TOWARDS EXCELLENCE IN ENVIRONMENTAL EDUCATION A VIEW FROM THE UNITED STATES

B. SIMMONS
Department of Teacher Education, Northern Illinois University, DeKalb, IL 60115, U.S.A

Abstract. Within the United States, a nationwide debate has been raging over how to best provide quality education for all learners. Much of this debate, spurred by poor test scores and other measures of achievement, has centered on the development of national, state and local standards and assessments for the core disciplines (e.g., mathematics, science, geography). For the most part, environmental education has been left out of this debate and out of the various standards development initiatives. Whether one agrees philosophically with academic standards or not, these standards are determining what is being taught in the classroom. By 1993, environmental education in the United States found itself in a conundrum. It has always been argued that environmental education should be interdisciplinary, infused throughout the curriculum. However, with the new standards, environmental education was in real danger of becoming marginalized. To address this situation, the North American Association for Environmental Education (NAAEE) initiated the National Project for Excellence in Environmental Education.

Keywords: environmental education, environmental standards

1. Introduction

In any discussion of environmental education in the United States it must be understood that it is a grassroots movement, characterized by literally thousands of educators working in schools, colleges, nature centers, zoos, museums, government agencies, and non-governmental organizations. It must also be remembered that education in the United States is decentralized. There is no national curriculum; there are no national exams. Each state determines how schools will function. Some states have a state-mandated curriculum and statewide adoption of textbooks. Others allow each school district to determine its own curriculum and select its own teaching materials. Consequently, when the education system in the United States is discussed, let alone environmental education in the United States, that discussion must be framed in terms of general trends.

Although the field has struggled with defining environmental education in a meaningful way, the most commonly accepted working definitions continue to draw heavily from the Belgrade Charter (UNESCO, 1976) and the Tbilisi Declaration (UNESCO, 1978). As the field has evolved, the principles promoted in these two documents have been researched, critiqued, revisited, and expanded. They still stand as a strong foundation for a shared view of the core concepts and skills that environmentally literate citizens need.

Water, Air, and Soil Pollution **123:** 517–524, 2000.

Although at times it may seem difficult for everyone to agree upon the exact wording of a definition, the practice of environmental education in the United States is characterized by some essential elements (Disinger and Monroe, 1994):

- Environmental education is based in knowledge about ecological and social systems. It draws on and integrates knowledge from disciplines that span the natural sciences, social sciences, and humanities.
- Environmental education considers humans and their creations to be a part of the environment. Along with biological and physical phenomena, EE considers social, economic, political, technological, cultural, historical, moral, and aesthetic aspects of environmental issues.
- Environmental education emphasizes the critical thinking and problem-solving skills needed for informed personal decisions and public action.
- Environmental education emphasizes the role of attitudes, values, and commitments in shaping environmental issues. It acknowledges that environmental issues are not strictly scientific in nature. Recognizing the feelings, values, attitudes, and perceptions at the heart of environmental issues is an essential step in understanding them, and a precursor to accepting responsibility for exploring, analyzing, and resolving them.

The purpose of this paper is to discuss the relationship between environmental education and education reform in the United States and to describe the efforts of the National Project for Excellence in Environmental Education to develop *Excellence in Environmental Education – Guidelines for Learning (K-12)* (North American Association for Environmental Education,1999).

2. Environmental Education and Education Reform

Standards, accountability, assessment, transdisciplinary learning, and systemic change each describe one of the many themes of the current education reform movement in the United States. Although the development of academic standards at both the national and state levels is only one of the pieces of education reform, it has garnered much public attention and scrutiny.

The calls for standards setting were first heralded with the publication, in 1983, of *A Nation at Risk.* It became common to call into question the very structure of American education. In at least partial response to the concerns raised in *A Nation at Risk*, each of the core curriculum areas (i.e., science, geography, mathematics, English-language Arts, history, civics) developed a set of voluntary national standards. These standards, many of which have been adapted or adopted at the state level, delineate the knowledge and skill bases of their respective fields. They are designed to define what students should know and be able to do in order to be considered geographically literate, scientifically

literate, mathematically literate, etc. by the time they graduate from secondary school.

