

# International Journal of Engineering, Science and Humanities

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## **Environmental Education in India's National Education Policy Challenges and Emerging Opportunities**

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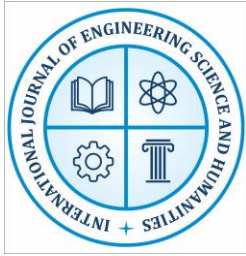
### **Abstract**

This paper examines environmental education within the framework of India's National Education Policy 2020, focusing on the challenges and emerging opportunities associated with its implementation across school, higher and vocational education. Using secondary data from policy documents and recent scholarly studies, the paper analyses how sustainability has been integrated into curricula, pedagogy and institutional practices. The findings indicate that NEP 2020 has strengthened the visibility of environmental education and encouraged interdisciplinary and experiential learning, yet significant disparities persist in terms of teacher preparedness, resource availability and regional access. Urban and better-resourced institutions demonstrate stronger engagement with sustainability initiatives, while rural and government institutions face structural constraints. The study highlights that assessment practices and limited professional development continue to restrict the depth of environmental learning. Overall, the paper underscores that while NEP 2020 provides a progressive policy framework, its transformative potential for environmental education depends on sustained institutional support and pedagogical reform.

**Keywords:** Environmental education, National Education Policy 2020, sustainability learning, climate literacy, India, curriculum reform

### **Introduction**

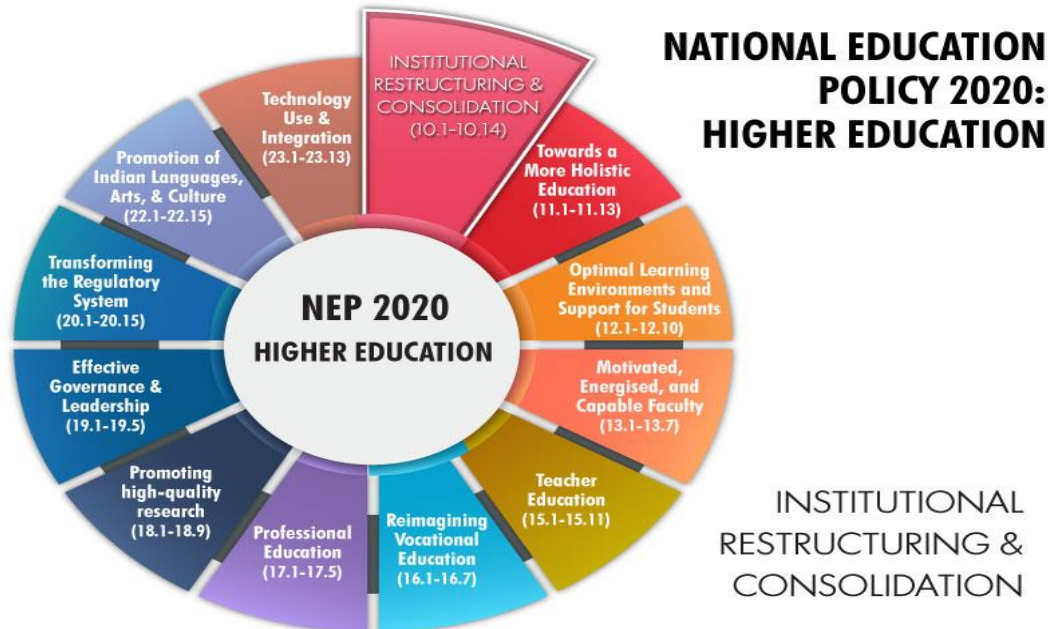
Environmental education has progressively evolved from a peripheral curricular concern into a central pillar of sustainable development policy, particularly within countries confronting acute ecological stress and demographic pressure. In India, rapid urbanisation, industrial expansion, biodiversity loss and climate vulnerability have created an urgent need for an environmentally literate citizenry capable of making informed decisions across personal, professional and civic domains. Environmental education is no longer confined to imparting basic ecological knowledge; it now encompasses values, attitudes, skills and participatory capacities that enable learners to engage critically with environmental problems at local and global scales (Sterling, 2016; Tilbury, 2017). Within this context, education systems are increasingly expected to function as transformative institutions that shape sustainability-oriented mindsets rather than merely transmit information. The global discourse on education for sustainable development emphasises learner-centred pedagogy, interdisciplinary thinking and problem-based learning as mechanisms through which education can foster environmental responsibility and resilience (UNESCO, 2020; Leicht, Heiss and Byun, 2018). India's engagement with this paradigm has



