Chapter 9
Environmental Education and Its Effects on Environmental Sustainability

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ABSTRACT

Environmental education (EE) for sustainable development remains a valuable subject of contemporary society, which is characterized with environmental issues such as climate change, pollution, loss of biodiversity, and resource degradation. The delivery of EE is based on the North American Association for environmental education values of knowledge, dispositions, competencies, and responsible behavior towards the environment. EE is a transformative tool to learners since it prepares learners with skills, attitudes, knowledge, and values to resolve environmental problems. It promotes environmental activism and action-oriented resolution of environmental issues. The full benefits of EE are challenged by limited human capacity, questionable professionalism, limited resources, and poor transformation of knowledge to practice. These challenges however can be alleviated through community engagement in formulating EE programs, multidisciplinary engagements, and research on EE delivery and quality.

INTRODUCTION

Initiatives focusing on the need for environmental protection began two centuries ago with the motive of rescuing endangered species. However, the growing indicators of environmental degradation including global warming, climate variation and change, ozone layer thinning, soil and water pollution have imposed the need for environmental protection and diversified education initiatives focused on this subject (Boca

& Saracli, 2019). It is from these predispositions that the awareness of the importance to act responsibly towards nature at individual and collective level has grown among humankind. Consequently, mutual collaborations at all administrative levels to protect nature are emerging in the field of environmental education (EE). According to Thomas (2005), EE is the acquisition of knowledge aimed at behavioural and action modification by students and is skewed to wise use of environmental resources at individual and group level. Similarly, Grosseck et al. (2019) pointed out that recent research tendencies focused on understanding EE promote sustainable development (SD). A research by Choudhary et al. (2019) also indicated that EE is an opportunity to acquire skills, attitudes and knowledge essential in ecological improvement. The Rio de Janeiro earth summit that promulgated the Agenda 21 emphasized the role of education in environmental sustainability (Boeve-de Pauw et al., 2015). Other efforts towards EE for SD include the Johannesburg world summit of 2002 that declared 2005 to 2014 as the period, which this initiative was to be implemented and the campaigns by UNESCO aimed at reshaping curriculum to inculcate EE (Grosseck et al., 2019).

Although the initiatives aimed at promoting EE are existent, the actions to address environmental issues and participate in actual initiatives is low among students. Boca and Saracli (2019) highlighted this issue observing that there is a rift between the lack of involvement in practical environmental protection despite the rich ecological knowledge among communities. This tendency could be a flaw of existing curriculums whose attention does not specify methods aimed at practical civic and moral education towards environmental sustainability. Therefore, EE aimed at SD does not only disseminate knowledge on environmental issues but also enriches the value associated with the ecology to instil problem-solving skills and change the attitudes and perceptions of ecosystems for the better (Liu & Guo, 2018). Authors such as Maurer and Bogner (2019) assessed the role of EE and SD and highlighted their inter-relatedness and overlap. Environmental education, "resonates with the model which refers to the environment in a holistic, human-oriented approach as interacting biophysical (organisms and life support systems), social (people living together), economic (livelihood, money and services) and political (power, policy and decisions) dimensions" (Goldman et al., 2013, p. 517). These are some of the tenets of SD, which can be interrelated with EE. The purpose of this book chapter will be to highlight the chronological development of EE; discuss its delivery determinants and challenges involved in its dissemination with the aim of providing a way forward. Additionally, it will discuss the effects of EE in relation to learner outcomes using named case studies of Botswana and Colombia. The case studies were chosen because EE in these two countries is compulsory unlike other developing countries where it is voluntary or offered on ad hoc basis. The methodology applied in the chapter is an examination of existent literature on the topic.

The History of EE

EE is traceable from the early educational reformers from Europe such as Humboldt, Goethe, Pestalozzi, Rousseau and Comenius prior to its definition and integration of this concept to mainstream education (Rosaleen, 2012). In the 1970s, an international working meeting on environmental education was held in the USA and came up with an EE definition (IUCN, 1970). In the meeting, EE was defined as a process of developing values and understanding concepts to cultivate attitudes and skills essential to appreciate the interrelationships among humans, their culture and biophysical features. Furthermore, EE was a tool useful in making decisions, coding behaviours and best practices on environmental quality issues. Following this development, the United Nations (UN) in a conference on human environment held at

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