution (Rocky Mountain Institute, 1999).
environment. The world we know is changing, fast, and human beings must learn the skills to adapt to those changes in order to create a sustainable society now and in the future.

**Conclusions: A Call for Sustainable Education**

Without long-term, consistent education that focuses on sustainability, the human community cannot hope to meet present-day environmental and social challenges. Since the late 1800s, public school has, for the most part, been the primary means with which adults educate children to become productive members of their society. It is within public schools that education about how to live in the world is disseminated.

Over the last forty years, the environmental education curriculum was developed in an attempt to educate children about the planet where they live and their impact upon it, as well as to foster a sustainable environmental ethic and perhaps allow for a smooth transition to a low-energy society rather than an ecocidal collapse.

**II. Environmental Education**

**The Origins of Environmental Education**

The origins of what we now call “environmental education” extend back more than a hundred years, and can be traced to three specific areas: the conservation movement, nature study, and outdoor education.

The American conservation movement represents a radical re-visioning of the value of wilderness and a turning point in society’s relationship to the natural world essential for the possibility and growth of the environmental education movement. Prior to the turn of the century, landscapes that were most commonly described as “wilderness” were also considered “deserted,” “barren,” “savage,” “desolate,” and “a waste.” Being out in wilderness evoked emotions of bewilderment and terror in the populace rather than awe and reverence. The main

---

36 Susan Erickson, *The Land Ethic as an Educational Goal*, Division 3 examination (Amherst, MA: Hampshire College, 1976), 22.
37 Erickson 22.
39 Cronon, *Uncommon Ground* 70.
value of wilderness was seen as its potential to be “reclaimed” for civilized human use in the form of gardens, farmland, cities and towns.\textsuperscript{40}

In the mid 1800s, however, the United States became the scene of a change in this type of thinking. This was seen in the establishment of the first national parks and the U.S. Park Service and the deification of figures such as John Muir and Henry David Thoreau who romanticized and called for the protection of wild places.\textsuperscript{41} The success of the ideology spread by these pioneer conservationists was partly due to the growing popularity of the view of wilderness as a “sublime” landscape, where “one had more chance than elsewhere to glimpse the face of God.”\textsuperscript{42} It was also due to the national obsession with the myth of a romantic frontier which, in the 1890s, was declared gone, never to return, by historian Frederick Jackson Turner.\textsuperscript{43} The vanishing frontier led to concerns about the finite nature of America’s natural resources, and caused preservationists and conservationists to discuss how to use these resources wisely.\textsuperscript{44} In this era, schools were seen as places to teach values that would improve both individual and societal behaviors relating to the natural world—places to teach “conservation” as a moral ethic.\textsuperscript{45}

Nature study can be considered the origin of science teaching in elementary schools.\textsuperscript{46} This realm of study emphasized “identification and categorization of plants and animals, and developing powers of observation and appreciation through field experiences.”\textsuperscript{47} Here, the idea of outdoor knowledge and observation as a tool for environmental appreciation was first seen.\textsuperscript{48}

While conservation and nature study are content areas to be taught in school, outdoor education is an educational approach that focuses on learning in the outdoors. It was popularized in the 1940s in the exponential growth of summer camps, school camps and the scouting movement.\textsuperscript{49} These programs were designed to “foster outdoor skills, conservation, and nature

\textsuperscript{40} Cronon, \textit{Uncommon Ground} 71.
\textsuperscript{41} Erickson 22.
\textsuperscript{42} Cronon, \textit{Uncommon Ground} 75.
\textsuperscript{43} Cronon, \textit{Uncommon Ground} 76.
\textsuperscript{44} Jack Chin, “Connecting Schools and Communities through Place-based Education,” Background paper for unidentified seminar, 3.
\textsuperscript{45} Chin 3.
\textsuperscript{46} Chin 3.
\textsuperscript{47} Erickson 23.
\textsuperscript{48} Erickson 23.
\textsuperscript{49} Erickson 23.
study while developing individual capabilities and social interaction.” The outdoor education movement has grown and broadened since the 1940s, and is now a facet of many public and private school educational programs.

**Environmental Education, Defined**

The term “environmental education” did not emerge until the 1970s as a response to widespread societal knowledge of human impacts on the planet and a logical offshoot of a combination of conservation, nature study and outdoor education. Dr. William Strapp of the University of Michigan School of Natural Resources defines the goal of environmental education as “producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution.”

The definition of environmental education continued to evolve throughout the 1960s and 1970s. In the Environmental Quality Education Act of 1970, the first federal legislation pertaining directly to environmental education, environmental education was defined as “the educational process dealing with man’s relationship with his natural and manmade surroundings, and includes the relation of population, conservation, technology, and urban and regional planning to the total human environment.” And the Tbilisi Declaration, now considered the “classic” definition of environmental education, was created during the UN-sponsored Intergovernmental Conference on Environmental Education that met during the mid to late 1970s. It states:

> Environmental education is a process of developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, skills, attitudes, motivation and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones.

---

50 Erickson 23.
51 Erickson 23.
54 Chin 5.
55 Chin 5.
Though it draws heavily on earlier forms of “nature education” as described above, environmental education differs from each of them in several ways. While nature studies, outdoor education, and conservation education address nature objectively, environmental education considers the connections between humans and the environment. Specifically, it considers the human relationship with environmental problems and solutions, while using both social and ecological systems as a context for exploration of these problems and solutions. Environmental education also seeks to change fundamental values and develop skills for creative problem solving rather than teaching people to blindly perform particular actions (such as recycling). It was hoped that by teaching students how to think about the environment they would reach conclusions that would lead to positive ecological citizenship.

Environmental education is traditionally provided in a variety of settings, which can be loosely categorized as Informal, Media-Based, and Classic. Informal environmental education is the type available to the general public in zoos, parks, aquariums, nature centers and the like, and focuses on awareness knowledge. Media-Based environmental education is available through the media, including the Internet, books and magazines, and television and radio programs specifically focused on environmental issues. It too promotes awareness knowledge of issues. Classic environmental education refers to the education passed on by teachers to K-12 students, mainly in the traditional classroom. While informal and media-based environmental education are important and influence environmental literacy, an in-depth look at them is beyond the scope of this work. Instead, I focus here on classic environmental education, as well as new forms of non-traditional environmental education that will be discussed later in this paper.

Evolution of Environmental Education
In the 1980s and 1990s, teachers, academics and legislators continued to develop and refine classic environmental education programs. In the early 80s, scholars from several Midwestern universities began to develop the conceptual framework of classic environmental education in a

---

56 Chin 4.
57 Chin 4.
59 Chin 7.
60 Chin 7.
61 Chin 7.
62 Chin 8.
more refined manner. In 1980, for example, scholars from Southern Illinois University School of Education (SIU) laid out a framework to advance environmentally responsible behavior titled “Goals for Curriculum Development in Environmental Education” which defined four clear levels of measurable achievement expected from classic environmental education curricula. These are:

1. Understanding of a broad range of ecological concepts;
2. Awareness of how personal and communal behaviors influence environmental quality;
3. Cultivation of skills and knowledge needed to understand environmental problems and find their solutions, and;
4. The cultivation of skills and knowledge needed to take action to carry out these solutions.

This list of goals supports the assertion that classic environmental education philosophy is grounded in the belief that environmental literacy is the foundation upon which environmental action and personal ethics are built.

Conceptual research like the SIU framework led to the National Project in Environmental Education, an initiative started in 1993 by the North American Association for Environmental Education. This project sets out distinctive guidelines for the development of classic environmental education programs, and includes recommendations for choosing educational materials, identifying measurable outcomes for each grade level, and recommending levels of training that educators intending to teach environmental education must receive. Efforts to improve and enhance classic environmental education through clearer definition and increased standardization continue to the present day.

Starting in the 1970s, classic environmental education concentrated on informing students about particular environmental issues. Issues selected as important for students to understand often directly mirrored the passage of major environmental federal and state legislation. This resulted in the creation of curricula that discussed issues such as the

---

63 Chin 8.
64 Chin 8.
66 Chin 9.
67 Chin 6.
preservation of endangered species, water quality and air quality. Nature walks, “discovery weeks” focusing on environmental issues, community-wide “clean-ups” and “green-ups,” ecology poster projects, and field trips to waste management facilities are all popular teaching methods used in classic environmental education. These activities tend to emphasize environmental problems, the undesirability of pollution, and resource mismanagement, using the lens of ecological concepts to explain why these issues occur and why they need to be solved. The “issues-based” approach to environmental education represents the dominant classic environmental education paradigm present over the last thirty-five years. It is important to evaluate whether the “issues-based” focus of classic environmental education is meeting the original goals of environmental education.

**Environmental Education Successes and Failures**

As stated previously, environmental education seeks to provide students with understanding of a broad range of ecological concepts (i.e. ecological literacy), awareness of how personal and communal behaviors influence environmental quality, the skills and knowledge needed to understand environmental problems and find their solutions, and the skills and knowledge needed to take action to carry out these solutions.