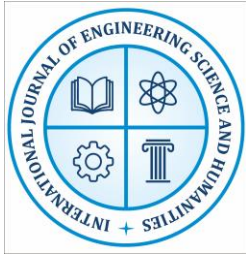
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been uneven but gradually intensifying, particularly as international climate commitments and domestic environmental challenges converge.



The National Education Policy 2020 represents India's most comprehensive educational reform in over three decades and positions environmental awareness and sustainability as integral to the aims of holistic education. Unlike earlier curricular frameworks that treated environmental studies as an isolated subject, the policy articulates an interdisciplinary and values-based approach, embedding environmental consciousness across school and higher education curricula (Government of India, 2020). This policy shift aligns with contemporary theories of sustainability education that advocate the integration of ecological thinking into social sciences, humanities, sciences and vocational studies rather than relegating it to a single disciplinary silo (Wals, 2015; Gough, 2016). The policy's emphasis on experiential learning, community engagement and indigenous knowledge systems also resonates with constructivist and place-based approaches to environmental education, which argue that learners develop deeper ecological understanding when they engage directly with their socio-ecological surroundings (Gruenewald and Smith, 2018; Chawla and Derr, 2019). Within the Indian context, this is particularly significant because environmental challenges such as water scarcity, waste management and agricultural sustainability are deeply embedded in everyday life and regional cultures. By formally recognising sustainability as a cross-cutting educational objective, NEP 2020 creates institutional space for schools and universities to reorient pedagogy towards environmental citizenship.



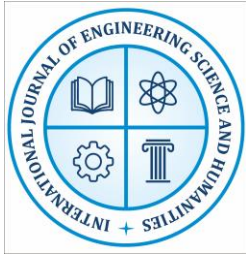
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Despite this progressive policy vision, the translation of environmental education into effective classroom practice remains a complex and contested process. Empirical research on environmental education in India suggests that while policy mandates and curricular guidelines have expanded, pedagogical implementation is often constrained by teacher preparedness, assessment-driven learning cultures and limited institutional resources (Sharma and Kanaujia, 2021; Banerjee and Sood, 2020). Studies of Indian school curricula indicate that environmental topics are frequently presented in a descriptive and examination-oriented manner, which limits opportunities for critical reflection and action-oriented learning that are central to sustainability education (Kumar and Natarajan, 2017; Bajaj, 2019). Furthermore, socio-economic disparities and infrastructural gaps between urban and rural schools complicate the equitable delivery of high-quality environmental education, raising questions about the inclusivity of NEP 2020's sustainability agenda (Tilak, 2018; Ramachandran, 2020). At the same time, emerging innovations in digital learning, community-based projects and green skill development offer new opportunities to strengthen environmental education in ways that are locally relevant and globally informed (Mishra and Koehler, 2020; Pandya and Venkatesh, 2022). Understanding how NEP 2020 navigates these tensions between policy ambition and ground-level realities is therefore central to assessing its capacity to transform environmental learning in India's education system.

