

Compiling Ecosystem Management and Environmental/Climate Literature into the Environmental Education

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Abstract

In the contemporary world, since people are encountering environmental/climate issues and losing some species of ecosystem, world organizations have propounded ecosystem management to conserve the ecosystem for a wealthy future. Ecosystem management creates boundaries to reduce the extreme consumption of natural resources. Nevertheless, the governments and people of the world fail to perform eco-management persistently. Therefore, the questions of what are the difficulties in implementing ecosystem management, despite the fact that eco-management has enough policies and plans and what is the strategy to increase the execution of ecosystem management among students through environmental education. Furthermore, no researcher has dealt with how teaching ecosystem management and environmental/climate fiction through ecosystem education raise robust awareness among students in society. The objectives of the research paper are to describe how governments and industries neglect ecosystem management and prescribe eco-management and environmental fiction in environmental education. The research paper finds unaware of the apocalyptic future world nonexistence of an ecosystem causes the absence of ecosystem management among Homo sapiens.

Keywords: *ecosystem, ecosystem management, environmental education, climate fiction, environmental fiction.*

Introduction

Homo sapiens are part of the natural world, and our existence depends on the cycling of water and the elements. The preservation of stable atmospheric, climatic, and hydrological conditions, as well as the continued production of foodstuffs, are critical to our well-being (Pirot et al, 2000, p.1; Pettiward, 2000; Allen, 2022; Hance, 2017; Millennium Ecosystem Assessment, 2005, p.1). In order to survive in the world,

the human race manipulates and alters the surrounding ecosystem: deforestation for building roads and industries, hunting animals, and other species of biodiversity (Stone, 2015). According to National Geographic, the ecosystem is a "geographic area where plants, animals, and other organisms, as well as weather and landscapes, work together to form a bubble of life" (Rutledge et al., 2022). As Chapin states, an ecosystem "consists of all the organisms and the abiotic pools with which they interact" and ecosystem processes are "the transfers of energy and materials from one pool to another" (Chapin et al. 2011, p.5). In the present world, urbanization decreases the ability and reverses the process of the ecosystem (Cumming, G.S., et al., 2014, p.51; Hamann, M., et al., 2015, p.224). Anthropocentrism drives the human race to consume and degrade the natural environment because it assumes that only humans and their interests are ethically significant (Humaida, 2020, p.2). Moreover, urban and human-made environments created by humans cause environmental, global, and climate change (Haase, D., et al., 2018, p.19). Therefore, ecologists and environmentalists have propounded scientific and literary concepts such as "ecocriticism," "ecology," "bioregionalism," "environmentalism," and "eco-centrism" to expose the importance and value of ecosystems and ecosystem management. These concepts approach ecological management either implicitly or explicitly, to recognize the relationship between man and the ecosystem, and implement environmental schemes and policies to conserve the ecosystem. The research paper tries to find answers to the questions of what are the difficulties in implementing ecosystem management, why hasn't implementation increased even though ecosystem management has enough plans to conserve the ecosystem, and what is the strategy to increase the execution of ecosystem management among students.

The purviews of the research paper are to examine how far ecosystem management is really pursued by the people, describe how industries and governments fail to perform eco-management, and propose to add ecosystem management and environmental fiction in environmental education for schooling. Researchers are constantly involved in identifying the challenges associated with implementing eco-management. There are so many difficulties in executing eco-management: economic obstacles, political barriers, and a lack of awareness, especially among urban people. Academic research has been done in the terms of ecological science, environmental science and political ecology (Malhi et al. 2020, p.6). The research paper insists that awareness of ecosystem management should be provided through ecosystem education. No research has been done on how would teaching ecosystem management and environmental/climate fiction through ecosystem education raise robust awareness among students in society.

Ecosystem Management as an Eco-centric Approach

In the contemporary world, as people are facing health issues due to pollution and other climate/environmental crises, some of them have been considering and involving environmental and ecosystem management. Apparently, present-day academicians, environmental researchers, and eco-policy

makers have suggested a “new biodiversity paradigm” for ecosystem management in order to develop the concept of conserving natural resources and the environment for the future (Beatley, 2000, p.16). As Barlow states, "Ecosystem management refers to approaches ranging from simply considering the impact of a management decision on other elements of the ecosystem to the simultaneous optimization of management strategies to meet the management goals of all elements of an ecosystem" (2018, p.557). Brody conceptualizes and tries to implement ecosystem plan components for eco-management "to protect regionally significant habitats, the integrity of ecological systems" and "the functionality of the ecosystem" (2003, p.518–19). Ecosystem management is an ecological and environmental-based approach to resource management (Ecosystem Management Initiative). Therefore, ecosystem management contributes to protecting biodiversity and managing the usage of natural resources.