The National Environmental Education and Training Foundation (NEETF) has attempted to evaluate the successes and failures of environmental education through quizzes and questionnaires. Since the early 90s, NEETF has released a “national report card” each year, which evaluates environmental knowledge, attitudes and behavior. These report cards are based on data collected in representative telephone surveys: the survey conducted in August 2000 surveyed 1,505 Americans 18 and older. Over time, NEETF report cards have demonstrated both successes and failures of classic environmental education.

http://www.epa.gov/history/topics/earthday/02.htm
69 Chin 6.
70 Erickson 24.
71 Erickson 25.
72 Chin 8.
73 Chin 12.
Successes

One success of classic environmental education is its widespread proliferation. Since the start of the environmental education movement, many schools have developed classic environmental education curricula.\textsuperscript{75} In 2000, NEETF reported that approximately half of all U.S. schools have some form of environmental education program.\textsuperscript{76} The numbers of environment-based schools are growing, and many high schools now offer an advanced placement environmental science course.\textsuperscript{77}

Both research-based and anecdotal evidence show that people are now more aware of environmental problems due to environmental education.\textsuperscript{78} According to author and education reformer Jack Chin, “environmental education increases the likelihood that young people will grow up to be environmentally-responsible voters, consumers, and citizens.”\textsuperscript{79} While a statement like this is difficult to quantify, several studies support this statement in some way.\textsuperscript{80} In NEETF’s 2000 report card, when asked to choose between protecting the environment and economic development, 71\% of Americans choose the environment.\textsuperscript{81} Additionally, almost half (46\%) of Americans believe that current environmental protection laws “do not go far enough” to prevent environmental damages.\textsuperscript{82}

Classic environmental education also enjoys widespread societal support. Support for environmental education among adult Americans was extremely high in 2000—95\% of those surveyed support environmental education for children.\textsuperscript{83} This has largely to do with the fact that a majority of Americans (88\%) believe that environmental education has great benefits in preparing children to understand environmental issues.\textsuperscript{84}

The beliefs of the American public alone are not enough of an indicator to measure whether environmental education is successful, however. While widespread proliferation,

\textsuperscript{75} NEETF Lessons.
\textsuperscript{76} NEETF Lessons.
\textsuperscript{77} NEETF Lessons.
\textsuperscript{78} Chin 12.
\textsuperscript{79} Chin 2.
\textsuperscript{81} NEETF Lessons.
\textsuperscript{82} NEETF Lessons.
\textsuperscript{83} NEETF Lessons.
\textsuperscript{84} NEETF Lessons.
awareness of environmental problems and high support levels for environmental education are important successes to be celebrated, the NEETF report cards also expose the failures of classic environmental education.

**Failures**

A comparison of NEETF report cards issued in 1997 and 2000 show that, while Americans are very concerned about the state of the environment, knowledge of environmental issues continues to be low.\(^\text{85}\) In both years, those surveyed were asked a series of 12 multiple-choice questions dealing with recent environmental topics.\(^\text{86}\) In the 2000 survey, NEETF found that two out of three adult Americans fail the quiz (8 or more incorrect answers).\(^\text{87}\) Between 1997 and 2000, scores only improved on one question, while a lower portion of those surveyed answered correctly on two questions in 2000 than they did in 1997.\(^\text{88}\) This information is corroborated in another study: the 1998 report *Environmental Literacy in the United States: What Should Be, What Is, Getting from Here to There*, which reviewed 32 environmental literacy studies, found that overall environmental literacy rates in adult Americans range from low to moderate.\(^\text{89}\)

The NEETF report also shows that the number of Americans who assert that they perform basic environmental stewardship actions such as trying to reduce their consumption, conserving water and purchasing biodegradable productions declined between 1997 and 2000.\(^\text{90}\) NEETF links this to declining ecological literacy, citing survey results that show that, as ecological literacy increases, ecological stewardship activities also increase.\(^\text{91}\) Environmental knowledge, according to NEETF, affects the likelihood of performing day-to-day actions that benefit the environment directly or indirectly.\(^\text{92}\)

The NEETF 2000 survey concludes, “the public presently lacks sufficient knowledge, skills and motivation to understand and implement the kind of solutions needed to address today’s environmental challenges.”\(^\text{93}\) But the NEETF report cards are indicative of the failures of...

---

\(^{85}\) NEETF Lessons; Chin 12.  
\(^{86}\) NEETF Lessons.  
\(^{87}\) NEETF Lessons.  
\(^{88}\) NEETF Lessons.  
\(^{89}\) Volk and McBeth.  
\(^{90}\) NEETF Lessons.  
\(^{91}\) NEETF Lessons.  
\(^{92}\) NEETF Lessons.  
environmental education in another way. NEETF defines ecological stewardship in terms of superficial environmental activities such as recycling and turning off lights. Critics point to this focus on surface signs and symptoms of problems rather than the values, beliefs, attitudes and feelings that result in environmental problems as one of the major flaws of an “issues-based” environmental pedagogy.  

Emphasis on these types of activities seems to assert that the environmental crisis would not exist if everyone turned their lights off or recycled their bottles and cans. In fact, the glass and metal recycling industries are extremely environmentally detrimental, creating more waste and using more energy than it took to produce the original bottles and cans. Such actions demonstrate a minimal understanding of environmental issues. In this way, the concept of the NEETF survey itself can be considered a measure of the failure of environmental education to promote understanding of the deeper issues underlying negative environmental symptoms and therefore to prevent environmental destruction.

Conclusions: A Call for Re-Visioning

Beliefs vary as to why the last three decades of environmental education have little to show for their efforts in terms of increasing ecological literacy or improving environmental problems. Some point to inadequate financial support and coordination while others consider the lack of classroom time spend on environmental education (at many schools, just a few hours a year) as the main problem.

Implicit in these assumptions is the belief that the current classic environmental education methodology and the traditional classroom context within which it is taught is truly an effective means of education ecological citizens—and that if we just get more funding, more classroom time, more cohesion within environmental education discourse, and more focus on personal beliefs about the environment, classic environmental education will eventually work. Though these issues are certainly part of the problem and environmental education’s goals would be furthered in some ways if they were improved, many environmental education reformers are recognizing that a more radical re-visioning of how to “do” environmental education is

---

94 Erickson 25.
96 Chin 13.
97 NEETF *Lessons*.
98 NEETF *Lessons*. 

14
warranted. Roger Hart, professor of Environmental and Developmental Psychology at City University of New York (CUNY) Graduate School and co-director of the Children’s Environment Research Group (CERG), calls for a radical reconception of environmental education “in order [for environmental education] to be seen as fundamental to the residents of communities from all social classes in all countries.”

III. Re-Visioning Environmental Education

In response to awareness of the lack of success of classic environmental education in promoting ecological literacy and motivating ecological citizenship, a new discourse has emerged in the environmental education movement within the last ten years. In the following section I consider EIC-based learning, a relatively new environmental education pedagogy that is promising in redirecting the course of the environmental education movement and in preparing youth to face today’s environmental and social problems. I discuss the ways in which EIC-based learning avoids problems faced by classic environmental education, as well the potential obstacles to widespread implementation of EIC-based learning approaches and flaws in an EIC pedagogy.

EIC-Based Learning

Environment as an Integrating Context for learning (EIC) is a term coined by the State Education and Environmental Roundtable (SEER) in reference to a set of educational practices that SEER believes “should form the foundation of environment-based education programs.” In the early 90s, representatives of SEER expressed interest in the efficacy of environmental education programs but were unable to evaluate the potential of these programs to advance environmental education’s overarching goals due to limited research into their effectiveness. To solve this

101 Lieberman and Hoody 3.
problem, SEER members designed a study to “identify the most innovative and successful programs, describe their effectiveness, and analyze their commonalities and differences...”\textsuperscript{102} 

In 1998, Gerald A. Lieberman and Linda L. Hoody of SEER released the results of this study in their report, \textit{Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning}.\textsuperscript{103} The SEER study focused on 40 EIC schools in the United States. While all of these programs were using hands-on environmental projects as an integral part of their curricula, SEER does not consider EIC-based learning as environmental education according to the classical definition.\textsuperscript{104} Rather than being primarily focused on learning about the environment, EIC-based learning uses the environment as a framework and focus for learning in all areas of study: basic life skills, disciplinary and general knowledge, and problem-solving skills.\textsuperscript{105} Since the release of \textit{Closing the Achievement Gap}, EIC-based learning has been used increasingly frequently as a model for school reform efforts. One of the emerging educational pedagogies that has EIC-based learning at its core is Place-Based Education.

\textbf{Place-Based Education} 

The relatively new term “Place-Based Education” has only recently begun to appear in educational literature.\textsuperscript{106} It is often used in association with the rural community education reform movement initiated by the Rural School and Community Trust (formerly the Annenberg Rural Challenge),\textsuperscript{107} a national non-profit organization “dedicated to improving student learning concurrently with strengthening community life.”\textsuperscript{108} Initiated in 1993, the Rural Challenge program offered a $50 million dollar, 1-to-1 matching challenge grant to assist rural schools in developing a “place-based” learning focus. The Rural Challenge website defines place-based learning as a pedagogy “in which rural public schools base teaching and learning on their community’s culture, history, ecology, and economy while also engaging community members in the work of the school.”\textsuperscript{109} During its tenure, the Rural Challenge program assisted more than

\begin{itemize}
    \item \textsuperscript{102} Lieberman and Hoody 3.
    \item \textsuperscript{103} Lieberman and Hoody 3.
    \item \textsuperscript{104} Lieberman and Hoody 4.
    \item \textsuperscript{105} Lieberman and Hoody 4.
    \item \textsuperscript{106} Chin 17.
    \item \textsuperscript{107} Chin 17.
    \item \textsuperscript{108} Annenberg Institute for School Reform (AISR), “The Rural Challenge”, (Annenberg Challenge website), viewed April 2006, \url{http://www.annenberginstitute.org/challenge/sites/rural.html}
    \item \textsuperscript{109} AISR.
\end{itemize}
700 schools in 35 states.