Although obviously written to address the needs of specific discipline based areas, these standards do, to one degree or another, address environmental education interests. Taken singly, the standards of any one discipline allow for environmental learnings. For example, ecological knowledge such as the components of Earth's physical systems: the atmosphere, lithosphere, hydrosphere, and biosphere; how Earth-sun relations affect conditions on Earth; and the physical characteristics of places (e.g., landforms, bodies of water, soil, vegetation, and weather and climate) are included within *Geography for Life: National Geography Standards* (1994). Similarly, understandings of measurement, patterns and relationships, and statistics and probability, all elements of *Curriculum Evaluation Standards for School Mathematics* (1989), are also important to environmental literacy.

Conversely, environmental education programs can be used to meet discipline-based standards. Because environmental education is by its very nature interdisciplinary, it can help students meet the high standards set by the traditional school disciplines (e.g., science, civics, geography, history). Additionally, integrated throughout the curriculum, environmental education has the potential of furthering the general education reform agenda. Conley (1993) argues that education reform must address the past failure to teach process skills which "led to the inevitable fragmentation of knowledge into 'infobits,' and to graduates who appeared unable to apply much of what they had learned to real-world situations." Environmental education with its focus on developing a well-informed, responsible citizenry "has the potential as an exemplary vehicle for what many believe all of education should consider its primary function: furthering the development of higher-order skills – critical thinking, creative thinking, integrative thinking, problem-solving" (Disinger, 1993).

Although environmental education can effectively and efficiently facilitate the learning of specific concepts and process skills, it also provides an often missed opportunity for synthesis of materials that crosses disciplinary boundaries, connecting learnings to create a whole. The explicit focus of environmental education on the integration of knowledge and skills is one of the primary distinguishing factors between it and a traditional view of curricular disciplines. Because environmental education is, by its very nature, interdisciplinary, the synthesis of learnings across subject material is a deliberate and essential outcome.

Environmental education has the potential of linking the K-12 curriculum, providing the opportunity to meet the requirements of the core disciplines by creating a comprehensive and cohesive program of study. With this said, it must be emphasized that environmental education is more than a useful theme that can tie units of learning together or an effective pedagogy that makes learning more meaningful. Environmental education is essential education. Environmental literacy must be a goal of our society, and environmental

education must play an integral role throughout our educational system – at the national level, at the state level, and in each and every classroom.

3. National Project for Excellence in Environmental Education

The National Project for Excellence in Environmental Education, sponsored by the North American Association for Environmental Education (NAAEE), was initiated in 1993 to provide an opportunity for environmental education to become a voice in the national education reform agenda. The National Project for Excellence in Environmental Education is a multi-year program designed to establish guidelines for the development of balanced, scientifically accurate, and comprehensive environmental education programs and to identify and provide examples of high quality environmental education practice. The Project has initiated four interrelated efforts: 1) publication of *Environmental Education Materials: Guidelines for Excellence* (1996); 2) creation of a three volume series of educators' resource guides to quality environmental education materials (*The Environmental Education Collection – A Review of Resources for Educators*); 3) development of *Excellence in Environmental Education – Guidelines for Learning (K-12)* (1999); and 4) development of a set of recommendations for the preparation of teachers and other environmental educators.

3.1. EXCELLENCE IN ENVIRONMENTAL EDUCATION – GUIDELINES FOR LEARNING (K-12)

Excellence in Environmental Education – Guidelines for Learning (K-12) was developed to provide students, parents, educators, administrators, policy makers, and the public a set of common voluntary guidelines for environmental education. The guidelines support state and local environmental education efforts by:

- Setting expectations for performance and achievement in fourth, eighth, and twelfth grades;
- Suggesting a framework for effective and comprehensive environmental education programs and curricula;
- Demonstrating how environmental education can be used to meet standards set by the traditional disciplines and to give students opportunities to synthesize knowledge and experience across disciplines; and
- Defining the aims of environmental education.