In general, ecosystem management is the most effective method of preserving ecosystems. To understand the responsibility of humans, according to the Holy Bible, the first and foremost duty of the human race is to manage and maintain the ecosystems of the world. After God created man and woman, He handed over the world and its belongings to protect and rule. Additionally, it is mentioned that there was no man to conserve the earth and its ecosystem (Genesis 2: 5, 15). Therefore, humans are the only species assigned by God to protect the ecosystem. Nevertheless, humans are the only agents that significantly destroy the ecosystem. To get urban amenities, environmental management has been reduced among the people. Despite the fact that people today bump into environmental and climate issues, they are not ready to support ecosystem management. Moreover, to promote ecosystem management, world organizations have proposed many more policies, plans, and schemes. A group of scholars has tabled a seven-step framework for developing regional plans to conserve biological diversity, based upon principles of conservation biology and ecology, which is being used extensively by the nature conservancy to identify priority areas for conservation”: Identity conservation targets, collect information and identify information gaps, establish conservation goals, assess existing conservation areas, evaluate ability of conservation targets to persist, assemble a portfolio of conservation areas and identify priority conservation areas” (Groves et. al., 2002, p.499, 500).

Eco-Management Schemes Vs Hypocrisy of Authorities and People

The ecosystem management approach draws a boundary line for humans to reduce the extreme usage of environmental resources such as water, food, and others. As Brussard and his co-researchers state, the purpose of ecosystem management is "to ensure that ecological services and biological resources do not erode irreversibly as a result of human activities" (1998, p.10).

Despite the fact that many ecological planners and policymakers propose strategies and statistical methods for ecological management, their implementation has not been spectacular. The reasons for ineffective environmental management are linked to the human race, either directly or indirectly. When people fail at ecosystem management by permitting urbanization, the world will be led into scarcities of food, water, fresh air, and other natural resources. Already, some countries in the world are encountering these problems. Implementation of policies and plans for ecosystem management is the only decision necessary to maintain an ecosystem, lest it goes in vain. The failure to use eco-management contributes to the environmental and climate crises. Additionally, eco-management has existed for sea life, forests, and other high-profile projects, but it has not been performed inside the small regions.

Governments of countries, in addition to environmental organizations, promote ecological management in their countries and carry out plans by providing financial assistance through the department of the environment. Nevertheless, sometimes the same governments politically degrade the ecosystem for some projects regarding urbanization. Many government plans and schemes contribute to deforestation and natural resource scarcity.

One of the greatest eco-management plans is the uniform ban on fishing. Every year, the Indian government announces a uniform ban on fishing to conserve marine fishery resources. The fishers of India are imposed not to go fishing (MPEDA; The Hindu Bureau, 2022; Times of India, 2022; ICSF, 2022). Many countries around the world pursue marine resource management to conserve marine ecosystems (Schiffman, 2018). But, some companies and industries produce marine litter and plastic waste. Their impacts on "marine life range from physical or chemical harm to individual animals to wider effects on biodiversity and ecosystem functioning" (UNEP). Industries and businesses discharge effluents into bodies of water such as the ocean, sea, and river. Thus, ecosystem management and degradation occur simultaneously.

Furthermore, for the sake of urbanization, the government engages in deforestation for the construction of industries, as well as the destruction of farmland and trees for the installation of roadways. As Wang and Zhai argue, "humans have dramatically changed natural ecosystems around the world as their capacity to manage their environment for multiple uses has evolved in step with agricultural, industrial and green revolutions" (2019, p.1). These anthropocentric activities lead to the annihilation of ecosystems. For instance, the Amazon rainforest is being evicted, and "a quarter of the amazon rainforest will be devoid of trees by 2030 if cutting continues at the same speed" (Times of India). According to a National Geographic report, deforestation in the Amazon rainforest has been reduced in response to the climate change crisis, and the current challenge is combating illegal deforestation (Haywood, 2022). However, neither the public nor the government is concerned with ecosystem management. In India, the government announced the plan for the expansion of the airport in Surat over 700 acres of farmland (Express News Service, 2022), and the state

government of Tamil Nadu has planned to construct a new airport in Ekkanapuram. The people from the village stand in fear that the arrival of the airport will surely affect the water bodies and farming lands (The Hindu, 2022). Today, many farmers are also ready to sell their farming land to solve their economic problems. These activities against the ecosystems of those regions will lead to food scarcity in the future.

Environmental Ethics in Ecosystem Management

Eventually, to protect the future world from environmental calamities, implementing eco-management will be most important. Indeed, the people and the government that leads the people will not be following ecosystem management. As ecosystem management is unavoidable, governments create ecological places alternately after the depletion of the acres of the natural environment. Nowadays, artificial or semi-artificial ecosystem replaces natural ecosystem (Wang & Zhai 2019, p.1) due to the cause of the economy. The alternative ecology sets boundaries for the ecosystem. Alternative ecosystems or urban ecology acts as a kind of ecosystem boundary. The belief is that urban ecology contributes to managing sustainability in urban areas by constructing ecological parks and lands. To be frank, urban ecology limits the growth of ecosystems around people. According to ecosystem management, boundaries should not be made for plantations or re-plantations. Fixing the borderline for the ecosystem is directly against environmental ethics.

