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A Problem in Ecology or an Ecological Problem? The Role of the Human and Social Sciences in Environmental Education

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Abstract: In the popular imagination and public conception, science, regarded as value-free, universal, and objective, and literature, deemed imaginative and culture-specific, are often considered irreconcilable. This belief has shaped our attitude toward the environment and the global ecological crisis. The introduction of environmental studies at the school and undergraduate levels across India attempts to engage young minds with these urgent issues. However, such courses largely reflect a technocratic notion of science. This paper argues that the environmental crisis cannot be understood as a purely scientific issue. It proposes that environmental education must integrate literature and the human and social sciences to develop ecological awareness that is moral, cultural, and political as well as scientific.

Keywords: Environmental Education, Ecology, Environmental Humanities, Human/Social Sciences, Ecocriticism

The essentialist notion that only ecologists, and by extension practitioners of the natural sciences, are competent to impart environmental education results in it being narrowly construed as a scientific discipline. Consequently, non-scientific subjects and teachers are often regarded as unfit for imparting environmental knowledge. While it is true that most non-natural science practitioners may not scientifically analyze ecological systems, they are not without a crucial role in environmental discourse. As H. N. Southern noted in his 1969 address to the British Ecological Society, "ecology is too important a subject to be left to ecologists alone" (Southern 1). Echoing this view, John Passmore observed that solving ecological problems demands "a moral or metaphysical revolution" rather than mere scientific management (Passmore X). Robert McIntosh similarly emphasized that ecological crises are embedded in "the ecological conscience," "ecology and social institutions," and "the metaphysics of ecology" (McIntosh 313).

Ecology, in its broadest sense, concerns the interdependence of organisms and their environment. Thus, environmental education must not deify nature or reduce it to a catalogue of its parts such as trees, rivers, animals, and forests. Instead, it must foster an understanding of mutual dependence between humans and nature. The prevailing scientific view often separates humanity from nature, an assumption that environmental humanities scholars such as Greg Garrard identify as a central flaw in modern environmental thinking (Garrard 6). Education must challenge this dualism and cultivate an ecological consciousness that recognizes nature as both cultural and biological; a relational matrix in which human life participates (Latour 142).

Beyond the need to protect nature from human excess, students must also become aware of the socio-political causes of environmental degradation. Such awareness will enable them to assess their societies through what Val Plumwood terms an "ecological rationality." According to her, this is a mode of thinking that resists the domination of nature by patriarchal and capitalist structures (Plumwood 59). Linking environmental problems to social concerns reveals that anxiety over nature and anxiety over society are not mutually exclusive. Alison Hawthorne Deming, Richard Nelson, and Scott Russell Sanders remind us that no one can be "complete, safe, and sane without a community which, in turn, requires the vigor and abundance of the earth to thrive" (Deming et al.).

A major reason for administrative indifference to environmental issues lies in the disconnect between ecological crises and the socio-cultural realities of specific communities. The exclusion of cultural and social dimensions from environmental curricula prevents future policymakers from grasping the ethical and humanistic principles of environmentalism. This gap, as Rob Nixon would argue, creates "slow violence," a gradual, invisible form of environmental suffering disproportionately affecting marginalized groups (Nixon 2). Therefore, the cultural and livelihood aspects of ecological issues must be integrated into environmental education to nurture empathy, justice, and sustainability.

While designing a new framework for environmental studies in India, it is essential to understand what are termed "ecological struggles." India, with its coexistence of preindustrial, industrial, and postindustrial economies, has witnessed numerous conflicts born of resource exploitation and uneven development. The Chipko Movement in Uttar Pradesh resisted massive deforestation that threatened the livelihoods of forest-dependent tribal communities. In Balliapal, Orissa, locals opposed a missile base that would have destroyed fertile farmland. In Madhya Pradesh, Gujarat, and Maharashtra, the Narmada Bachao Andolan protested the Sardar Sarovar Dam, which would displace thousands of tribal families. At Mavoor in Kerala, communities resisted the pollution of the Chaliyar River by a rayon factory, while in Orissa, the Dongria Kondh tribe campaigned against bauxite mining in the sacred Niyamgiri Hills.

These movements illustrate that conservation is not merely an ecological endeavor but a socio-cultural and economic one. As Graham Huggan and Helen Tiffin note, postcolonial ecological struggles intertwine environmental defense with resistance against cultural and political domination (Huggan and Tiffin 12). Each of these movements demonstrated that the rhetoric of development, often framed as "employment for thousands," was deployed to justify environmental destruction and reinforce inequality. Yet, the affected communities redefined these ecological conflicts as moral and political struggles for justice, identity, and survival.

In this sense, the ecological movements of India exemplify the transformation of problems in ecology into ecological problems. They show that environmental conflicts cannot be resolved by science alone, but must involve ethical reasoning, social reform, and democratic participation.