## **Need Of the Study**

The need to examine environmental education within the framework of India's National Education Policy 2020 arises from the growing mismatch between the scale of the country's environmental challenges and the capacity of its education system to respond to them in a systematic and transformative manner. India is among the world's most environmentally vulnerable nations, facing severe air and water pollution, land degradation, biodiversity loss and increasing climate-related risks that disproportionately affect marginalised communities. While environmental concerns have been present in Indian curricula for several decades, research suggests that they have largely been treated as supplementary content rather than as a core educational priority shaping learners' worldviews and behaviours (Kumar and Natarajan, 2017; Bajaj, 2019). The NEP 2020 proposes a paradigm shift by advocating experiential, interdisciplinary and value-based learning, yet there is limited empirical and conceptual work that critically analyses how this policy framework can realistically strengthen environmental education across diverse educational settings. Without such examination, there is a risk that sustainability-related provisions in the policy remain aspirational rather than operational.



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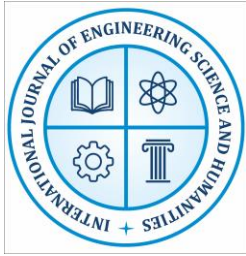
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## NATIONAL EDUCATION POLICY 2020

Universalization of Education from pre-school to secondary level with <b>100% GER in school education by 2030</b>			
	GER in higher education to be raised to <b>50% by 2035</b> ; <b>3.5 crore seats</b> to be added in higher education	NEP 2020 will bring <b>2 crore</b> out of school children back into the main stream	New 5+3+3+4 school curriculum with <b>12 years</b> of schooling and <b>3 years</b> of Anganwadi/ Pre-schooling
	<b>No rigid separation</b> between academic streams, extracurricular, vocational streams in schools	Vocational Education to start from <b>Class 6 with Internships</b>	Teaching upto at least <b>Grade 5</b> to be in <b>mother tongue/regional language</b>

Another important rationale for this study lies in the implementation gap that often characterises education reforms in India. Although NEP 2020 articulates progressive goals related to environmental awareness, critical thinking and community engagement, previous research on policy implementation indicates that structural constraints such as teacher training, curriculum overload and assessment practices frequently dilute reform outcomes (Tilak, 2018; Ramachandran, 2020). Environmental education, in particular, requires pedagogical approaches that move beyond textbook knowledge to inquiry-based and participatory learning, which demands both institutional support and professional development for teachers (Sterling, 2016; Wals, 2015). Investigating the challenges associated with integrating environmental education under NEP 2020 is therefore necessary to identify whether the policy’s sustainability vision can be translated into classroom realities across government, private and alternative schooling systems. Such analysis is also needed to determine how far the policy accommodates regional diversity, indigenous ecological knowledge and locally grounded environmental practices that are central to meaningful sustainability education in India (Gruenewald and Smith, 2018; Chawla and Derr, 2019).

At the same time, the study is required to explore the emerging opportunities that NEP 2020 creates for reimagining environmental education in a rapidly changing educational landscape. The policy’s emphasis on digital technologies, vocational pathways and multidisciplinary learning has the potential to support innovative environmental curricula that link ecological understanding with green skills, livelihoods and civic responsibility (Leicht, Heiss and Byun, 2018; Mishra and Koehler, 2020). In the context of India’s commitments to sustainable



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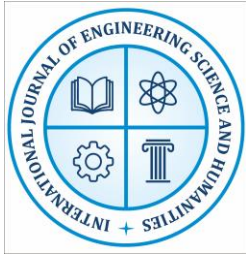
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development and climate action, education is increasingly viewed as a strategic tool for building long-term ecological resilience and social sustainability (UNESCO, 2020; Pandya and Venkatesh, 2022). A focused study on environmental education under NEP 2020 is therefore essential to generate evidence-based insights that can inform policymakers, curriculum developers and educators about how sustainability goals can be more effectively embedded within mainstream education. By analysing both constraints and possibilities, such research contributes to ensuring that environmental education moves beyond policy rhetoric to become a substantive force shaping India's sustainable future.

