The History and Philosophy of Environmental Education

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Stewart Udall, President John F. Kennedy's Secretary of the Interior, identifies a pair of events and the questions they evoked as the impetus for his landmark book of 1963 – *The Quiet Crisis*.

> One week last fall two events came to my attention which seemed to sum up the plight of modern man: the first was a press report which indicated that T.S. Eliot, the poet, was a victim of London's latest "killer fog" and lay gravely ill; the second was a call from a preservation-minded citizen of New Hampshire who informed me that Robert Frost's old farm—fixed for all time in memory by the poem "West-running Brook"—was now an auto junk yard.
>
> The coincidence of these two events raised questions in my mind: Is a society a success if it creates conditions that impair its finest minds and make a wasteland of its finest landscapes? What does material abundance avail if we create an environment in which man's highest and most specifically human attributes cannot be fulfilled?
>
> (Udall 1963, p. vii)

Those questions, and many others, are still being asked today and it is through the discipline of environmental education that we can provide answers and map the way to solutions. What follows is an exploration of the beginnings, the present, and the future of environmental education, its philosophical underpinnings, and its relationship to science teacher education.

A Brief History Lesson

Ask one scholar when the term *environmental education* (EE) first came into use and you will get one answer. Ask another and you will most likely get a different response. Over the years that EE has been a part of the educational vernacular

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there has been disagreement about the first use of the term. It is not the intent of the authors to settle the matter of when the name was first used but to shed some light on its development and its characteristics – the unique ones as well as those shared with other disciplines and fields, and to examine what EE means to teachers of science. For those interested in the etymology of the term, John Disinger's (1985) well-detailed treatment of that topic and EE's antecedents is highly recommended.

This chapter focuses on the history and development of EE in the USA. That story did not occur in isolation, however, so a context of world events is supplied as needed. The presentation here is primarily chronological, but in order to present as complete a picture as possible some temporal, as well as geographic, leapfrogging is occasionally necessary. EE has a rich and varied past, with its underlying philosophy informed by a range of source disciplines – a situation that often has given rise to confusion regarding EE's identity and application. In the following pages, we offer some context and sequence for that variety with the hope that it provides readers with a clearer picture of the rich background and educational power of EE.

Authors, Awakenings, and Achievements

From Emerson's *Nature* (1836), to Thoreau's *Walden* (1854), to George Perkins Marsh's *Man and Nature* (1864) one can trace the developing concerns regarding human interaction with nature expressed by the political and social commentators of a young and, in the view of many people, a still seemingly limitless USA. The dialog continued in the writing and public speaking of renowned naturalists and writers of the late nineteenth and early twentieth centuries such as John Muir (1838–1914), Enos Mills (1870–1922), Robert Marshall (1901–1939), and Aldo Leopold (1887–1948). But much of what was being written, discussed, and actually accomplished primarily took the forms of resource conservation and habitat preservation rather than the environmental quality, environmental awareness, and environmental literacy that are the central concerns of today (Gottlieb 1995; Stegner 1990).

A new focus on the state of the environment can be traced to the years immediately after the close of World War II although this attention did not coalesce into the modern environmental movement until the 1960s (Kline 2007). The postwar years saw a proliferation of efforts to reach international accords for the protection of the environment. The *Conference for the Establishment of the International Union for the Protection of Nature* (IUCN) convened at the Fontainebleau, Paris, France in October of 1948 and made its top priority the protection of nature and habitats. Subsequent conferences were scheduled as well in order to insure continued progress (UNESCO 1948). A flurry of related activities during this period set the stage for a burst of effort that would begin developing in earnest in the 1960s and spill into the 1970s with unprecedented energy.

Although the concept of EE as practiced today may arguably be traced back to at least 1948 and the IUCN Conference (Disinger 1985), it is certain that 1972 was a major turning point in EE internationally. The participants in the first *United Nations Conference on the Human Environment* in Stockholm, Sweden produced a declaration containing 26 principles. Principle 19 of the Stockholm Declaration specifically calls for "education in environmental matters, for the younger generation as well as adults" (UNEP 1972). Environmental quality was finally gaining some attention from the world at large, but in the USA a groundswell of awareness, concern, and effort was already well underway.