In the early 1990s, the Orion Society also began to define its pedagogical methodology as a “place-based” educational approach.\textsuperscript{110} The Orion Society is an international nonprofit organization whose mission is “to inform, inspire, and engage individuals and grassroots organizations in becoming a significant cultural force for healing nature and community.”\textsuperscript{111} The Orion Society defines place-based education as “a pedagogy grounded in community that promotes nature literacy—local knowledge of the connections between nature and culture—and inspires humane stewardship and informed decision-making.”\textsuperscript{112} According to Laurie Zane-Tucker, executive director of the Orion Society, place-based education is a form of “enlightened localism”—that is, “a local/global dialectic that is sensitive to broader ecological and social relationships at the same time as it strengthens and deepens people’s sense of community and land.”\textsuperscript{113}

To promote place-based education, the Orion Society awards place-based education fellowships to teachers, works with schools around the country to develop place-based education programs, hosts gatherings and conferences both regionally and nationally that focus on place-based education, and publishes resources for education (namely the Nature Literacy series).\textsuperscript{114} The authors who have contributed to this series, such as Dr. John Elder of Middlebury College and Dr. David Sobel of Antioch New England Institute (ANEI) graduate school, are important proponents of place-based education and have been instrumental in defining place-based education and proliferating its programs.

David Sobel’s work in the place-based education field is particularly important in extending place-based education theory beyond the academic realm and into the realm of the practical. In addition to writing several books about place-based education theory and practice, Sobel is the director of the Community-School Environmental Education Program (CO-SEED) ANEI’s Center for Place-Based Education in Keene, New Hampshire.\textsuperscript{115} The CO-SEED program

\begin{itemize}
\item \textsuperscript{110} Laurie Zane-Tucker, introduction to \textit{Place-Based Education} by David Sobel, (Great Barrington, MA: The Orion Society, 2005), ii.
\item \textsuperscript{111} Orion Society, “The Orion Society, viewed April 2006, http://www.orionsociety.org/pages/os/index_os.html
\item \textsuperscript{113} Zane-Tucker, ii.
\item \textsuperscript{114} Orion Society, “Our Educational Initiatives.”
\item \textsuperscript{115} Antioch New England Institute, “CO-SEED: Community-based School Environmental Education Program.”
\end{itemize}
develops three-year-long collaborations with individual schools and communities in the northeast to assist them in developing place-based education programs. In his book *Place-Based Education: Connecting Classrooms and Communities*, Sobel defines place-based education as follows:

Place-based education is the process of using the local community and environment as a starting point to teach concepts in language arts, mathematics, social studies, science, and other subjects across the curriculum. Emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances students’ appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens. Community vitality and environmental quality are improved through the active engagement of local citizens, community organizations, and environmental resources in the life of the school.116

The place-based education programs supported by the Rural School and Community Trust, the Orion Society and CO-SEED are dealing with the same issues and drawing from the same beliefs about what education should be as EIC-based programs.117 The difference in terminology comes from the preferences of individuals involved in both movements: and though I believe that the terms can be used interchangeably, I will use the term “EIC-based learning” predominantly for the purposes of this paper when referring to both. Drawing on the philosophy of all EIC-based programs, not only those defined as “place-based education,” is important in developing a holistic perspective on how EIC-based learning differs from classic environmental education.

**Classic Environmental Education versus EIC-based Learning**

In addition to broadening the definition of “environment” to include the entirety of communities that people live in, EIC programs differ from classic environmental education in several key ways.

*Difference 1: From Far Away Catastrophe to Local, Solvable Problem*

---

117 Sobel *Place* 15.
A large problem in classic environmental education is its “catastrophe approach”—that is, a focus on factual information about global warming, pollution, fossil fuel consumption, ocean dead-zones and other environmental crises in far-off places. This method of conveying subject matter tends to oversimplify environmental issues into “right” and “wrong” behaviors, rather than encouraging investigation into the social complexities that lead to and perpetuate environmental problems. It is difficult for students to identify with environmental problems that are abstract and remote, and therefore difficult for them to develop skills in investigation and evaluation of problems as a precursor to environmental action skills.

Additionally, exposure to so much troubling information may also cause children to disassociate because they are unable to deal with it. David Sobel offers an analogy to explain this: when physically and/or sexually abused, children learn to separate themselves from the pain they experience by turning off emotionally. “My fear is that our environmentally correct curriculum similarly ends up distancing children from, rather than connecting them with, the natural world,” says Sobel.

EIC-based education programs, however, teach students to identify and relate to proximate, real environmental problems in a critically aware manner. As John Chin writes, “they [students] can more easily see in a community context that issues are interrelated, not separate, and that perspectives on these issues are complex…. They can conduct investigations in a hands-on, inquiry-based way, not hypothetically or virtually.” One example from Closing the Achievement Gap is the case of the STREAMS project at the area middle school in Huntingdon, Pennsylvania. David Sobel summarizes the STREAMS project in Place-Based Education:

Water quality tests conducted by middle school students at Muddy Run, a local stream, indicated abnormally high levels of bacteria. Through collaboration with local college professors and students, the middle school students identified the crumbling municipal sewer system as a probable major cause of the contamination. What started out as a science curriculum project turned into an integrated writing and social action initiative as students and teachers mounted a campaign to convince community members of the

References:

118 Chin 18.
119 Chin 18.
121 Louv 134.
123 Chin 18.
124 Lieberman and Hoody.
seriousness of the problem. The end result was a $250,000 grant from the Pennsylvania Infrastructure Investment Authority to repair the municipal sewer system.125

Since local problems tend to have more implementable solutions and are generally less complex than global environmental problems, focusing on them helps children to gain a sense of empowerment and hope.126

**Difference 2: From Homogenization to Diversity**

Like most mainstream education, classic environmental education emphasizes a homogenized educational experience designed to develop a common set of values and skills shared by each child—keeping children on the same page on the same day. This is problematic for teachers since, unlike generic textbooks, no two students are the same. Each has particular needs, abilities and intelligences that are often neglected by this method of education.

EIC-based programs seek to adapt to the unique skills and abilities of individual students. In his book *Starting from Scratch*, fourth-grade teacher Steve Levy describes his transformation as a teacher when he realized that “addressing and remediating all of the deficits of each child”127 in order to meet all of his students’ needs and bring everybody to the same page on the same day was an exercise doomed to failure. Instead, he began to explore the achievable goal of assisting in the discovery and development of the unique strengths of each of his students.128

EIC’s essential assumption here is that a common set of values and skills can still be developed using multiple, specialized approaches. This assumption allows teachers and learners to broaden and diversify the curriculum in a way that is more holistic and interesting than the generic model. David Sobel asserts that “recognizing that there are many interesting ways to go from point A to point B will free up teachers and schools to plan their own itinerary—and their students will only benefit….”129

**Difference 3: From Generic and Remote Issues to Specialized, Proximate Issues**

---

125 Sobel *Place* 11.
126 Chin 18.
127 Sobel *Place* 22.
129 Sobel *Place* 22.
Classic environmental education often employs a generic, state or federally mandated curriculum such as that laid out in the 1993 National Project for Environmental Education mentioned earlier in this paper. While these programs provide a standard by which classic environmental education programs can be evaluated, they do not capitalize upon the unique environmental and social issues facing every school community. Rather, classic environmental education focuses on environmental issues that impact far-away areas rather than the communities where students live. A classic example of this is rainforest education: many children now know all about these ecosystems, but few will ever have direct relationships with them. At the same time, temperate ecosystems (or desert ecosystems, or marsh ecosystems) are not being studied. Mounting a “Save the Rainforest” campaign seems somewhat hypocritical while the neighborhood oak grove is being cut down.

Instead of being constricted by standardized environmental education curriculum guidelines that study the “long-ago-and-far-away,” EIC-based programs are specialized according to the particular ecological and communal conditions of each school in the “here-and-now.” Through such study, EIC-based programs seek to develop understanding and appreciation for the local environment and community. A good example is the Edward Fenn Elementary School in Gorham, New Hampshire:

…third grade teachers and students…worked with a children’s book author to write and illustrate about Gorham. As you read it, you’ll ‘laugh at the hilarious adventures of Peewee Skunk, Amos Moose and Shylee Beaver, go back in time and learn about the history of Gorham, visit different places around Gorham today, and find out about the jobs people do.’

EIC-based programs are designed to vary greatly according to location and individual needs of schools—indeed, one of the benefits of EIC described in Closing the Achievement Gap is its applicability “across all geographic and socio-economic settings.” Projects are created to fit the needs of the particular place, not the other way around.

*Difference 4: From “Environment” to World*

---

130 Chin 8.  
131 Sobel *Place* 20.  
132 Sobel *Place* 6.  
133 Lieberman and Hoody.
As stated in the Tbilisi declaration, “Environmental education is a process of developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, skills, attitudes, motivation and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones” [emphasis mine]. Yet part of the failure of classic environmental education is its narrow definition of “total environment.” In classic environmental education, “environment” is defined as the natural world rather than the human world. However, if nature is defined to only exist without the presence of humanity, a dichotomy is created within which nature must fall to make way for humans.

EIC-based learning addresses this issue by asserting that “environment” means different things in different places. In Closing the Achievement Gap, Lieberman and Hoody write that “the term ‘environment’ may mean different things at every school; it may be a river, a forest, a city park, or a garden carved out of an asphalt playground.” In EIC-based learning, environmental education is broadened to include both natural and built environments as well as the communities inhabiting those environments. EIC is about “using a schools’ surroundings and community as a framework within which students can construct their own learning.”

