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Embedding Environmental Ethics in Indian Education: A Study on Value-Based Approaches to Sustainable Development in Higher Institutions

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Abstract:
Environmental ethics and sustainable values have become central to the discourse on higher education in India, particularly in the context of the National Education Policy (NEP) 2020, which emphasizes holistic, value-based learning. This study explores the extent to which environmental ethics are embedded in Indian higher education institutions (HEIs), the pedagogical practices used to nurture ecological consciousness, and the challenges faced by educators in promoting sustainability. Using a mixed-method approach, data were collected from 120 faculty members and 300 students across five Indian universities especially from Delhi & Haryana. Quantitative analysis was conducted through descriptive and inferential statistics, while qualitative responses were thematically analysed. The findings reveal a growing awareness of environmental ethics among educators but a lack of structured institutional frameworks and curriculum integration. The paper concludes with recommendations for embedding sustainability ethics within higher education curricula, institutional culture, and teacher training, aligning with India's sustainable development goals (SDGs) and NEP 2020 vision. Future research may explore longitudinal impacts of value-based environmental education and comparative studies across regions and disciplines.

Keywords: Environmental ethics, sustainable development, value-based education, higher education, NEP 2020.

INTRODUCTION

The 21st century has witnessed unprecedented environmental challenges: climate change, biodiversity loss, air and water pollution, and depletion of natural resources. Education is widely recognized as a critical means for fostering ecological consciousness and sustainable behaviour (Tilbury, 2011). In this context, environmental ethics - the study of humans' moral relationship with nature provides a framework to develop value-based, responsible, and sustainable citizens.

In India, environmental consciousness has deep cultural and philosophical roots. Ancient texts, including the Vedas, Upanishads, and epics like the Mahabharata and Ramayana, emphasized harmony with nature and respect for all life forms (Gupta, 2016). Gandhian philosophy further reinforces ecological responsibility, simplicity, and ethical stewardship of the environment (Mukherjee, 2019). Integrating such traditional wisdom with modern education provides a culturally relevant foundation for environmental ethics in higher education.

The **National Education Policy (NEP) 2020** emphasizes holistic education, multi-disciplinary learning, and value-based pedagogy. It advocates embedding sustainability education into the curriculum, enabling students to not only acquire knowledge but also internalize ecological values. Despite these

policy directions, studies indicate that Indian HEIs often focus on awareness-driven, event-based interventions, rather than integrating ethics systematically into curricula and institutional culture (Kaur & Kumar, 2022).

This study aims to examine the extent, methods, and challenges of embedding environmental ethics in Higher Education, particularly in fostering sustainable development values among students and faculty. It seeks to provide empirical insights to inform curriculum design, teaching practices, and institutional policy.

Review of Literature

Environmental ethics as an academic discipline gained prominence in the mid-20th century with the work of Leopold (1949) and Naess (1973), advocating the intrinsic value of nature and ecological responsibility. Environmental education, globally reinforced by UNESCO's **Tbilisi Declaration (1977)**, emphasizes knowledge, awareness, attitudes, and skills to encourage environmentally responsible behavior.

In India, environmental education has historically drawn from philosophical and cultural roots. **Gupta (2016)** highlights the integration of ecological ethics in Indian scriptures and the traditional reverence for nature as a living entity. **Mukherjee (2019)** further emphasizes that value-based environmental education aligns with India's socio-cultural ethos, fostering ethical awareness and moral responsibility.

Contemporary research in Indian higher education reveals both progress and gaps. **Sharma and Singh (2021)** observed that students often exhibit awareness of environmental issues but lack sustained action due to the absence of structured pedagogical interventions.

Kaur and Kumar (2022) reported that institutional sustainability efforts, such as eco-clubs and workshops, positively influence students' attitudes but remain limited in scope and depth. **Chakraborty (2020)** highlighted the challenges of translating environmental ethics from theory to practice, noting curriculum rigidity, limited faculty training, and a focus on knowledge acquisition rather than value internalization.

Experiential learning, service-based projects, and community engagement have been cited as effective strategies to promote environmental ethics (Sterling, 2001). Embedding SDGs and sustainability frameworks in higher education can strengthen the moral and behavioral aspects of students' learning experiences (Tilbury, 2011). This study builds upon these insights by empirically exploring the Indian HEI context, assessing both faculty and student perspectives, and identifying barriers and opportunities for systematic integration.

Research Objectives and Hypotheses

Objectives

1. To examine the awareness and perception of environmental ethics among faculty and students in Indian higher education institutions.
2. To identify the pedagogical approaches and institutional practices promoting environmental ethics and sustainability values.
3. To assess the challenges in integrating environmental ethics into curriculum and campus culture.
4. To propose strategies for embedding sustainability ethics within higher education.

