



The Inclusion of Environmental Education in Science Teacher Education

Astrid Steele

Assistant Professor Schulich School of Education Nipissing University Ontario, Canada Email:
astrids@nipissingu.ca

Abstract

Book review The Inclusion of Environmental Education in Science
Teacher Education

Keywords: Environmental Education, Science Teacher Education



The Inclusion of Environmental Education in Science Teacher Education is a collection of essays and research papers which are presented in two parts: the first defines environmental education (EE) and then examines the history of EE in the USA; the second, much larger section, focuses on the pedagogies, the research, the challenges and the technological innovations of EE in pre-service teacher education.

Although the book title implies a global perspective, given the largely American citation and funding base (National Science Foundation, North American Association for Environmental Education, No Child Left Behind legislation, and cited authors) my initial hesitation was that the book would be entirely American in its scope, with a tunneled view of environmental education appropriate only to American teacher preparation. While the collective essays and research papers clearly focus on and address pre-service teacher training in the USA, nevertheless the book offers varied, useful and often universal insights to those working in pre-service science teacher preparation and to those advocating for an integrated environmental education perspective in teacher training.

The editors state that the purpose of the book is to "share knowledge and ideas about EE pedagogy in the context of science teacher preparation..." (p., vii.) This position immediately introduces a layer of complexity since traditional science pedagogies tend to focus on content knowledge and specific laboratory and research skills, while EE pedagogies ideally embrace multiple and cross disciplinary activities, and have a student-inquiry and issues-based focus. Curious as to how the various authors would position EE within science teaching and learning I began by reading the vignette that precedes Part One, and which describes a possible, and evidently desirable scenario in which students are in an outdoor natural setting with their teacher, engaged in nature studies. Although an important element of both science and environmental education, nature study as a guiding perspective for EE as part of science curriculum involves largely benign activities such as naming, observing and recording environmental variables and becoming comfortable and knowledgeable in outdoor situations; nature studies on a their own fail to challenge students and teachers to address environmental issues, both locally and globally. Nature study is only one of many aspects of environmental education, which itself is an umbrella term for studies as diverse as environmental science, resource management/ conservation, or outdoor and experiential education. As I continued to read I realized that one basic question



was coming to the fore: Do the multiple authors of this book propose that teaching science outdoors is the main vehicle for integrating EE in science curriculum?

Fortunately, despite the editors' choice of vignettes, the papers themselves address this question by proffering multiple aspects of a contemporary version of EE. For example, in *Unraveling the Scientific, Social, Political and Economic Dimensions of Environmental Issues Through Role Playing*, the authors propose ethics as one of the dimensions of environmental inquiry, and in *Environmental Education Service Learning in Science Teacher Education* the connection is made between environmental service learning and ecojustice. Other chapters acknowledge multiple issues in teaching an EE integrated science curriculum. For example: the importance of political, social and economic elements of EE is considered; the argument that ecofeminist theory negates the usefulness of problem-based pedagogy is presented; the role of mentors for teachers familiarizing themselves with EE, and the inclusion of field trips specifically designed to address EE within a science curriculum are also examined. The chapter titled *Exploring Pre-service Teachers Mental Models of the Environment* describes the use of drawings to access and understand the mental models that teachers bring to their EE pedagogy, and more importantly identifies key issues in pre-service EE education. In *Using Podcasts to Address Nature-Deficit Disorder*, the authors describe a project that used digital media to connect pre-service teachers (who are themselves digital natives) to the natural world.

While the chapter on the common characteristics of pre-service teachers' learning in EE resonated for me (pre-service teachers tend to have poor science/environmental content knowledge and a strong need for highly structured learning environments), other chapters that describe the negative responses of pre-service teachers to going outdoors because 'they might get dew on their toes or encounter bugs', or teachers demonstrating 'plant blindness' is not characteristic of pre-service science teachers everywhere. In my experience, many pre-service teachers are comfortable and even facile in outdoor environments. This is one of the moments in the book that points to the influence of predominantly urban American perspectives in EE.

Despite its American focus, the book provides a much needed consideration of the inclusion of EE in pre-service science teacher education, particularly at a time when science and technology are being promoted as the means to a successful future for humans on



the planet. Environmental education provides an alternative and often mediating influence that takes into account the social and environmental issues that so often arise when new sciences and technologies are embraced by a western consumerist society.