**Difference 5: From Dis-Connection to Interconnection**

The curricular separation of environmental education into subject areas such as ecology, environmental science, agricultural studies and natural resource management results in many distinct disciplines that “hold different points of view, teach different subject matter, and reach different audience members….rarely to these groups talk, meet, or work together….“ The 2000 draft National Environmental Education Advisory Council (NEEAC) report to Congress states “although the numerous programs and activities [in environmental education] are impressive in their individual missions, they are diffuse and fragmented and therefore fail to reach a ‘critical mass’ capable of achieving overall direction or consistent, definitive

---

134 Chin 5.  
135 Cronon Uncommon 80.  
136 Lieberman and Hoody.  
137 Lieberman and Hoody 4.  
138 Chin 13.
accomplishment.” In addition to weakening the environmental education movement, curricular separation imprints the belief that the world is also divided into categories. This may encourage students to think with a reductionist view of the world as separate parts, rather than to think in whole systems.

The fragmentation of environmental education into isolated disciplines is also reflected in the fragmented curriculum of classic, classroom education—both environmental and not. This may lead children to view subjects taught in school, including those directly pertaining to environmental education, as disconnected from everyday life. In his 1891 work *School and Society*, educational reformer John Dewey writes:

> From the standpoint of the child, the great waste in school comes from his inability to utilize the experiences he gets outside the school in any complete and free way within the school itself; while, on the other hand, he is unable to apply in daily life what he is learning at school. That is the isolation of the school—its isolation from life.

This view of education as separate from everyday life points to another, general societal trend of separation—“most people, including educators, are increasingly dis-connected from the natural world.” The result is that educators may not know how to connect children with the places where they live—indeed, they may not know that this is desirable. As David Orr puts it, “…place has no particular standing in contemporary education…Place is nebulous to educators because to a great extent we are a displaced people….”

EIC programs attempt to avoid the disciplinary distinctions and content disconnections that plague classic environmental education programs. They focus on creating inter-disciplinary projects that are directly connected to students’ real experiences in their home communities. David Sobel gives a good example of this in his book *Place-Based Education: Connecting Classrooms and Communities*:

---

140 Sobel *Place* 18.
142 Chin 14.
When students in Parrish, Alabama, discovered high concentrations of lead in the school and then the town water supply, local chemistry teachers developed a hands-on curriculum around the issue. But what started out as chemistry curriculum slid sideways into neurophysiology when looking at lead and learning disabilities, and then ultimately evolved into social studies and economics when the students got involved in town politics. The research that began in the school moved out into the community and spurred interactions with county health officials, engineers, and local biologists. Eventually, the students saw their two-year project lead to the town’s installation of a new water system, which resulted in an improvement in community health.144

This type of project seeks to provide students with a holistic understanding of how diverse community systems like education, health and economics are interrelated.145

This advantage, along with the other advantages of EIC-based education in comparison with classic environmental education described above, points to the success of EIC-based programs in areas where classic environmental education fails.

**Challenges and Potential Obstacles for EIC-Based Programs**

Though it is more successful in some areas than classic environmental education, EIC faces particular challenges to its successes and proliferation.

1) *Lack of Historical Educational Credibility and a Specific Theoretical Tradition*

Though the work of academics like David Sobel and organizations such as the Orion Society and SEER has made great strides in defining and quantifying EIC-based learning, it is difficult to link EIC with a single theoretical tradition because of its philosophical avoidance of separating its subject matter into distinct disciplines. As David Gruenewald writes in *The Best of Both Worlds: A Critical Pedagogy of Place*, his essay on the combination of critical pedagogy and place-based education:

> Its [place-based education’s] practices and purposes can be connected to experiential learning, contextual learning, problem-based learning, constructivism, outdoor education, indigenous education, environmental and ecological education, bioregional education, democratic education, multicultural education,

---

144 Sobel *Place* 20.
145 Sobel *Place* 20.
community-based education, critical pedagogy itself, as well as other approaches that are concerned with context and the value of learning from and nurturing specific places, communities, or regions.\footnote{David Gruenewald, “The Best of Both Worlds: A Critical Pedagogy of Place,” \textit{(Educational Researcher}, Vol. 32, No. 4. May 2003) 3.}

The problem here is not that EIC-based learning programs draw on so many diverse disciplines for practices and purposes—indeed, EIC advocates would consider this cross-disciplinary approach one of the strengths of EIC-based learning. Rather, the relatively recent evolution of EIC pedagogy means that it does not have a strong foundation of credibility within the larger educational community as the classic environmental education model does. Being able to connect with a specific theoretical tradition would, perhaps, encourage more educators to adopt EIC-based learning programs. This is partly a function of time, however, and if EIC programs are able to demonstrate qualitative success in the areas that are important to today’s educational evaluators this will become less of an issue.

2) \textit{EIC-Based Learning and Academic Achievement}

Now as never before, education emphasizes continual inspection and accountability testing in the name of quality. In this era, educators have little room in school for any activities that are not directly addressing student achievement.\footnote{Chin 14.} They are trapped by state-mandated curricula that don’t allow time for more authentic modes of study like field trips or even recess, let alone EIC.\footnote{Louv 98.} In his 1995 report \textit{Pieces of a Puzzle: An Overview of the Status of Environmental Education in the United States}, Gerald Lieberman notes correctly that “Environmental education will have to prove its effectiveness and meet the pedagogical standards of other disciplines and teaching methods….\footnote{Gerald Lieberman, \textit{Pieces of a Puzzle: An Overview of the Status of Environmental Education in the United States} (The Pew Charitable Trusts, April 1995).} While EIC is promising in that it seeks to construct a more sustainable education experience for teachers and learners \textit{within} a state and federally mandated educational framework, it will have to demonstrate its accountability in order for teachers and schools to feasibly adopt it.

There have been two major studies that evaluate academic performance in EIC-based program. The first of these is the 1998 SEER study that, as mentioned previously, evaluated the
standardized test performance and student behavior in 40 select EIC-based public schools around the country. In Closing the Achievement Gap, Lieberman and Hoody describe their findings:

…using the environment as an integrating context (EIC) in school curricula results in wide-ranging, positive effects on student learning. The study found that EIC improves student achievement in social studies, science, language arts and math. Students, teachers and administrators also reported other significant effects including: development of problem-solving, critical thinking and decision-making skills; increased enthusiasm and engagement in learning; and, gains in summative measures of educational achievement such as standardized test scores and grade point average.\(^{150}\)

The SEER study contains specific evidence of improved test scores in EIC programs. Seventeen comparisons of standardized test reading scores in EIC and non-EIC schools found that EIC program students performed better than their peers.\(^{151}\) In the case of the Hotchkiss Elementary School in Dallas, for example, performance gains were significant:

The passing rates of fourth graders from the 1996-1997 class, the first to learn through EIC approaches, surpassed by 13 percent those of students in the 1995-96 class. According to staff members in the Texas Education Agency’s Division of Student Assessment, Hotchkiss’s gains were “extremely significant” when compared to the statewide gain of one percent during the same period.\(^{152}\)

Richard Louv, journalist and author, lauds the SEER findings as proof of the success of EIC-based programs in improving cross-disciplinary academic achievement: “The findings are stunning; environment-based education produces student gains in social studies, sciences, language arts, and math; improves standardized test scores and grade-point averages; and develops skills in problem-solving, critical thinking, and decision-making.”\(^{153}\)

The second study that provides quantitative evidence of the successes of place-based education is a 2002 study by NEETF, which focused on five schools in Wisconsin, Texas, and North Carolina.\(^{154}\) All five schools used EIC as the instructional strategy at the core of their programs,\(^{155}\) and quite a few of the chosen schools were in urban neighborhoods with diverse

\(^{150}\) Lieberman and Hoody.

\(^{151}\) Lieberman and Hoody.

\(^{152}\) Lieberman and Hoody.

\(^{153}\) Louv 204.

\(^{154}\) Sobel Place 28.

\(^{155}\) Sobel Place 28.
student bodies and high poverty rates. Standardized test evaluation of these schools showed that:

Reading scores improved, sometimes spectacularly. Math scores also improved. Students performed better in science and social studies. Students developed the ability to make connections and transfer their knowledge from familiar to unfamiliar contexts. Students learned to “do science” rather than just learn about science. Classroom discipline problems declined. Every student had an opportunity to learn at a higher level. (Numerous teachers in Kentucky indicated that students previously performing at low academic levels “came alive” when introduced to an environment-based curriculum.)

The initial positive findings of these studies are promising for the proliferation of EIC-based programs. Continued evaluation of EIC-based programs is warranted, however, in developing the scope of positive findings and establishing the credibility of EIC.

5) Isolated, Ecological/Rural Emphasis
Despite the assertion of EIC proponents that EIC can be applied anywhere, most EIC-based programs are primarily connected with ecological and rural studies. As a result, EIC-based learning pedagogy “has developed an ecological and rural emphasis that is often insulated from the cultural conflicts inherent in dominant American culture”—that is, urban, multicultural conflicts. David Gruenewald, Assistant Professor of Teaching and Learning at Washington State University, also asserts that EIC’s focus on local, ecological experiences often leads to a hesitancy to link these themes with critical problems like urbanization and cultural homogenization within global capitalism. In today’s world, the success of EIC is dependent upon its adaptability to all educational settings—not only rural, but also urban and suburban. Avoiding issues that affect some places but not others limits the applicability of EIC.