Authors

In June of 1948, just months before the first IUCN conference, Aldo Leopold, a pioneer in the modern conservation movement suffered an untimely death fighting a fire on a neighbor's farm (Meine 1988). His seminal work on the relationship between people and the environment would be published posthumously in 1949. *A Sand County Almanac* (Leopold 1949) became, and remains, the cornerstone of the American environmental movement and of modern environmental thinking and writing. It helped set the stage for later works that would move the country further toward the environmental awakenings of the 1960s and 1970s.

Leopold challenged the pursuit of affluence for its own sake. The wisdom of the pursuit of affluence at the cost of the environment began to be questioned in earnest in the 1950s. The success of John Kenneth Galbraith's *The Affluent Society*, published in 1958, was punctuated by the choking smog in California cities, and in his 1960 book, *The Waste Makers*, Vance Packard raised the alarm against pollution and sprawl (Rome 2003). But it took the works of a quiet, eloquent scientist, and an environmentally literate bureaucrat to really shake things up.

Two landmark books brought deepening environmental problems to the attention of the American public during the early 1960s. The 1962 publication of Rachel Carson's *Silent Spring* awakened readers to a situation that threatened the very fabric of the environment. Carson documented and reported that the arsenal of chemicals manufactured, and used with abandon, to "control" insect populations and weeds was having a deleterious effect far beyond the "pest control" for which it was intended. Hailed as a master work by the conservation movement and environmental groups both the book and its author were vilified by the chemical industry (Lytle 2007). But the alarm had been sounded and the American public began to become more acutely aware of a deteriorating environment as well as some of the underlying causes of that deterioration.

While the furor over *Silent Spring* continued, another book piled even more fuel on the fires of environmental controversy and awareness. Late in 1961, at the urging of author Wallace Stegner, Steward Udall, President John F. Kennedy's Secretary of the Interior began work on his own book (Finch 2008). *The Quiet Crisis* was published in November of 1963 and it provided the reading public with a view of the

American environmental legacy, both what had been lost, and what could yet be lost, due to a broad range of existing and imminent environmental threats. *Silent Spring* and *The Quiet Crisis* ushered in a decade of unprecedented environmental legislation and action from grassroots organizations to the Congress and the White House.

Awakenings

The Civil Rights Movement and the Vietnam War protests of the 1960s overshadowed most other events of that decade (Hall 2005; Reed 1986). But the protest culture of the 1960s was fertile ground for the growing concerns about environmental quality (Rome 2003). Much of that concern was reflected in a marked increase in environmentally focused legislation being passed and signed into law at a rate, and in a volume, that would only be exceeded during the 1970s. The Wilderness Act of 1964, the Species Conservation Act of 1966, and the Wild and Scenic River Act of 1968 signaled a concern for our relationship to the environment and what humans might be doing to it. The Solid Waste Disposal Act (1965) and the Clean Air Act of 1965 reflected national concerns over what postwar affluence was pumping into the environment in the form of waste and emissions. The momentum that was built through the literature and legislation of the 1960s culminated in three separate events that establish 1970 as a landmark year in things environmental.

On January 1, 1970 another new law came into effect. The National Environmental Policy Act of 1969 (NEPA) remains the environmental law of the USA today. The environmental concerns of the day were clearly reflected in NEPA's statement of purpose, which reads in part, "to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation" (42 U.S.C. § 4321). But it is not due to NEPA alone that 1970 is considered the benchmark year for environmental concern and efforts. That was the result of a much more publicly visible and far reaching event.

The protest movements for civil rights, against the Vietnam War, and for environmental quality spawned a flurry of populist actions during the 1960s and 1970s, many of which took the form of a generally passive activity known as the *sit-in*, in which large numbers of protesters would gather in a particular area with the intent of hampering normal operations simply by getting in the way. These sorts of actions became a popular tool of a range of activists and were all characterized by a large number of people gathering together for a specific purpose – usually a protest, but not always. According to Ling (2000), sit-ins began at segregated lunch counters during the civil rights movement but later variations included kneel-ins at churches, wade-ins at public pools, and stand-ins at ticket counters. Sit-ins became a popular form of protest on college campuses. One variation of the sit-in with a decidedly educational focus born out of antiwar protests was the *teach-in* (Hall 2005).

