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RESEARCH ON ENVIRONMENTAL EDUCATION - A META ANALYSIS

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Abstract

Despite the wealth of information which exists concerning environmental behavior, it is not known which variable or variables appear to be most influential in motivating individuals to take responsible environmental action. A meta-analysis of environmental behavior research was undertaken in an attempt to determine in this research. This study discuss that exhaustive search of the empirically based environmental behavior research conducted over the past decade yielded a substantial number of studies representative of a broad academic base. The characteristics and findings of these studies served as the data for the meta-analysis. As a result of the meta-analysis, the following variables were found to be associated with responsible environmental behavior: knowledge of issues, knowledge of action strategies, locus of control, attitudes, verbal commitment, and an individual's sense of responsibility. A model of predictors of environmental behavior is proposed.

Keywords: Environmental Education, Environmental Behavior, Environmental Attitude, Information.

Introduction

Environmental education refers to the integrated study of the natural, living, and physical environment and humans' interactions with it. Environmental education programs in U.S. K–12 public schools increased as a result of the environmental movement of the 1960s–1970s era. There are many differences in philosophy and approach and continual disagreements about the composition and social purpose of environmental education. Educators who trust that work is imperative and who invest wholeheartedly in their work are required to react positively to work advancement, that is, to need critical occupations where they can show their drive and responsibility. While it is commonly recognized that where you discover great schools you will discover great pioneers, it has been famously hard to build a record of school authority, grounded in regular practice that goes past conventional heuristics of proposed practice. Research has found that the implementation of environmental education in schools is problematic and not very successful, and there is a large gap between intent and performance in teaching students about environmental issues.

Background

Environmental education can be traced to outdoor education, and its history is intimately intertwined with that of outdoor and experiential education. The roots of environmental education can also be traced to recreational camping, which began to be practiced during the period from 1861–1880, the nature study movement. Environmental education, as outdoor education, was influenced by the traditions of camping education and nature study.

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Environmental education grew out of the juxtaposition of the philosophies of the two separate movements: the school camping/outdoor education movement and the conservation/nature study movement. Environmental education draws on the combined educational practices of experiential and outdoor education (Adkins & Simmons, 2002; Carlson, 2000; Chase, 1985; Kirk, 1980). According to Carlson (2000), the beginning of outdoor education as a "learning method" began in 1930.

Direct observation and experience with one's natural surroundings was considered to be a worthwhile endeavor until about the 1940s (Pyle, 2001). A significant purveyor of this type of direct observation and first-hand study was Rand Aldo Leopold (1886–1948). Leopold was a forester, ecologist, philosopher, educator, and writer. Leopold was a fervent campaigner for wilderness areas and the preservation of wildlife. He was a founder of the Wilderness Society in 1935 and a director of the Audubon Society, also from 1935. His experiential learning on the land led to his development of a "pedagogy of place" or "place-based education, " which involved quality environmental learning experiences in local settings (Knapp, 2005; Merriam-Webster Inc., 1988). In addition to place-based education, the field of environmental ethics also originated near the end of the 1940s, but did not make great progress until the 1970s (Huiying, 2004).

The 1960s Environmental Movement - Environmental education began to take concrete form as a discipline in the late 1960s. The goals of environmental education since their emergence have been strongly evident in science curricula. Developing environmentally literate citizens who have the knowledge and skills to take responsible action with regard to the natural environment have been the aims of environmental education since its inception. Many well-known events and people contributed to the movement, including:

• The introduction of the term "environmental literacy" in 1969.

• Rachel Carson's concept of "ecological interdependence," introduced in her book *Silent Spring* published in 1962.

• The Russian scientist D. L. Armand's works of the 1960s contributing to establishing the concept of "sustainable development."

• The first journal of environmental education published in the late 1960s.

• The involvement of the Peace Corps with environmental education in the 1960s, sponsoring programs in schools, youth centers, parks, and zoos.

(Adkins & Simmons, 2002; Bennett & Bennett, 2004; Braus, 1993; Di Chiro, 2006; Kasimov, Malkhazova, & Romanova, 2005; Roth, 1992).

Environmental education programs in U.S. public schools increased as a result of the environmental movement of the 1960s and 1970s, becoming a "pedagogical field" in the 1970s. The first international conferences on environmental education were also held in the 1970s. The United Nations conferences on the environment played an instrumental role in developing the basic premises and guiding principles for environmental education curriculum development. The first Earth Day celebration took place on April 22, 1970 (Baird, 1991; Covert, 1986; Gonzalez-Gaudiano, 2007; Papadimitriou, 2001).