3) EIC-Based Learning and Environmental Stewardship

---

156 Sobel Place 28.
157 Sobel 28.
158 Gruenewald 3.
159 Gruenewald 4.
160 Gruenewald 4.
Even more difficult to quantify than academic achievement in EIC programs is whether EIC contributes positively to changing children’s’ environmental behavior. Though EIC-based programs directly engage students in environmentally responsible behaviors such as water quality monitoring, school recycling, habitat restoration, aquaponics and waste management, and schoolyard naturalization, it is difficult to measure whether students apply ecological ethics learned in these programs to their own lives and use them to make more positive environmental choices. While researches, program developers and academics point to a lot of anecdotal evidence to suggest significant change, empirical evidence of this is hard to come by. As of 2005, a recently formed organization called the Place-based Education Evaluation Collaborative (PEEC) is conducting research that it hopes will provide the necessary empirical evidence to support anecdotal claims.

In the meantime, several studies have already attempted to quantify the relationship between EIC-based learning and changing environmental behaviors and attitudes of children. In one study conducted by Massachusetts’ Education Development Center, it was determined that “as the diversity of the natural landscape on schoolyards increases, there’s an increase in children’s appreciation of experiences in the natural world. These changes in environmental attitudes provide the affective basis for stewardship behavior—for acting in ways that improve the quality of the environment.” While promising, this information is inadequate and must be substantiated by more empirical research.

However, positing that EIC-based programs are more effective at promoting ecological citizenship than classic environmental education programs is a more supportable task. More conclusive evidence of increased stewardship behavior is found in an analysis by Dr. Lynnette Zelezny, Associate Professor in the Department of Psychology at California State University, of all of the research done from 1974 to 1999 examining the effects of environmental education on stewardship. The most influential of her findings is this: “Classroom interventions improved environmental behavior more effectively than interventions in non-traditional settings.” In other words, in depth EIC programs in schools have more positive effects on students’ environmental

---

161 Sobel *Place* 41.
162 Sobel *Place* 32.
163 Sobel *Place* 33.
164 Sobel *Place* 33.
behaviors and stewardship of their home places than classic environmental education initiatives not integrated into the rest of the curriculum.

4) EIC-Based Learning and Parental Fear
Despite the skyrocketing defense budget, Americans today feel increasingly unsafe. In a world where violence, drugs, environmental disasters and child abductions are the highlights of the evening news every night, and movies like *The Blair Witch Project* and *The Day After Tomorrow* top the summer box office, it’s no wonder that parents want to know where their children are, 24/7—including when they are in school. Parental fear and the increasing emphasis on liability is causing many schools to eliminate field trips and outdoor recess from the curriculum entirely.\(^{166}\) For an educational pedagogy which attempts to use the environment as an integrating context for learning, cultural fears can prove challenging.

The first task of EIC proponents must be the re-education of parents about real versus perceived threats of environment and community-based experiences. The crime rate is falling in most wilderness parks.\(^{167}\) Brown recluse and black widow spiders, which cause many more fatalities than snakebites, are most often found indoors. The risk of drive-by shootings of children is extremely rare.\(^{168}\) Indoor air pollution is considered the United States’ number one environmental health threat.\(^{169}\) And according to the Active Living Research program for the Robert Wood Johnson Foundation, an indoor, sedentary childhood has been conclusively connected to mental health problems.\(^{170}\) In short, being indoors is often more dangerous for children’s’ health and well-being. This information must be made available to parents and community members in order to garner support for EIC-based education.

**Conclusions: From Environmental Education to Education for Sustainability**
In recognition of the exponentially deteriorating environmental situation that may amount to a human-induced “ecocide,” the environmental education curriculum was created as a means to educate people about human impacts on the planetary environment and to transform human relationships with the environment in ways that result in a healthier environment and more

---

\(^{166}\) Louv 130.  
\(^{167}\) Louv 130.  
\(^{168}\) Louv 126.  
\(^{169}\) Louv 130.  
\(^{170}\) Louv 32.
sustainable society. More specifically, classic environmental education was aimed at “producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution.”

In the 35 years since its emergence, classic environmental education has been successful in some ways and unsuccessful in others. While it has become widespread, is widely supported by society, and has increased awareness of environmental problems, environmental education has failed to significantly improve environmental literacy rates, increase environmental stewardship actions or develop in the public the “sufficient knowledge, skills and motivation to understand and implement the kind of solutions needed to address today’s environmental challenges.”

EIC-based learning, including place-based education, is a promising new branch of environmental education that enhances and expands classic environmental education with integrative, communal methodologies and thereby avoids many of its problems and pitfalls. Advocates of EIC-based education recognize that an environmental education pedagogy solely focused on preservation of the natural environment cannot be fully responsible for turning the tide of environmental destruction—after all, beliefs and practices that destroy the environment are also found in the political, economic, racial, social, and spiritual spectrums. To combat the negative messages of these societal engines and to raise citizens who will perpetuate sustainable environmental, communal and global ethics is a broader goal than that which environmental education currently encompasses. Therefore, EIC-based programs use the environment as a focus and framework for learning in a variety of site-specific and individualized ways, all of which are geared towards connecting and rooting schools within their local communities and landscapes. In its many differences from classic environmental education, the EIC approach to environmental education considers more of the issues crucial to education for sustainability.

However, EIC-based learning is not a final solution for providing the comprehensive and holistic environmental education necessary to prepare people for future challenges. While accountability issues involving academic achievement, test scores, ecological literacy, and institutional credibility will hopefully become less problematic as research and study continues.

---

171 Strapp.
172 Volk.
and theoretical scholarship in the field of EIC increases, the scope of EIC falls short of providing comprehensive education for sustainability. In its emphasis on rural ecology, EIC often fails to deal with issues that are more applicable to an urban setting, such as cultural homogenization or unsustainable urbanization.

In order to educate for present and future sustainability, the scope of environmental education programs (including programs like EIC) must be broadened to deal with the complex issues facing communities in all environment—built and natural, urban and suburban, paved and unpaved. Today, educational reformers are considering ways in which this can take place. For example, Gruenewald considers a combination of “critical pedagogy” and “place-based education” in his essay The Best of Both Worlds: A Critical Pedagogy of Place. Gruenewald takes the position that place-based education and critical pedagogy are “mutually supportive educational traditions” that have much to offer each other. Identifying the fact that place-based education emphasizes the rural and ecological realms while critical pedagogy focuses on urban and social contexts, Gruenewald asserts that a combination of the two into what he terms “a critical pedagogy of place” will offer a much-needed educational framework that broadens the scope of both. “Place-based pedagogies,” writes Gruenewald, “are needed so that the education of citizens might have some direct bearing on the well-being of the social and ecological places people actually inhabit. Critical pedagogies are needed to challenge the assumptions, practices, and outcomes taken for granted in dominant culture and in conventional education.” It is creative syntheses such as the one suggested by Gruenewald that are necessary for sustainable education.

In sum, rather than considering EIC-based learning the final solution to the problem of educating for sustainability, educators must combine classic environmental education concepts and goals with EIC and place-based educational concepts and goals while exploring other educational pedagogies that may deal with the problems inherent in each. In fact, searching for solutions only within the field of education is too narrow an information base for educators concerned with sustainable living. David Orr calls for educators to keep Earth in mind when designing educational pedagogies—but the earth is much more than the ground beneath our

---

173 Gruenewald 3.
174 Gruenewald 3.
175 Gruenewald 3.
feet. Rather, it is the whole system of interconnections that we live in. In the same vein, all aspects of culture that consider human relationships with the environment and with each other must be considered by education reformers in order to find successful and promising models for dealing with the impending ecological breakdown or breakthrough scenarios.

IV. Education for Sustainability

This section represents just such a cross-disciplinary approach. First, I consider the case study of the Walden Project high school, the small alternative public program operated by the Willowell Foundation on the Willowell property in Monkton, Vermont, as another educational pedagogy that enriches the broadening definition of what education for sustainability can look like in a particular place. Though similar conceptually to EIC and Place-based educational pedagogies, the Walden Project employs its own unique educational philosophy in dealing with the environmental and social issues important in educating for sustainability, and faces its own unique challenges.

Case Study: The Walden Project High School

Now entering its sixth year of operation, the Walden Project is a state-approved, 9-12th grade alternative high school program.177 There are two faculty members, Matt Schlein and Julia Bunting, and 20-24 students each semester. Affiliated with and accredited by the Vergennes Union High School (VUHS), participation in the Walden Project is offered to all high school students within the three neighboring districts, though space is limited.178 Students are chosen partly in order to create a diverse community of learners, with struggling students with learning disabilities learning alongside “gifted” students who are bored in a normal classroom.179 Students from 9th through 12th grade attend classes together, rather than being segregated into grades as

178 Matt Schlein and Julia Bunting, personal interview, 16 September 2005.
179 Schlein and Bunting.
in the mainstream public school. This, too, is meant to both enhance the diversity of the program and expose students to the concept of peer mentorship and teaching-to-learn.¹⁸⁰

As part of the public school system, student attendance is paid for by taxes and requires no additional fees, allowing students from all income brackets to attend the school.¹⁸¹ Bussing, Matt and Julia’s salaries, and the salaries of consultants (such as yoga teachers and writing instructors) are also paid by the state through VUHS.¹⁸² Though Walden is technically available for students to attend 9th through 12th grade, students often attend regular public school for at least one year of their high school career in order to gain key math and science credits which the Walden Project does not offer.¹⁸³

The Walden Project’s structure and curriculum is based, philosophically, on the writings of Henry David Thoreau, who entered the woods to “live deliberately.”¹⁸⁴ There, he considered his own life and the relationship between himself and society. Time spent in the woods at the Walden Project is, as it was for Thoreau, time for articulating individual beliefs and philosophies. “Creating a sense of one’s place in the world, through education,” writes Walden Project co-leader Matt Schlein, “is a highly individualized affair. To that end, it is important that we offer students a variety of ways to wrestle with the important questions of learning, where there is a natural thematic connection linking the fields of study.”¹⁸⁵

Faculty and students at Walden also seek to “reconcile the notions of self-sufficiency and social responsibility”¹⁸⁶ while spending time in nature. The phrase “out of the classroom and into the woods” represents a large part of the Walden Project philosophy. Most of the students who attend Walden have never spent a whole year outside. Allowing students to experience the outdoors in all four seasons is meant to help build an authentic relationship with the natural world.