Guidelines for Learning has been developed over the last four years with the input of literally thousands of teachers, school administrators, environmental educators, scientists, and parents, as well as from a variety of professional organizations and government agencies. Developed through an extensive process of review and comment, they set a standard for high-quality

environmental education in schools and other educational settings across the country. They draw on some of the best thinking in the field and its rich history to outline the core ingredients for environmental education.

3.2. ESSENTIAL UNDERPINNINGS OF ENVIRONMENTAL EDUCATION

Environmental education builds from a core of key principles that inform its approach to education. Some of these important underpinnings are:

- *Systems* – Systems help make sense of a large and complex world. A system is made up of parts that can be understood separately. The whole, however, is understood only by understanding the relationships among the parts. The human body can be understood as a system; so can galaxies. Organizations, individual cells, communities of animals and plants, and families can all be understood as systems. And systems can be nested within other systems.
- *Interdependence* – Human well being is inextricably bound with environmental quality. Humans are a part of the natural order. We and the systems we create—our societies, political systems, economies, religions, cultures, technologies—impact the total environment. Since we are a part of nature rather than outside it, we are challenged to recognize the ramifications of our interdependence.
- *The importance of where one lives* – Beginning close to home, learners forge connections with, explore, and understand their immediate surroundings. The sensitivity, knowledge, and skills needed for this local connection provide a base for moving out into larger systems, broader issues, and an expanding understanding of causes, connections, and consequences.
- *Integration and infusion* – Disciplines from the natural sciences to the social sciences to the humanities are connected through the medium of the environment and environmental issues. Environmental education offers opportunities for integration and works best when infused across the curriculum, rather than being treated as a separate discipline or subject area.
- *Roots in the real world* – Learners develop knowledge and skills through direct experience with the environment, environmental issues, and society. Investigation, analysis, and problem solving are essential activities and are most effective when relevant to the real world.
- *Lifelong learning* - Critical and creative thinking, decision-making, and communication, as well as collaborative learning are emphasized. These skills are essential for active and meaningful learning, both in school and over a lifetime.

3.3. HOW THE *GUIDELINES FOR LEARNING* ARE ORGANIZED.

Excellence in Environmental Education – Guidelines for Learning (K-12) offers a vision of environmental education that makes sense within the formal

education system and promotes progress toward sustaining a healthy environment and quality of life. Guidelines are suggested for each of three grade levels – fourth, eighth, and twelfth. Each guideline focuses on one element of environmental literacy, describing a level of skill or knowledge appropriate to the grade level under which it appears. Sample performance measures illustrate how mastery of each guideline might be demonstrated. The guidelines are organized into four strands, each of which represents a broad aspect of environmental education's goal of environmental literacy.

3.3.1. Strand 1: Questioning and Analysis Skills

Environmental literacy depends on learners' ability to ask questions, speculate, and hypothesize about the world around them, seek information, and develop answers to their questions. Learners must be familiar with inquiry, master fundamental skills for gathering and organizing information, and interpret and synthesize information to develop and communicate explanations.

I. Questioning
II. Designing investigations
III. Collecting information
IV. Evaluating accuracy and reliability
V. Organizing information
VI. Working with models and simulations
VII. Developing explanations

3.3.2. Strand 2: Knowledge of Environmental Processes and Systems

An important component of environmental literacy is understanding the processes and systems that comprise the environment, including human systems and influences. That understanding is based on knowledge synthesized from across traditional disciplines. The guidelines in this strand are grouped in four sub-categories.