Gaylord Nelson, at the time a US Senator from Wisconsin, had for some time envisioned an environmental teach-in that would raise public awareness on critical

environmental issues (Christofferson 2004). Denis Hays, a Harvard law student collaborated with Nelson in enlisting the aid of campus activists from across the country for an environmental teach-in that became known as Earth Day and on April 22, 1970 it involved an estimated 20 million people with participation by nearly 1,500 college campuses (Rome 2003).

NEPA and Earth Day were not the only landmark developments of 1970. A study conducted by the National Science Teachers Association (NSTA) in 1970 painted the picture of an educational landscape in desperate need of program and curriculum development. Among the schools and districts of the 50 states there existed only 54 programs with any EE element (National Science Teachers Association 1970). In an August 1970 address to Congress President Nixon stated:

> It is also vital that our entire society develop a new understanding and a new awareness of man's relation to his environment—what might be called "environmental literacy." This will require the development and teaching of environmental concepts at every point in the education process.
>
> (Nixon 1970, p. vii)

Nixon's comment and the NSTA study indicated that there was a gaping hole yet to be filled. Part of that need would be filled by legislation just over the horizon.

In October 1970, the Environmental Education Act became law. Provisions of the new law included the establishment of an Office of Environmental Education within the US Office of Education in the former Department of Health, Education, and Welfare and funding for states to implement EE within their K-12 systems through several means. A marked shortcoming of the act, however, was that it had a life span of only 5 years. Another shortcoming was the limited funding that accompanied its short life. Nonetheless, EE had finally made its way into federal law and was a part of the federal government's infrastructure.

Achievements

The decade of the 1970s is epitomized by prolific growth for EE. This was an era of exuberant capacity building for the field. The momentum of the legislation and activism of the 1960s continued to build on both the national and international levels. In 1971, a group of educators concerned about the development of EE materials formed the National Association for Environmental Education, which later was renamed the North American Association for Environmental Education (Disinger 2001). By this time the Journal of Environmental Education was already in print, having had its first issue published in the fall of 1969. In that inaugural issue William Stapp of the University of Michigan enumerated the societal necessity for EE and identified objectives of the nascent field (Stapp, et al. 1969). According to Hammerman (1979), before the end of the new decade there were EE coordinators within the school systems of all 50 states. Meanwhile, publishing houses around the country were rapidly producing EE materials (Minton 1980).

Although the federally funded programs initiated through the Environmental Education Act were limited in duration, nongovernmental organizations (NGOs) maintained a healthy pace of development and dissemination. The Western Regional Environmental Education Council (WREEC), later to become the Council on Environmental Education (CEE), was formed and subsequently spearheaded the development of a number of EE curriculum materials, beginning with the widely acclaimed and internationally recognized Project Learning Tree (Carter 2006).

A number of conferences were held throughout the decade, each addressing different aspects of the concern for and the development of EE. The topics of these conferences ranged from elementary and secondary education to higher education and addressed emerging issues in the field, culminating in the National Leadership Conference in Environmental Education in Washington, D.C. in 1978 (Stapp 1978). In the latter half of the decade, NGO support continued to blossom and expand as federal government support waned.

The Rest of the World Catches Up

The 1972 Stockholm conference may have set the stage for greater awareness of the need to advance EE internationally but two subsequent conferences still stand today as the seminal events for EE on the world stage. The International Workshop on Environmental Education, held in Belgrade, Yugoslavia in October of 1975 resulted in what became known as *The Belgrade Charter*. The Belgrade Charter built on the framework of Stockholm and described the goals, objectives, audiences, and guiding principles of EE and proposed what has become the most widely accepted definition of EE:

> Environmental education is a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, attitudes, motivations, commitments, and skills to work individually and collectively toward solutions of current problems and the prevention of new ones.
>
> (UNESCO-UNEP 1976, p. 2)

But the definitive codification of EE as an international enterprise ultimately came out of the world's first Intergovernmental Conference on Environmental Education held in Tbilisi, Georgia, USSR in October of 1977. The document now known as *The Tbilisi Declaration* was formulated during this conference and in many quarters remains the definitive statement on what EE is and ought to be. These goals provide the foundation for much of what has been done in the field since 1978:

(a) to foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas;
(b) to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;

(c) to create new patterns of behaviour of individuals, groups and society as a whole towards the environment (UNESCO 1978, p. 26)

But while EE was gaining momentum internationally, the same could not be said of EE back here in the USA.