Weekly Schedule: Practicing Sustainability

¹⁸⁰ Schlein and Bunting; Schlein “The Walden Project.”
¹⁸¹ Schlein and Bunting.
¹⁸² Schlein and Bunting.
¹⁸³ Schlein and Bunting; Schlein “The Walden Project.”
¹⁸⁵ Schlein, “The Walden Project.”
¹⁸⁶ Schlein, “The Walden Project.”
The weekly schedule of the program brings students to the Willowell land twice to three times a week. On Mondays, Wednesdays and some Fridays, students meet at the Vergennes Union High school at 8:10 am and ride a VUHS school bus to a drop-off spot at the Willowell land. During the fifteen-minute walk from the drop-off point down to the cedar woodland that is the main Walden Project classroom, students integrate slowly into the landscape that they have grown to know very well, noting seasonal changes and experiencing the elements on their way to the shelter of the woodland.

The school day begins with gathering wood for a fire, and having morning conversation in the fire circle or, in case of extreme weather, in the cedar longhouse. Students then gather together for a Thoreau reading from one of their peers, which they discuss together before the day’s classes begin. This discussion is meant to gauge how everyone is feeling and determine what may need to take place as part of the day’s activities. Like testing the water before jumping in, the morning reading brings the minds of the Walden community together to prepare for the day’s work.

Activities are many and varied at Walden. In addition to semi-traditional classes such as contemporary literature, math, psychology and wildlife biology, students participate in activities such as “Newsy Notes,” in which the group discusses current issues in the news in order to connect with local and global issues, explore differing viewpoints, and form individual opinions while learning the skills to articulate those opinions clearly both to their peers and to their elders.\(^{187}\) Though the curriculum at the Walden Project offers courses in the same study areas as the public high school, cross-curricular connection is emphasized and encouraged and multiple methods of approaching the subject mater are utilized. Class period lengths are generally pre-determined, but the day’s schedule is flexible to allow students to explore ideas and projects fully. There are no grades at Walden: students are evaluated using Gardner’s Theory of Multiple Intelligences as a framework.\(^{188}\)

According to Walden Project literature, students are asked to “be active members of their community, both within the alternative program and the community-at-large. This involvement is intended to cultivate positive relationships to their selves, their social milieu, and their physical

\(^{187}\) Schlein and Bunting; Schlein, “The Walden Project.”
\(^{188}\) Schlein, “The Walden Project.”
environment.”\textsuperscript{189} In order to foster Walden students’ connection between the work done at the land at Walden and the larger regional community, Tuesday, Thursday and oftentimes Friday are spent off-site engaged in community projects. Tuesday is “Urban Day” and is spent in nearby Burlington, just 30 minutes from the Willowell land. There, students can take courses at the Community College of Vermont (CCV), which has a partnership with the Walden Project.\textsuperscript{190} Field social work is a part of Tuesday’s curriculum—students may volunteer with local community action organizations, charities or activist groups on this day. Sometimes, the school meets with artisans or takes yoga classes. Tuesday is also a writing day, where students are required to sit down for at least 2 hours and work on a writing assignment. Assignments vary week to week, and are determined with a partnership between students and faculty.

In addition to classes, Walden engages in other communal activities. Monday mornings, the community gathers together for a Sharing Circle, where students can share their poetry, photos, skits, and art with each other. Monday afternoons are devoted to a community meeting: a time for students and faculty to work on the social aspects of the Walden Project and explore what it means to be both an individual and a community member in a successful and sustainable learning community.\textsuperscript{191}

For lunch, students create a stew using foods from the community garden and food contributions from home. This direct connection to the land through food grown on that land carries implicit lessons about local food issues and self-sufficiency, which are a subject of frequent discussion at Walden.\textsuperscript{192}

Thursdays are spent at the Kingsland Bay wilderness area, located on Lake Champlain in the town of Ferrisburg. The day at Kingsland Bay begins with a circle, a moment of silence, or another comparable “gathering of minds.”\textsuperscript{193} In addition to 1-2 hours of mandatory class time and up to an hour of solo wandering and journaling time, students participate in workshops such as wilderness first aid, and play ecology and sensory games. In the afternoon, the community gathers for Sacred Stories, within which students and faculty are encouraged to tell each other personal stories. This time is grounded in the belief that “the more we know and give of

\textsuperscript{189} Schlein, “The Walden Project.”
\textsuperscript{190} Schlein and Bunting.
\textsuperscript{191} Schlein and Bunting.
\textsuperscript{192} Schlein and Bunting.
\textsuperscript{193} Schlein and Bunting.
ourselves, the more we will receive.”

Every other month, the Walden Project takes an ecology-related field trip on Thursdays—a visit to an old-growth forest, for example, or a trip to the Dead Creek wildlife refuge in Vergennes.

Fridays are apprenticeship and community-based learning days. Under the umbrella of “community-based learning,” students have the freedom to study anything and everything—as the Walden Project faculty explain it, to take ownership of their educations and explore the areas where their curiosities and passions lie. Some students work in the community garden or engage in building improvement projects on the property. Other students pursue their passions by apprenticing with individuals, groups and organizations in the surrounding area. During the 2005-2006 school year, one student is working with a beekeeper, another with an herbalist, and a third apprentices at running an art gallery. As in EIC-based programs, learning through community engagement is encouraged and desired.

How do Walden students feel about Walden? The following is a beautiful summation of what the Walden experience can be for young people, written by a recently graduated senior from Walden who is now finishing his freshman year of college:

I entered Walden as a senior in high school. At that point, I had undergone the process of 12 years of "conventional" public education. Through that process, I had come to understand my education as being separate from my life (or at least the life I wanted to live.) school was a stage that I acted on 7 hours a day, 5 days a week. My education was a hassle, and my efforts and input often dependent on meeting standards and deadlines. Walden offered me time and space. I spent one school year in the woods. As a community, we were 20 kids with varied backgrounds, coming together through the course of the year as one living, breathing entity. We breathed in the cedar from the fire as though it might help to keep us warm on the days that bit your cheeks and nose and fingers. We breathed in each other on those days too...understood the beauty of each other as we turned to one another when the questions about ourselves and our surroundings became too large to keep inside of our hearts and heads. We understood what "community" was by denying it, ignoring it, faulting it, throwing snowballs and pinecones at it, yelling at it like animals, hugging it, crying with it, loving it, and living it as an individual, I uncovered a piece of myself I've yet to understand but hope always to hold onto. There may or may not have been one defining moment at Walden when I realized that answers weren't what I was really asking for, when I became more interested in how to question than how to answer, but that moment has been shaded in with all the rest. One deep breath in the woods. One giant exhale the rest of my life.

Schlein and Bunting.
Schlein and Bunting; Schlein, “The Walden Project.”
My most meaningful lesson: the confidence to first question myself.\textsuperscript{196}

For at least one student, time spent in the woods at Walden led to the process of self-questioning championed by Thoreau in his description of his experiences “living deliberately” at Walden Pond.\textsuperscript{197}

**Walden Project Challenges and Potential Obstacles**

*EIC-Related Obstacles*

The Walden Project pedagogy is similar to EIC-based learning in a number of ways: in its emphasis on local land and community living, inquiry-based projects, self-directed and individual study, and service learning projects, for example. In these similarities, it also faces many of the same challenges faced by EIC-based learning programs. The most important of these is a lack of statistical support to establish academic credibility.

*Lack of Credibility and Statistical Support*

One of the major challenges facing the Walden Project is the lack of empirical evidence to support its philosophical claims or document its successes. Most of the information available about the program is purely anecdotal and comes from the recollections of teachers, experiences of individual students and my personal experiences both as a high school student five years ago when I visited the program multiple times, as the Walden Project garden manager in 2003, and during my thesis year working indirectly with Walden and mentoring Walden Project students.

Academic achievement data, including test scores evaluating Walden Project students has not been separated from district-wide data and compiled in one place, let alone compared to scores from the local public schools or national standards.\textsuperscript{198} Records on attendance and retention of students for all four years are also mostly anecdotal. The demographics of Walden students—for example, the percentage of students accepted who are considered “at-risk youth” versus the percentage who are considered “gifted-and-talented”—have not been documented or analyzed.

This lack of credibility and statistical support makes it difficult to compare the Walden Project to

\textsuperscript{196} Brian Raymond, “Re: question about Walden,” e-mail to Emily Watson-Blagden, 10 April 2006.

\textsuperscript{197} Thoreau.