Hypotheses

H_1: Faculty members in HEIs possess a moderate to high level of awareness regarding environmental ethics and sustainable development.

H_2: There is a positive correlation between institutional initiatives and students' environmental value orientation.

H_3: Lack of curriculum integration and institutional policy support act as barriers to effective embedding of environmental ethics.

Research Methodology

Research Design

This empirical study employed a mixed-method design combining quantitative surveys and qualitative interviews.

Population and Sample

The population comprised faculty members and students from public and private universities in India. A **sample of 420 respondents** was selected using stratified random sampling 120 faculty and 300 students representing five universities from Delhi & Haryana.

Tools and Instruments

1. **Environmental Ethics Awareness Scale (EEAS)** – 25-item Likert scale measuring cognitive (knowledge), affective (attitude), and behavioural (practice) components of environmental ethics (Sharma & Singh, 2021).
2. **Sustainability Integration Questionnaire (SIQ)** – Assessed institutional initiatives, pedagogical strategies, and perceived challenges, developed by the researcher.
3. **Semi-Structured Interviews** – Conducted with 15 faculty members to explore experiential teaching methods, policy implementation, and institutional culture.

Data Collection and Analysis

Data were collected via Google Forms and in-person interviews. Quantitative data were analysed using **SPSS 25**, applying descriptive statistics (mean, SD), **t-tests**, and **Pearson's correlation**. Qualitative responses were analysed using **thematic coding** with NVivo software, identifying recurrent themes related to pedagogy, challenges, and institutional practices. Reliability of the EEAS was confirmed with Cronbach's alpha = 0.86.

Results and Discussion

a) Awareness of Environmental Ethics

Quantitative analysis indicated high faculty awareness (M = 4.32, SD = 0.47) and moderate student awareness (M = 3.89, SD = 0.61) on a 5-point Likert scale. Analysis revealed that **78% of faculty** and **65% of students** demonstrated high awareness levels regarding environmental ethics. Faculty respondents exhibited deeper conceptual understanding, while students displayed enthusiasm but limited practical engagement.

Table 1: Mean Awareness Scores

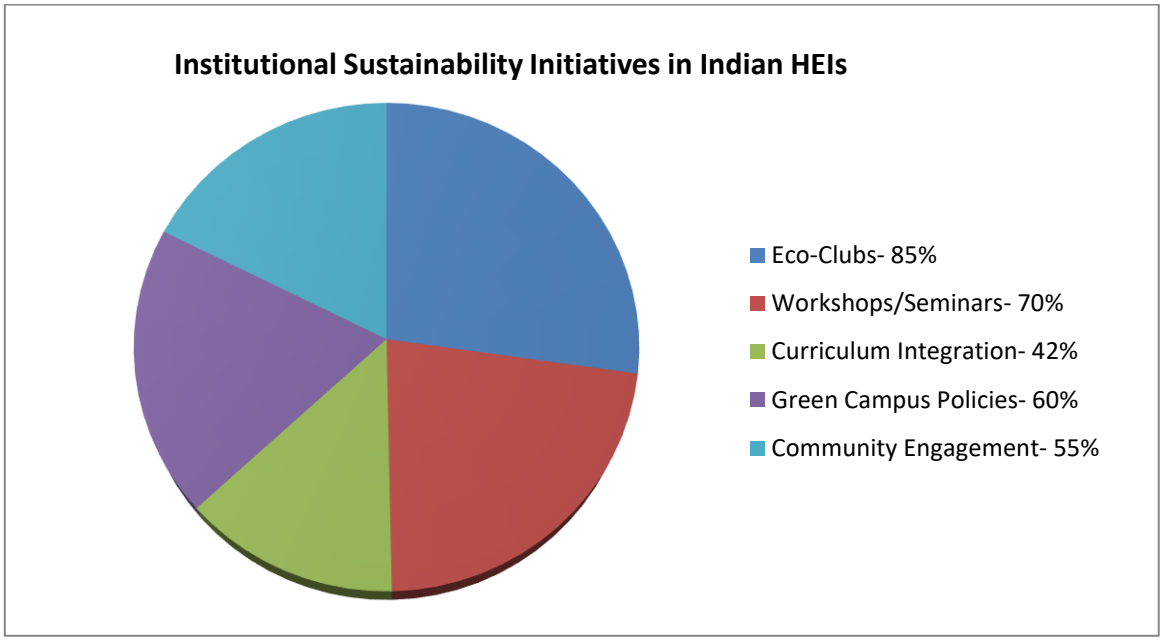
Group	N	Mean	SD
Faculty	120	4.32	0.47
Students	300	3.89	0.61

A **t-test** confirmed significant differences ($p < 0.05$) between faculty and student awareness, supporting H_1. Faculty were more knowledgeable about policy frameworks, SDGs, and philosophical foundations, while students exhibited enthusiasm but limited practical engagement.