Rollercoaster Ride to the Twenty-First Century

The 1980s were not as kind to EE as the previous decade had been, at least within the US government. Under President Ronald Reagan, the federal purse strings known as the Omnibus Budget Reconciliation Act (OBRA) of 1981 eliminated nearly everything that had been established by the Nixon-era Environmental Education Act.

Another aspect of Reagan era politics was not only Reagan's apparent indifference to environmental quality and literacy, but the development of a decidedly anti-environmental movement dubbed variously as *brown-lash*, the *sagebrush rebellion*, or the *wise use* movement (Kline 2007). No matter the label, it amounted to a burgeoning effort by many of the consumptive, extractive, and pollution-producing businesses and industries to roll back environmental advances of the previous 20 years. Reagan, along with the pro-development appointees in his Cabinet managed to achieve many such rollbacks. Although, eventually, Congress began to balk at many of the changes the Reagan White House attempted (Kraft 2000). The advances of the environmentally heady decades of the 1960s and 1970s were now quickly receding into the past.

The years of the Reagan administration may be viewed as the beginning of a long downturn for EE but the election of George H.W. Bush to the presidency in 1988 marked the beginning of a politically turbulent era with regard to both the environment and education. Although a new National Environmental Education Act was signed into law by President Bush in 1990, the 4 years of the Bush administration and the succeeding 8 years of the Clinton administration saw gradual but substantial change in the federal government as the White House re-embraced environmental concerns while an increasingly conservative-dominated Congress went the other way (Warren 2003).

During this period EE itself came under fire. Described variously as incomplete at best or biased at worst, EE came under heavy attack from conservative think tanks that invariably had agendas as one-sided as those they ascribed to practitioners and proponents of EE (Holsman 2001). At the same time a new focus was being placed on the quality of EE materials and instruction.

By this time the academic standards movement driven by the 1983 publication of *A Nation at Risk* was well-developed (Resnick and Resnick 1983). An outgrowth of the standards movement was an initiative by the North American Association for Environmental Education (NAAEE) to develop standards for EE (Simmons 1995). As the idea grew and matured, it became the *National Project for Excellence in*

Environmental Education and today provides guidelines for the development and assessment of EE materials as well as benchmarks for practitioner and student knowledge on environmental topics (NAAEE 2004a, b, c). It could be inferred that the twentieth century drew to a close with little net gain for EE but a strong infrastructure had been established.

The first decade of the twenty-first century did not start off any better for EE than the previous century had ended with regard to support within the US government. The 2001 reauthorization of the Elementary and Secondary Education Act, commonly known as The No Child Left Behind Act, ignored EE while repeated attempts to reinstate the National Environmental Education Act languished and died in committee. But as all educators and scientists know, many things occur in cycles, and EE, as both a useful teaching tool and an engine of environmental literacy, is no exception.

The capacity building, curriculum development, and dialog that had taken place since the environmental flurry of the 1960s resulted in a rich knowledge base for EE grounded in both research and practice. Education in and about the environment remained a topic in educational circles regardless of governmental lethargy. Educators, authors, and researchers continued to promote, demonstrate, and document the benefits of involving children in the environment as a learning context. Most telling was the resurgence of interest in, and mounting evidence for, the benefits of interaction with the natural environment and developing problems due to the reduction or complete loss of that contact and the environmental price to be paid.

Rivkin (2000) commented on the essential need for especially young children to interact with and experience the environment through outdoor play spaces, and Chawla (2003) examined the relationship of environmental awareness to children's manipulation of the natural environment. Two researchers at the University of Illinois documented the positive effects of green play spaces on the symptoms of attention-deficit disorder (ADD) and attention-deficit/hyperactivity disorder (ADHD) in children noting that there was a "green advantage" in natural versus built play environments (Kuo and Taylor 2004).