\textsuperscript{198} Matt Schlein, personal interview, 4 November 2005.
other environment-based education programs, as well as to quantify the academic success of Walden individually and in relationship with the mainstream public schools in the area.

**Unique Obstacles**

Walden also faces unique problems, some of which are dealt with effectively in EIC-based programs. The most important of these is lack of community connection.

**Lack of Community Connection**

As in EIC-based programs, the Walden Project emphasizes community connection as one of its essential goals. While students and faculty within the Walden Project form a close-knit community, and foster connections within the regional community through apprenticeships and urban social work projects, the Walden Project is markedly disconnected from the immediate community in the town of Monkton and with the educational community in the district. It is important to note here that Walden leaves the immediate area of the Willowell property once a week and travels almost an hour away to engage in community improvement projects in Burlington, rather than connecting with the local Monkton community’s needs and performing social services there as might be expected of an EIC-based program. The Walden Project could benefit from fostering connections with the local community in community partnership initiatives like those demonstrated in EIC-based programs.

Additionally, the immediate neighbors to the Willowell land who are in contact with Walden Project students at least weekly have little understanding of the purposes of the Walden Project. This has lead to negative impressions of Walden Project students and faculty. In light of this problem, it is interesting that students do not seek out apprenticeships with the nearest neighbors of the Willowell property. This cannot be blamed on a lack of interesting opportunities directly adjacent to the property: in the immediate area surrounding Willowell are town offices, a local library, three major farms, a karate dojo, and a preschool. In order to develop more positive connections with the immediate local community, this type of EIC-based

---

199 Schlein, “The Walden Project.”
200 Schlein and Bunting; Henry Shaw, personal interview, 4 November 2005.
201 Schlein and Bunting. This information also comes from my interactions with the five neighboring families during the summer of 2003 when I worked at the Walden Community Garden.
202 Schlein and Bunting.
203 Schlein and Bunting.
project might be explored. Though it does not have EIC-based community enrichment programs specifically in mind, the Willowell Foundation’s most recent project focuses on this type of exploration.

**Beyond the Walden Project: The Center for Sustainability**

The Willowell Foundation’s most recent project, the “Center for Sustainability” project at the Willowell land, is meant to connect the larger educational and regional community to Willowell and the Walden Project and in so doing improve both the sustainability and educational value of Willowell programs. In many ways, an EIC-based educational pedagogy is more suitable to designing this effort than trying to apply the Walden Project philosophy to traditional public school groups coming to the land for a field trip. The small, specialized and non-traditional nature of the Walden Project, while important in itself, is not designed to cater to the needs of every student in public education as EIC is meant to. Rather, the Walden Project serves a small demographic of students who, in one way or another, don’t fit into mainstream public education. The somewhat radical nature of the Walden Project approach does not work for all learners. Additionally, it can be argued that the teaching methodology used in the Walden Project curriculum is only effective when used with a small group of students.

In creating a framework for sustainable education on the Willowell property, then, using an EIC-based pedagogy is advantageous. But in designing such a framework, the Willowell Foundation can further enrich the developing discourse of education for sustainability by applying other aspects of cultural sustainability. The aspect that I choose to explore and apply here returns us to my own area of expertise: permaculture.

**Designing Education with Permaculture**

My own background as a permaculture designer naturally led me to explore the educational applicability of using permaculture as an integral part of education for sustainability. Just as creating a permaculture land use design for the Willowell property represents a facet of a new sustainable land use paradigm important to the Willowell foundation, using permaculture as a framework for sustainable education pedagogy at Willowell represents a facet of a new

---

204 Schlein and Bunting.
205 Shaw 4 November; Henry Shaw, personal interview, 21 October 2005.
206 Schlein and Bunting; Schlein “The Walden Project.”
sustainable educational paradigm. The permacultural land use plans that I created as part of my thesis work are now being used by three public education districts to design environmental education projects on the Willowell land. But the permaculture principles I used to create the landscape design can also be applied to educational methods used on the Willowell property.

“Permaculture,” says David Holmgren, “has provided a focus for many people motivated to apply the intellect to what have traditionally been regarded as humble and simple activities of necessity in peasant societies. The desire to solve problems, to experiment and to design is one of the defining characteristics of the permaculture gardener.”207 This desire mentioned by Holmgren is also a desired characteristic in young people. Natural settings are full of multi-sensory experiences that are proven to help build ‘the cognitive constructs necessary for sustained intellectual development.’208 For example, in author Edith Cobb’s The Ecology of Imagination in Childhood, the author concluded that early experiences with nature was a direct cause of the imagination and inventiveness of almost all of the many creative people whom she studied.

Incorporating permaculture design into schools and the landscapes around schools, especially student-created permaculture designs, awakens the natural curiosity and creativity of children that is so often deadened in the four-walled classroom. Permaculture also offers increased hands-on educational opportunities that are not generally offered in classic environmental education. These include, but are far from limited to: agriculture, horticulture, aquaculture, land management, human impact on the natural environment, seed saving, food and nutrition, construction, architecture, productive land stewardship, and decolonized land use history.

Contrary to the myth of the “virgin wilderness” used to characterize the American continent before the arrival of Europeans, the Vermont landscape was actually heavily managed by native Abenaki people for the entire scope of their history there.209 It is time that we take responsibility for the fact that humans have been engineering the landscape to meet their needs for as long as they have lived on that landscape.210 Nature is not only the virgin wilderness; it is

207 Holmgren 22.
208 Louv 86.
209 See Appendix G, “Land Use History.”
our farms and gardens around our homes. It is the places where we create our shelters, gather our fuel, and grow our food. We are part of the landscape that we inhabit. To assume otherwise is to refrain from taking responsibility for how we influence the systems that we live in.

Permaculture creates a cultivated, human-managed environment that mimics natural systems and broadens our definition of nature and the human place in it. Blending the lines between managed and unmanaged environments allows nature to switch from an exotic “other” to an intimate “self,” from “out there” to “in here.” Teaching young people about how to meet their basic human needs in a way that models itself upon natural systems helps them to realize that they belong in the wild world just as much as in the created world.

Permaculture is also a very valuable tool for environmental educators interested in education for sustainability because it is so directly applicable to the standardized curricular requirements of today’s educational system. Permaculture design principles can be plugged into the standards of almost any class or unit with ease. Because it can be easily formatted to fit educational curricula and standards, permaculture is an excellent tool for educators who want to get their students out of the classroom and into the forest/farm/field/real environment.

**Educational Design Principles**

In addition to guiding the creation of sustainable human environments, the principles of permaculture design are equally applicable in designing educational pedagogy. Combining the philosophies of the Walden Project and EIC with permaculture design principles gives the Willowell Foundation and the educators involved in creating the Center for Sustainability on the Willowell property a vastly improved toolbox over that offered by classic environmental education. To add to this theoretical understanding, a more in-depth exploration of how specific permaculture principles can be used to design education at Willowell is warranted.

I undertake this exploration by focusing on the five permaculture principles briefly explained in the introduction to this paper: *Use and Value Renewable Resources and Services, Catch and Store Energy, Observe and Interact, Integrate Rather than Segregate, and Use and Value Diversity*. Though Holmgren outlines twelve distinct permaculture principles in *Permaculture: Principles and Pathways Beyond Sustainability*, I consider these five alone.

because they are to me the most interesting and applicable principles for framing education at Willowell.

I begin an exploration of each principle with the catch-phrase used by Holmgren to describe it, followed by a quote from Permaculture: Principles and Pathways Beyond Sustainability that best describes the design concept linked to this slogan. I then explain the principle more thoroughly, both in a classic permacultural context and in terms of the principles’ applicability to the goal of creating sustainable education on the Willowell property.

1) Use and Value Renewable Resources and Services

   Permaculture design should aim to make best use of renewable natural resources to manage and maintain yields, even if some use of non-renewable resources is needed in establishing the system.211

In a classic permaculture design sense, this principle encourages us to focus on renewable energy sources such as solar energy, water, wind power, and biomass to provide for our needs. Earlier in this paper, we discussed the many unsustainable lessons and structures that characterize the modern educational system. Some reformers suggest not just a total revisioning of education, but a total removal of the concept of compulsory schooling in favor of a more sustainable and effective method for moving children through culture. However, as this principle teaches us, mainstream education has the infrastructure, funding, and governmental, political and cultural support that such a move would lack. We must make best use of the resources that we have available in order to establish a new system, even if some of these resources are ultimately unsustainable. The establishment of a new educational paradigm can make use of what the old paradigm has to offer, gain support and familiarity, and eventually replace the old paradigm.

   Using the Willowell land as a so-called “center for sustainability” is not ultimately very sustainable. For example, students from area schools must ride the bus a minimum of fifteen minutes to access the land. Bringing large numbers of students some of the fragile ecosystems of the Willowell property would, additionally, be environmentally destructive. Focusing on Willowell as a place to “do” sustainable education perpetuates the belief that nature and wilderness exist somewhere outside of human-inhabited areas. This focus could also serve as a

211 Holmgren 93.
distraction from the educational opportunities available in the immediate communities surrounding each individual public school.

However, the Willowell Foundation is willing, has funding sources and time, and employs trained educational professionals familiar with the environment-based educational opportunities available on the Willowell property. The Center for Sustainability project at Willowell can serve as a jumping-off point for area public schools to visit, learn from, and bring lessons back to implement at their own schools. Willowell can be a resource and example for how sustainable education can occur.