Strand 2.1 – The Earth as a physical system

I. Processes that shape the Earth
II. Changes in matter
III. Energy

Strand 2.2 – The living environment

I. Organisms, populations, and communities
II. Heredity and evolution
III. Systems and connections
IV. Flow of matter and energy

Strand 2.3 – Humans and their societies

I. Individuals and groups
II. Culture
III. Political and economic systems
IV. Global connections
V. Change and conflict

Strand 2.4 – Environment and society

I. Human/environment interactions
II. Places
III. Resources
IV. Technology
V. Environmental Issues

3.3.3. Strand 3: Skills for Understanding and Addressing Environmental Issues

Skills and knowledge are refined and applied in the context of environmental issues. These environmental issues are real-life dramas where differing viewpoints about environmental problems and their potential solutions are played out. Environmental literacy includes the abilities to define, learn about, evaluate, and act on environmental issues. This strand is subdivided in two.

Strand 3.1 - Skills for analyzing and investigating environmental issues

I. Identifying and investigating issues
II. Sorting out the consequences of issues
III. Identifying and evaluating alternative solutions and courses of action
IV. Working with flexibility, creativity, and openness

Strand 3.2 – Decision-making and citizenship

I. Forming and evaluating personal views
II. Evaluating the need for citizen action
III. Planning and taking action
IV. Evaluating the results of actions

3.3.4. Strand 4: Personal and Civic Responsibility

Environmentally literate citizens are willing and able to act on their own conclusions about what should be done to ensure environmental quality. As learners develop and apply concept-based learning and skills for inquiry, analysis, and action, they also understand that what they do individually and in groups can make a difference.

I. Understanding societal values and principles
II. Recognizing citizens' rights and responsibilities
III. Recognizing efficacy
IV. Accepting personal responsibility

4. A Final Thought

Taken together, these *Guidelines for Learning* create a vision of environmental literacy. A knowledgeable, skilled, and active citizenry is a key to resolving the environmental issues that promise to face us in the years to come. For each environmental issue there is not just one right answer or solution – there are many perspectives and much uncertainty. A quality environmental education program cultivates the ability to recognize uncertainty, envision alternative

scenarios and adapt to changing conditions and information. This translates into a citizenry that is better able to address its common problems and take advantage of opportunities, whether environmental concerns are involved or not. *Excellence in Environmental Education – Guidelines for Learning (K-12)*, in particular, and the National Project for Excellence in Environmental Education, in general, cannot "create" an environmentally literate citizenry. The project is aimed at producing a series of tools that might help educators develop effective, locally relevant environmental education programs. Environmental literacy does not just happen. It requires a concerted effort of all those who care about quality education and support the notion that students need to be prepared to make informed decisions as individuals, as consumers, as workers and as members of society.

References

Conley D.T. :1993, *Roadmap to Restructuring: Policies, Practices and the Emerging Visions of School*, ERIC.

Curriculum and Evaluation Standards for School Mathematics.:1989, National Council of Teachers of Mathematics, Reston,VA.

Disinger J.:1993)Environmental Education in the K-12 Curriculum: An Overview, in R.Wilke (ed), *Environmental Education Teacher Resource Handbook*, Kraus International Pub, Milwood, NY.

Disinger J. and Monroe M.:1994, *Defining Environmental Education*, An EE Toolbox Workshop Resource Manual, University of Michigan, National Consortium for Environmental Education, Ann Arbor, MI.

Geography for Life: *National Geography Standards*.:1994, National Geographic Research and Exploration, Washington, D.C.

National Commission on Excellence in Education.:1983, *A Nation at Risk: The Imperative for Education Reform*, U.S. Government Printing Office, Washington, D.C.

North American Association for Environmental Education.:1999, *Excellence in Environmental Education – Guidelines for Learning (K-12)*, NAAEE, Rock Spring, GA.

UNESCO .:1976, Belgrade Charter. *Connect*, **1** (1), 1-2.

UNESCO.:1978 Final Report Intergovernmental Conference on Environmental Education, *Connect*, **3** (1), 1-8.