The capstone of this era of research and publishing on the environment and environmental concerns came in 2005 with the publication of Richard Louv's *Last Child in the Woods: Saving Our Children From Nature-Deficit Disorder*. Louv's manifesto on the causes and consequences of a number of modern society's ills reawakened an interest in the outdoors, the environment, and EE, returning them to center stage. A national *No Child Left Inside* movement sprang up, spearheaded by the Chesapeake Bay Foundation, a not-for-profit organization dedicated to the cleanup and protection of the Chesapeake Bay. The upwelling of new support for education in and about the environment even reached the chambers of Congress and as of this writing, the US House of Representatives had passed, and sent on to the US Senate, the reauthorization of the National Environmental Education Act, alternatively named in this version as The No Child Left Inside Act (H.R. 3036 2008).

What's in a Name?

With such a broad base in time, geography, and intellectual underpinnings it is not surprising that EE has, for many, been difficult to define or even conceptualize. Nonetheless, EE is a discrete discipline with identifiable roots and unique characteristics. EE as practiced today taps into knowledge generated by a wide range of source disciplines and EE practitioners transmit that knowledge through sound pedagogical principles (Archie 2003). A closer examination of the pedigree and practice of EE can shed some light on why defining or conceptualizing it seems to be such an intractable situation.

Predecessor Disciplines

Disinger (1985) identifies three antecedents to EE: nature study, conservation education, and outdoor education. Nature study gained prominence in the USA during the late eighteenth and early nineteenth centuries. The writing and public speaking of John Muir and Enos Mills popularized wild nature as a source of recreation, replenishment, and solace throughout the early 1900s (Nash 1989; Drummond 1995). The Cornell University biologist, Liberty Hyde Bailey perpetuated that growth well into the first half of the twentieth century (Hammerman et al. 2001). His student and protégé, Anna Botsford Comstock became the first female faculty member at Cornell University and her 1911 publication, *Handbook of Nature Study* remains a valuable teaching resource (Chase 1985). Conservation education extended the ideas of enjoyment, relaxation, and health embodied in nature study while emphasizing the need to conserve natural resources so that both nonconsumptive and extractive pursuits could be maintained in perpetuity. Conservation, as proposed by Aldo Leopold, espoused sensible resource consumption balanced with maintaining habitat quality, even to the point of leaving some wilderness intact for its own sake (Lorbiecke 1996).

As conservation education began to grow and develop, the Dust Bowl stamped an indelible exclamation point on the need for just such a discipline. The problems predicted by Leopold and Marsh came to pass in a swift and highly visible manner. On April 14, 1935, in Washington, D.C., Hugh Bennett, director of the US Soil Erosion Service spoke to Congress about the need to end destructive farming and ranching practices. As if on cue, the chamber was blackened by a cloud of soil that had blown in from the Great Plains states, a distance of 2,000 miles. Bennett's point had been made more powerfully than any words could express. Less than 2 weeks after that episode Congress passed the bill creating the Soil Conservation Service (Lookingbill 2001). Conservation, and the education for its need, had finally become a cause célèbre in the USA. Conservation education steadily gained momentum throughout the middle of the twentieth century and remains a robust part of the educational mosaic today (Swan 1975; Roth 2008).

Whereas nature study and conservation education are generally considered to be content areas, outdoor education is more often viewed as a teaching method that draws from both nature study and conservation education (Disinger 1985). Outdoor education's underlying philosophy can be traced back to John Amos Comenius (1592–1670) and his emphasis on sensory learning (Hammerman 1980). In the years immediately following World War II, outdoor education combined elements of nature study and conservation education with what at the time was known as *school camping*. The links between school camping and outdoor education were further developed throughout the postwar years as outdoor education became a more common aspect of the regular school experience (Sharp and Partridge 1947).

Outdoor education, conservation education, and nature study, remain active fields of endeavor that continue to contribute to the knowledge base of EE while benefiting from EE's own products and practitioners. The links between these varied fields of practice are both permanent and mutually beneficial.

Contributing Disciplines

EE taps into a broad range of source disciplines for its content. Science, mathematics, language arts, social science, politics, and philosophy make up just a part of the mix. It also draws from a broad base for its pedagogy. As previously noted, its historical roots can be found in nature study, conservation education, and outdoor education, but, at its best, EE also draws from a deep well of pedagogical best practice (Archie 2003).