2) Catch and Store Energy

“We need to learn how to save and reinvest most of the wealth that we are currently consuming or wasting so that our children and descendents might have a reasonable life….this principle deals with the capture and long-term storage of energy…. [the] savings and investment to build natural and human capital.”

In traditional permaculture design, buildings and gardens to catch and store energy from the sun, and irrigation ponds upslope trap water that can irrigate downslope plants using gravity. The principle of Catch and Store Energy calls on designers to invest creative energy in building natural and human capital—by conserving and enhancing the ecosystems that people live in, and teaching children to perpetuate sustainable society. In a way, education can also be looked at as a method of catching and storing “energy”—or perhaps more appropriately, knowledge—for future use.

It is important to catch and store knowledge for future use that will be most useful to young people. Educating young people about the places where they live is important to ensuring their long-term survival in those places. In turn, these young people will pass on the information to their children, with the addition of new knowledge of place accrued during their own lifetimes. Ideally, the body of knowledge about our place will grow with each generation, as it did for the indigenous people who inhabited one place for thousands upon thousands of years. Catch and Store Energy reminds us to reverse the trend of knowledge loss through the cultivation of human capital, and in so doing preserve our natural capital as well.

---

212 Holmgren 27.
In keeping with this principle, the Willowell property can be used as a lab for learning about place. The property contains an incredible diversity of ecosystems, including swamps, farmland, several major forest types, and meadows, all widespread in the Champlain Valley where students from the three districts live. The property can act as a center for inquiry into what knowledge is important—a place to catch and store the energy of a new educational paradigm.

3) Observe and Interact

“Good design depends on a free and harmonious relationship to nature and people, in which careful observation and thoughtful interaction provide the design inspiration, repertoire and patterns. It is not something that is generated in isolation, but through continuous and reciprocal interaction with the subject.”

Protracted and thoughtful observation is one of the most important qualities necessary for an informed and effective permaculture design, and requires the gathering of feedback from the environment in order to determine success or failure. I spent five months of my own permaculture design process practicing this principle at the Willowell property. Periods of intense observation onsite were followed by returns to Hampshire College, where I sketched ideas for design possibilities. I then returned to the Willowell land and considered the implications of my design choices. This constant cycle of direct engagement and observation gave me the feedback necessary to create a well-thought-out design. All of the reasons for each of my choices were clear and communicable because so much time had been spent testing and re-testing them.

As described in EIC-based pedagogy and Walden Project philosophy, young people arrive at inspiration through observation of and direct interaction with the natural and human communities in which they live. When they engage directly in their communities as a context for their lessons, children receive the kind of feedback from what they interact with that is not available in a textbook.

Similarly to EIC-based pedagogy, this principle can be used to guide the ways in which school groups interact with the Willowell property and conduct projects there. Instead of studying the life cycle of a plant, for example, students at Willowell could plant corn in the

---

213 Holmgren 13.
214 Sobel Place; Schlein, “The Walden Project.”
community garden and watch it grow. Provided with information about soil amenities and the
nutrient needs of healthy corn plants, they can choose amenities that they believe are most
appropriate for corn and then watch the results of their choice—receive feedback. If what they
choose doesn’t work, they can adjust quantity or variety. Reading about soil amendments in a
textbook does not provide this type of feedback to students and contributes to the disconnection
and boredom that characterizes modern lessons.

4) Integrate Rather than Segregate

In every aspect of nature, from the internal workings of organisms to whole ecosystems, we find the
connections between things are as important as the things themselves. Thus ‘the purpose of a functional and
self-regulating design is to place elements in such a way that each serves the needs and accepts the products
of other elements.’

215

In a landscape design sense, Integrate Rather than Segregate looks at the ways that the needs of
one element of the design can be met by the yields of another. The need for woodchip mulch
around fruit trees, for example, can be met by the coppicing habit of a clump of nearby basket
willow that needs to be cut back each year. In an educational context, this principle encourages
us to consider schools as an integral part of the community rather than separate entities. Students,
schools, communities and the land all have basic needs and yields that can be arranged to suit
each other.

This principle can be applied to the potential relationships between Addison County
public school students, the Addison County community, and the Willowell property. Students in
the local public schools need effective and engaging ways to learn. They need connection to the
land and engagement with their places. They need community mentors and teachers. They yield
manpower, time, creative energy, and youthful exuberance. The Addison County community
needs willing workers, activists, and engaged community members with a variety of skills who
will put time and energy into community improvement. Whether it is a deteriorating park in need
of upkeep, the broken fence along main street or a cultural difference that keeps community
members isolated from one another, every community has problems in need of people to come
up with and implement creative solutions. Addison County yields diverse professionals, job and

215 Holmgren 155.
internship opportunities, and an endless supply of issues requiring research and problem solving skills. The Willowell property needs active stewardship, conservation, care, and the deep knowledge that comes from protracted, long-term observation. It yields multiple environments and outdoor classrooms; food, fuel and medicine; private space, and a million other things that children need.

It is easy to see that intersections that can occur between the yields of one and the needs of another within this equation. A need may absorb multiple yields, or one yield may satisfy many needs. The combinations are endless and should be investigated when designing the Center for Sustainability at the Willowell property.

5) Use and Value Diversity

The proverb ‘don’t put all your eggs in one basket’ embodies the common sense understanding that diversity provides insurance against the vagaries of nature and everyday life.216

In permaculture design, this principle most often deals with creating agricultural diversity: making choices about which crops to plant and animal varieties to breed, the incorporation of different ages and genetic makeup of plants and animals, and re-vegetating disturbed areas. A prime example is the permaculture practice of creating plant polycultures—that is, planting together many crop varieties that are adapted to different conditions. If one crop fails, we’ll still have the other ones. This principle also considers the more broad subjects of preserving human genetic and cultural diversity.

In an educational sense, this principle calls to mind Gardener’s Theory of Multiple Intelligences with the Walden Project instructors use to evaluate their students. It is important to take into account that everyone learns in slightly different ways when evaluating students and designing educational activities. At the Willowell property, using permaculture to provide a variety of different modes for learning the same thing is an effective way to accomplish this: for example, timber-framing, seeding tomatoes, and calculating solar greenhouse gain are all methods of teaching mathematics concepts.

Another example looks at different ways that students can explore the history of the Willowell land. While some students may enjoy heading off to the special collections department

216 Holmgren 202.
at the local library to research primary sources about land use history on the Willowell land, others may enjoy interviewing Monkton’s senior citizens about their memories of land use history there. Still others may enjoy going out into the woods with a forester and learning to read the forested landscape. There is no one right way to learn about the land, and this principle reminds educators to explore all the options in structuring their curricula at Willowell.

**Conclusions: Caterpillars and Butterflies**

A final permaculture principle, *Creatively Use and Respond to Change*, connects the many threads in this thesis project together. While it is most commonly used by permaculture practitioners to accelerate ecological succession in cultivated systems, *Creatively Use and Respond to Change* can also be applied to our understanding of how to encourage institutional, and therefore environmental, changes.\(^\text{217}\) It suggests “designing to make use of change in a deliberate and cooperative way,” and “creatively responding or adapting to large-scale system change that is beyond our control or influence.”

My thesis project is one small part of a creative response or adaptation to large-scale change that is beyond the control or influence of just one person. Designing the Willowell land parcel as an educational preserve and exploring the ways in which permaculture-grounded, place-based education can occur on that land parcel in a sustainable way represents a positivist response to the deteriorating health of the local and global environment and the institutions that grow out of it, as well as investigating integrative and comprehensive methods for teaching children how to care for that environment and perpetuate sustainability within society.

In addition to creating a permaculture landscape design and exploring the theoretical discourse that seeks to define education for sustainability, I have spent the last year directly engaged in this type of education. My thesis has been sustainable education *for me*, rather than a mere theoretical exploration of the effectiveness of environmental education. During the last eight months, I have gotten to know one place very, very well. I have learned about architecture, land use planning, reading and creating maps, interpreting the forested landscape, conducting successful interviews and collecting oral histories. I have worked with students, educators, nonprofit board members, town officials, architects, permaculture and landscape designers,

\(^\text{217}\) Holmgren 248.
farmers, and a variety of other community members during this process, and in so doing learned an infinite amount about the place where I grew up and intend to return after completing my undergraduate degree at Hampshire.

My thesis work has also been sustainable in that it has allowed me to create a multi-dimensional career in my dual fields of interest and gain experience in that career. In addition to being hired again to manage the Willowell Community Garden during the 2006 season, Willowell has offered me an Americorps-funded position to coordinate the future collaboration between area public schools and the Willowell Foundation in the Center for Sustainability project. I have been able to build my portfolio as an ecological landscape designer and laid the groundwork for a career as an alternative educator through my experiences working with the Walden Project and the Vergennes High School. I also hope to become a member of the board of directors of the Willowell Foundation in order to have more power in the decision-making process related to land use and education at Willowell. I have been able to do all this while completing my undergraduate degree. Now that’s education for sustainability!

Holmgren identifies a symbol for *Creatively Use and Respond to Change*: the butterfly, “which in the transformation of a caterpillar, conveys the idea of adaptive change that is uplifting rather than threatening.” The permaculture-influenced sustainable education ethic that I have explored in this paper is a positive, uplifting response to the environmental crisis facing our world today and the flawed classic environmental education system that has failed to avert it. My thesis experience working with Willowell has also been a positive, uplifting response to these issues, and marks the beginning of my work in a new cross-disciplinary field. In this way, letting my newly sprouted butterfly wings carry me out of the chrysalis of my college education feels like coming home.