Observation: Faculty awareness is significantly higher than students ($t = 5.87$, $p < 0.05$), confirming H_1.

b) Pedagogical and Institutional Practices

Figure 1 illustrates common institutional practices promoting environmental ethics.



Most universities reported organizing **eco-clubs, plantation drives, and sustainability workshops**, but only **42%** had formal curriculum components addressing environmental ethics. Qualitative findings highlighted that sustainability education remains "event-based rather than embedded."
Faculty cited the following approaches:

- Experiential learning projects on waste management and biodiversity.
- Value-based discussions on Gandhian environmental thought.
- Integration of Sustainable Development Goals (SDGs) in assignments.

However, many respondents stressed that time constraints and syllabus rigidity limit deeper engagement. This supports prior findings by Kaur & Kumar (2022) that institutional support is critical for sustained impact.

Correlation between Institutional Initiatives and Students' Environmental Values

Pearson's correlation ($r = 0.62$, $p < 0.01$) indicated a **strong positive relationship** between institutional initiatives and students' environmental value orientation, confirming **H_2**. Students in universities with active sustainability policies exhibited higher pro-environmental attitudes and practices.

C) Barriers to Implementation

Table 2: Barriers to Integration of Environmental Ethics

Barrier	Percentage of Respondents	Description
Curriculum rigidity	68%	Overloaded syllabus limits sustainability content
Lack of faculty training	55%	Teachers need pedagogical skills
Event-based approach dominance	60%	Sustainability often limited to single events
Lack of institutional incentives	50%	No rewards or monitoring systems

Observation: Curriculum rigidity and limited training are major impediments, confirming H_3.

Challenges Identified

- **Curricular rigidity** – Overloaded syllabi with limited flexibility for sustainability modules.

- **Limited faculty training** – Teachers often lack pedagogical strategies to teach environmental ethics effectively.
- **Event-based focus** – Sustainability education often occurs as one-off events rather than integrated learning.
- **Policy gaps** – Absence of institutional incentives and monitoring mechanisms for ethical integration.

These align with global findings that higher education faces a "values-action gap" in sustainability education (Sterling, 2001; Tilbury, 2011).

Findings

1. **Awareness is high**, but practical integration of environmental ethics in teaching remains partial.
2. **Faculty enthusiasm** is evident, yet institutional mechanisms for sustainability are inconsistent.
3. **Curricular rigidity** and lack of teacher training are significant barriers.
4. **Institutional commitment** (through policies, clubs, and sustainability cells) positively influences students' ethical values.
5. **Students exhibit motivation**, but require structured guidance to translate awareness into sustained behaviour.

Implications for Policy and Practice

- **Curriculum Reform:** Incorporate environmental ethics as a mandatory interdisciplinary component in undergraduate and postgraduate courses, aligned with NEP 2020's holistic vision.
- **Faculty Development:** Organize continuous professional development programs on environmental pedagogy and sustainability ethics.
- **Institutional Culture:** Establish "Green Campus" policies emphasizing waste reduction, renewable energy use, and biodiversity conservation.
- **Student Engagement:** Promote community-based projects linking classroom learning with local environmental challenges.
- **Policy Alignment:** Encourage University Grants Commission (UGC) and National Assessment and Accreditation Council (NAAC) to include sustainability indicators in accreditation processes.
- **Interdisciplinary Approach:** Encourage cross-disciplinary courses combining science, social sciences, humanities, and ethics for holistic understanding.

CONCLUSION

Embedding environmental ethics in Indian higher education is essential for cultivating responsible, ecologically conscious citizens. While faculty awareness is high and student interest exists, systematic integration into curricula and institutional practices remains insufficient. Effective embedding requires curriculum reforms, faculty empowerment, experiential pedagogy, institutional support, and alignment with NEP 2020 and SDGs. By transitioning from awareness-based to value-based education, HEIs can foster ethical, sustainable behaviour, bridging the gap between knowledge and action.

This study contributes empirically to understanding environmental ethics integration in Indian higher education and provides actionable recommendations for policy, curriculum, and pedagogy. Future research may explore longitudinal impacts of value-based environmental education and comparative studies across regions and disciplines.

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