I. History, Rationales, Misconceptions & Standards

Introduction

April 22, 1970 will be remembered by many as the date of the first nationwide celebration of Earth Day. This event, according to Gordon (1993, p. 32) in his thoughtful appraisal of the American environmental movement, was “one of the more remarkable happenings in the history of democracy ... 20 million people demonstrated their support [and] ... American politics and public policy would never be the same again.” From a science and science education perspective, this national opportunity to express concern for the environment was unique. Never in history had there been such an outpouring of emotion focused on the contributions of a particular scientific discipline. Only the launch of Sputnik and the aftermath of the Scopes evolution trial have impacted science teaching as dramatically as the rise in interest in environmental issues. The legacy of Earth Day was clear and immediate.

Environmental science quickly found a home in both the public consciousness and in the school science curriculum.

Now it is a rare day when the news media fail to report a story with an environmental message. From the Rio Earth summit in 1992 to the 2002 Johannesburg World Summit on Sustainable Development much attention during this past decade has focused on the environment. Science educators have the responsibility to ensure that citizens gain the intellectual tools to engage fully in the ensuing debates and decisions.

The recent renewed interest in environmental education may have had its origins in Earth Day, but the roots and founders of ecology are many; Aristotle, Buffon, Wallace, Darwin and the nameless agriculturalists worldwide who for millennia have noted and nurtured the relationships between the living and non-living worlds. They have helped to establish the science of ecology. It was German biologist Ernst Haeckel who is generally credited with developing the modern conception of ecological science at the end of the nineteenth century. He defined the study of the interactions of organisms with each other and with their environment in the following fashion:

By ecology we mean the body of knowledge concerning the economy of nature — the investigation of the total relations of the animal both to its inorganic and to its organic environment: including above all, its friendly and inimical relations with those animals and plants with which it comes directly or indirectly into contact — in a word, ecology is the study of all those complex interrelations referred to by Darwin as the conditions of the struggle for existence (Haeckel, 1866).

Since Haeckel, many scientists have added to our understanding of relationships between organisms and their link to the environment in which they live. We now have a much more robust appreciation for the