It becomes clear that the conservation of nature is not just an ecological or biological necessity but also a cultural and economic one. When conservation is framed solely in terms of scientific preservation as in protecting rainforests for biodiversity or maintaining habitats for endangered species, it risks alienating those whose lives and livelihoods are intertwined with nature. To engage the public meaningfully, environmental education must reveal how conservation intersects with questions of justice, identity, and economic survival. As Bruno Latour argues, nature and society are not separate domains but parts of a single network of interdependent relationships (Latour 142). Recognizing this interconnection prevents education from treating ecological issues as remote abstractions.

In a context like India's, where development rhetoric often overshadows environmental ethics, it is crucial to demonstrate that environmental concerns are inseparable from the political and social realities of people's lives. Therefore, any effort to convince students of the importance of conservation must extend beyond technological explanations. Instead of focusing solely on scientific ecology, educators should emphasize the experiential, cultural, and socio-economic aspects of nature. Environmental education must cultivate the moral insight that humans bear both practical and ethical responsibilities toward the natural world.

This approach aligns with the goals of environmental humanities, which link ecology to ethics, aesthetics, and human behavior. As Greg Garrard notes, literature and art can cultivate empathy toward the non-human world and help learners internalize ecological interdependence (Garrard 8). Curricula that integrate humanistic perspectives can therefore inspire stewardship and restraint, rather than mere factual understanding. Students must learn to see environmental issues not as external "facts" but as reflections of social attitudes and ethical choices.

One effective pedagogical method is to connect ecological wisdom with traditional practices such as India's sacred groves. These community-managed forest spaces embody religious and ecological principles. While these traditions are often idealized as evidence of India's "primitive ecological wisdom," their deeper value lies in their capacity to demonstrate sustainable coexistence between humans and their environment. As Huggan and Tiffin caution, invoking tradition should not glorify the past but reimagine alternative modernities that balance development with sustainability (Huggan and Tiffin 25). By juxtaposing the "ecologically benign, socially just" aspects of traditional life with the ecological and social degradation of the present, learners can envision ways of life that are both ethical and sustainable.

The ultimate aim of such education is to foreground the rapid and alarming rate at which nature is being depleted, while emphasizing that environmental degradation is also a cultural and spiritual crisis. Recognizing that struggles for clean air, water, and forests are entangled with spiritual and socio-political dimensions allows students to appreciate nature as more than a resource. Bonnie Costello's notion of focusing on "nature in our midst" underscores the need to attend to the immediate environments we inhabit, rather than an imagined pristine wilderness (Costello 573). This localized approach prevents environmentalism from becoming an elitist discourse detached from everyday life.

Furthermore, Ariel Salleh's ecofeminist critique highlights how capitalist societies, particularly their affluent classes, can "coexist quite comfortably with environmental despoliation" because privilege enables them to escape its consequences (Salleh 5). This observation underscores the urgency of cultivating ecological consciousness through schools and universities, where students must learn that their lifestyles and consumption patterns have far-reaching ecological and ethical implications. The challenge, therefore, lies in transforming education into a practice that reshapes cultural attitudes toward progress and prosperity.

Once these objectives are established, strategies can be developed to sustain ecological awareness among students. One promising approach is to historicize environmental struggles through both creative and scientific literatures, thus giving universal resonance to local concerns. Linking regional environmental issues to global movements such as juxtaposing the Chipko movement with the American Indian environmental ethics or comparing industrial disasters like Bhopal and Three Mile Island reveals the shared nature of ecological suffering. Such comparative pedagogy enables learners to perceive environmental degradation as a global phenomenon with local consequences, reinforcing the notion that ecological awareness transcends borders.

The role of human and social sciences in this educational project is therefore indispensable. Addressing ecological problems requires political and policy-level interventions, which depend upon informed and ethically conscious citizens. In democracies, meaningful change arises from collective awareness rather than expert knowledge alone. Consequently, environmental education must move beyond data-driven modules and become a sustained cultural and moral enterprise that nurtures ecological sensibility through continuous reinforcement across disciplines.

Ultimately, as John Passmore distinguishes, a problem in ecology refers to a scientific question within ecological research, while an ecological problem is a social dilemma emerging from human interactions with nature (Passmore 43). The former requires scientific understanding; the latter demands moral, political, and cultural solutions. The transformation of technical ecological issues into social and ethical concerns marks the transition from environmental science to environmental consciousness. This shift, as Latour and Plumwood both suggest, dissolves the boundaries between science and culture, calling for a truly integrative approach to knowledge.

In conclusion, environmental education must evolve from a technical discipline into an interdisciplinary field that bridges the natural and the human sciences. By fostering ecological awareness through literature, philosophy, history, and the arts, education can transform ecological understanding into ecological wisdom. Only through such an inclusive framework can we move from knowing about the environment to living responsibly within it. This is essential for a transition vital for both human flourishing and planetary survival.

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