Environmental ethics, according to Brennen, is "the discipline in philosophy that studies the moral relationship of human beings to, and also the value and moral status of the environment and its non-human contents" (Brennan, 2021). Environmental ethics stand in the faith that, as the human race is one of the parts of the environment, every human should respect, honour, and deal with other creatures ethically (Nicole, 2022). The people of this era degrade the ecosystem for some reasons, like urbanized amenities, a high economy, and political issues. Environmental ethics assists people to follow ecosystem management. "Land Ethics", an essay by Aldo Leopold, is the best example of eco-management. In the essay, Leopold confesses that people should provide the ecosystem with enough time to revive itself. Moreover, when Leopold writes,

A land ethic of course cannot prevent the alteration, management, and use of these 'resources' but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state.

In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such. (1968, p.204)

Ecosystem management does not result in biodiversity bias because people and governments work together to develop the species that provide economic wealth. They only consider economically valuable and endangered species, not non-economically valuable ones. Leopold is an eco-centric writer, who writes,

Some species of trees have been 'read out of the party' by economics-minded foresters because they grow too slowly, or have too low a sale value to pay as timber crops: white cedar, tamarack, cypress, beech, and hemlock are examples. In Europe, where forestry is ecologically more advanced, the non-commercial tree species are recognized as members of the native forest community, to be preserved as such, within reason. Moreover some (like beech) have been found to have a valuable function in building up soil fertility. The interdependence of the forest and its constituent tree species, ground flora, and fauna is taken for granted. (1968, p.212)

When it comes to eco-management, humans should enhance the growth of every species in the ecosystem. Perhaps some trees or plants with no monetary value should be beneficial to the environment. Indeed, ecosystem management helps to reduce environmental crises and climate calamities such as global warming, food and water scarcity, and temperature increases.

Contribution of Environmental/Climate Fiction in Eco-Management

To conclude, as Dale and Efroymson declare, "For centuries, humans have modified terrestrial and aquatic systems to meet basic energy needs as well as to satisfy other requirements, leading to major changes in global land cover, atmospheric concentrations of greenhouse gases, and the land's future capacity to sequester carbon" (2011, p.755). People are at the perch to take decisions effectively. Despite the fact that policies and plans for ecosystem management exist, people are failing to implement them. Therefore, the research paper proposes that environmental education is the only key to boosting implementation. As Roth strongly believes that ecosystem education deals with the attitudes of people towards individuals, groups of individuals and their environment (1973, p.2). The research paper assumes that the ecosystem will be restored, not only by the government but also by a few environmental activists. Everyone's participation is needed, especially students in schools. Effectively prescribing eco-management as a subject for students may raise awareness about using the ecosystem and implementing management. Environmental studies are available in schools and colleges but are not prioritized. Moreover, the content should deal with advanced environmental and climate issues, and ecosystem management since the world encounters tremendous crises due to climate change.

The lessons should give a depiction of the future world where people encounter food, fresh air, and water scarcity in the absence of a natural environment. The paper holds the belief that depictions of a future world or the inclusion of a climate apocalypse will ensure ecosystem management. By giving priority to

ecosystem management in school and college education, students will surely become aware of a future world without ecosystems and ecosystem management. In the discipline of literature, few contemporary writers depict the apocalypse of a future world dominated by urbanization and industrialization. The portrayal of eco-apocalypse, climate apocalypse and people in the climate fiction will create the thoughts not to encounter the future world described in those fiction and will steer the readers to conserve the ecosystem. For example, *The Ice People*, a novel by Maggie Gee, depicts two climatically changed future worlds affected by both global warming and the ice age. Throughout the novel, Saul, the protagonist tries to escape from the issues of climate change (Gee, 2012). McCarthy's novel *The Road* depicts an eco-apocalyptic world in which people engage in unethical behaviour in order to survive (McCarthy, 2006). Both novels express the value of ecosystems by depicting their absence in the future. As Drake states, climate or eco-apocalypse fiction "explores human connectivity with the environment when the relationship with the eco-system has been irrevocably severed" (2012, p.2). Consequently, the climate/eco-apocalypse fiction creates awareness about the future world, and the awareness creates the idea of ecocentrism. Corbett and Clark declared that texts regarding climate change depict "the so-called invisibility of climate change to be seen, felt, and imagined in the present and the future" and "encourage critical reflection on existing social structures and cultural and moral norms" (2017, p.4). As a result, teaching environment, climate, eco-apocalypse fiction, and ecosystem management policies and plans may influence future generations to protect their surrounding ecosystems for their future.

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