A major contributor to the EE knowledge base is environmental science. But in recent years educators have often had difficulty distinguishing environmental science from EE. In daily practice they often blend almost seamlessly, while theoretically and conceptually they remain very different. Part of the issue is the variability found in definitions of these terms. A major contributing factor may be the broad topical net cast by educational materials produced for, and used in, environmental science courses. As a case in point, in the preface to their most recent text, Raven, Berg, and Hassenzahl state: "[It] integrates important information from many different fields, such as biology, geography, chemistry, geology, physics, economics, sociology, natural resources management, law, and politics." They go on to state: "[B]ecause environmental science is an interdisciplinary field, this book is appropriate for use in environmental science courses offered in a variety of departments, including (but not limited to) biology, geology, geography, and agriculture" (2008, p. vii). While the authors are not claiming that their multidisciplinary text on the environment is, itself, environmental science, a net cast so widely can certainly contribute to confusion. Nonetheless, the essential characteristics of EE and environmental science are fairly straightforward and distinct.

Environmental science is the engine of data collection and knowledge creation, while EE is the vehicle for dissemination and application of that knowledge with environmental literacy as the ultimate goal. In a position paper on EE adopted by

the National Science Teachers Association, that organization's Board of Directors recognizes and emphasizes the nature of EE, noting that "environmental education [is] a way to instill environmental literacy in our nation's pre-K-16 students" (National Science Teachers Association 2003, p. 1).

There can be no argument that EE and environmental science are very closely intertwined and interdependent, but to say that they are one and the same is to say that science and education are the same.

The Focus on Environmental Literacy

At the heart of environmental education is developing an environmentally literate citizenry, and environmental literacy requires knowledge and skills that both build upon and go beyond the environmental sciences. Although there are many different definitions and descriptions of environmental literacy, the National Project for Excellence in Environmental Education has identified four key elements of environmental literacy (NAAEE 2004b). First, environmental literacy depends on a willingness and ability to ask questions about the surrounding world, speculate and hypothesize, seek and evaluate information, and develop answers to questions. Second, environmental literacy is contingent upon understanding environmental processes and systems, including human systems. Third, the environmentally literate citizen is able to identify, investigate, and formulate potential solutions to environmental issues. Finally, students are motivated, and understand that what they do as individuals and in groups makes a difference in their world.

Since environmental education begins close to home, it encourages learners to understand and forge connections with the environment in their own neighborhoods and communities. It is through these connections that students gain the knowledge and skills that help them make sound decisions. Recent variations on this theme are *environment-based education* and *place-based education* (Broda 2007). Ultimately, the goal of environmental education is a democratic society in which environmentally literate citizens participate actively. The challenge, of course, is to develop an education program that fosters environmental literacy. Environmental literacy depends on skills and knowledge drawn from the sciences, social sciences, and humanities. This vision of environmental literacy is also reflected in the newly adopted National Council for the Accreditation of Teacher Education (NCATE) Standards for the Initial Preparation of Environmental Educators, wherein teachers of environmental education are expected to be environmentally literate themselves (NAAEE 2007).

Environmental Education in the Post-NCLB Classroom

A commentary by Alston Chase in the November 1988 issue of Outside Magazine focused on the roots of a problem still being addressed today. In a brief but eloquent

and readable article he proposed that many of our continuing, and developing, environmental problems were either caused by or exacerbated by, what he termed, "academic tunnel vision," the means by which practitioners in a multitude of disciplines and higher education advance through increasingly narrowly focused specialization entirely within their one, specific field. Chase noted that despite that dominant paradigm, true advances and breakthroughs often occurred on the cusps between disciplines where influences and knowledge from other fields provided a richer environment for innovation and development (Chase 1988). In essence, knowledge may be acquired through narrowly defined study, but applying that knowledge well often requires a more holistic approach.

EE, as envisioned and practiced today, is the embodiment of that holistic approach. As a content area it is a gathering place, a collecting jar, of knowledge and data, derived from a range of source disciplines in the sciences, the humanities, and the arts. As a teaching method it emphasizes the best of what current pedagogical knowledge has to offer and guides the pursuit of hands-on, minds-on learning toward the development of an environmentally literate citizenry. Simply stated, "[e]nvironmental education is good education." (NAAEE 2004a, p. 1)

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