National Efforts

From 1990-1994, the National Science Foundation embarked on a nationwide program to infuse earth systems concepts throughout the K-12 science curriculum across the country. The National Environmental Education Act (NEAA) of 1990 established a federal comprehensive education program to support state and local efforts (U.S. Congress, 1996). The NEAA established the Office of Environmental Education (OEE) within the Environmental Protection Agency. The NEAA supports the development of materials and education efforts so that environmental problems are characterized factually and objectively, are scientifically sound, and are balanced. The National Environmental Education Amendments Act of 1996 made the NEEA programs operate more efficiently and effectively and extended authorization for NEEA programs.

As the focus of environmental problems and government policy in the U.S. has shifted from water supply in the 1960s to solid waste management in the 1970s to hazardous waste management in the 1980s, to air quality in the 1990s and to global warming and climate change in the 2000s, the role and importance of environmental education has continued to expand.

Environmental Education Overview

Environmental or environment-based education is a relatively new, innovative and dynamic form of

cross-curricular education that is focused on the study of the environment.

Because environmental education involves the study of changes in earth systems and environmental systems over time, it is an important context in which to learn about science. Environmental education curricula are directed at increasing students' environmental knowledge, awareness, and literacy. The history of environmental education is linked to that of outdoor and experiential education. Environmental education began to take concrete form as a discipline in the late 1960s and became a pedagogical field in the 1970s.

The practice of environmental education in U.S. schools is adaptable to all age, grade, ability, and achievement levels. Although experiential education can take place in a variety of settings, outdoor-learning settings have many advantages over classroom settings. Environmental education curricula are interdisciplinary, integrated, and thematic and require contributions from multiple subject areas. Environmental learning attends to students' variant learning styles and accents their diverse learning needs in the area of multiple intelligences.

Environmental education is an important context in which to learn about the environment, as well as science-biology, geology, nature-and numerous interdisciplinary, or hybrid fields. Environmental education involves the broad study of changes in earth systems and environmental systems over time. Among environmental education's primary goals are to deepen students' engagement with issues in environment and science such as global warming, biodiversity, sustainability, and sustainable development. Related school curricula are directed at increasing students' environmental knowledge and awareness and their overall environmental literacy-knowledge, skills, attitudes, and behaviors-related to the environment.

Applications Learning

Experiential environmental education and environmental learning can take place in a variety of settings and venues. These include diverse traditional and nontraditional settings for teaching and learning. Besides school-based/in-school/classroom environmental learning settings, there are many different, alternative, non-school/out-of-school/outside-the-classroom settings. Natural, local, cross-cultural, community-based, outdoor learning settings have many advantages over classroom settings. Informal learning can occur in nature or nature education settings. Students can address environmental issues and problems in the community and local areas. Outdoor settings include wilderness and urban adventures, rope courses or camp-based extensions of the classroom. It describes one program-resident outdoor environmental education (ROEE)-in which students live in the outdoor environment and take part in a camping experience for two to five days.

Most environmental education activities are undertaken in school or under the guidance of the school. Lab-based biological studies and environmental education in the school classroom have replaced nature study in outdoor environments, reducing possibilities for students to establish personal connections to the earth (Pyle, 2001; Rickinson, 2001). Most work in schools is done indoors. Schools sit isolated on large chunks of land surrounded by areas of grass and parking lots and consume many resources. Moore (1996) and Pope (1998) suggest that instead, schools could design and develop two perfect environmental education laboratories: one indoor and one outdoor. There exist a variety of options for designing the school grounds for environmental learning and creating optimal outdoor learning environments to foster students' intimate contact with nature. In doing so, schools need to give consideration to such features as pathways, ground covers, landforms and topography, trees and vegetation, gardens and animal habitats.

Conclusion

Hence environmental education has become a critical issue. In addition to individuals and governmental bodies, associations and learned societies have taken up the cause and published directories and handbooks about environmental education. Among the most valuable are International Handbook of Research on Environmental Education, edited by Robert Stevenson et al., which provides a general perspective of the field; Routledge International Handbook of Sustainable Development, edited by Michael Redclift and Delyse Springett, which brings in a range of opinions about sustainability; and The International Handbook of Environmental Sociology, edited by Michael Redclift and Graham Woodgate, which covers concepts, issues, and perspectives surrounding the interaction of human society and the environment and provides a range of opinions about controversial subjects. Taken together, all the resources discussed in this paper paint a clear picture of how education about the environment can benefit everyone and, ideally, forestall further degradation of planet Earth.

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