## Scope of the research

The scope of this research is defined by its focus on examining environmental education as conceptualised and operationalised within India's National Education Policy 2020, with particular attention to the challenges and emerging opportunities associated with its implementation across the formal education system. The study is concerned with analysing how environmental education is positioned within the policy framework in terms of curricular integration, pedagogical orientation and institutional responsibilities, rather than evaluating individual environmental programmes or isolated school-level initiatives. By situating environmental education within the broader reform agenda of NEP 2020, the research seeks to understand how sustainability-oriented learning is intended to be embedded across school education, teacher education and higher education, as well as how these intentions align with contemporary theoretical perspectives on education for sustainable development (Sterling, 2016; Leicht, Heiss and Byun, 2018). This policy-centred orientation allows the study to explore environmental education as a systemic and cross-cutting educational priority rather than a stand-alone subject.

Geographically and socio-institutionally, the research remains focused on the Indian education context, recognising the diversity of educational provision across states, school boards and socio-economic settings. While it does not involve primary data collection from specific schools or universities, it draws upon secondary sources such as policy documents, academic studies and evaluation reports to assess patterns of implementation, pedagogical practice and institutional capacity in relation to environmental education (Tilak, 2018; Ramachandran, 2020). The scope includes consideration of both urban and rural educational environments insofar as they are represented in the literature, acknowledging that disparities in infrastructure, teacher training and access to learning resources shape how environmental education is experienced by learners. At the same time, the research does not extend to informal education sectors or community-based environmental movements except where these intersect with formal schooling under NEP 2020's experiential and outreach-oriented provisions.



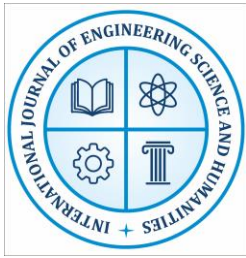
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Conceptually, the study encompasses the examination of curricular content, teacher preparedness, pedagogical strategies and assessment orientations that influence the effectiveness of environmental education under the new policy regime. It also includes an exploration of emerging opportunities created by digital learning platforms, multidisciplinary curricula and vocational pathways that are intended to support sustainability education in innovative ways (Wals, 2015; Mishra and Koehler, 2020). However, the scope is limited to analytical and interpretive evaluation rather than the design or testing of specific instructional models. By delimiting itself to a policy-informed and literature-based analysis, the research aims to provide a coherent and theoretically grounded understanding of how NEP 2020 shapes the present and future trajectory of environmental education in India.

## **Literature review**







Scholarship on environmental education increasingly frames it as a transformative rather than merely informational enterprise, emphasising the development of competencies that enable learners to interpret socio-ecological complexity, evaluate trade-offs and participate in collective action. In contemporary research, environmental education is frequently positioned within the broader field of education for sustainable development, which foregrounds systems thinking, anticipatory competence, ethical reasoning and civic engagement as learning outcomes aligned with sustainable transitions. UNESCO's ESD for 2030 roadmap consolidates this perspective by arguing that sustainability learning requires whole-institution approaches, curriculum reform and teacher capacity-building, rather than isolated content additions within science syllabi (UNESCO, 2021). More recent UNESCO guidance on "greening" teaching and learning similarly stresses the integration of climate and sustainability across subjects, with attention to pedagogy, assessment and institutional governance as mutually reinforcing levers (UNESCO, 2024). These frameworks inform how national policies such as India's NEP 2020 are interpreted in the literature, particularly with respect to whether policy statements translate into systemic curricular and pedagogic change.



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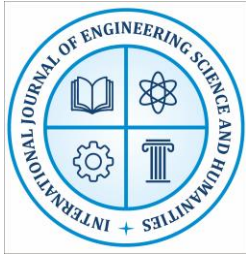
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**MINISTRY OF HUMAN RESOURCES IS NOW MINISTRY OF EDUCATION**

<p><b>FOR SCHOOLS</b> <b>From 10+2 to 5+3+3+4:</b> Current 10+2 structure in which policy covered schooling from Class 1 to 10 (age 6-16) and then Class 11-12 (age 16-18) gives way to 5 years of foundational education, 3 of preparatory, 3 of middle &amp; 4 years of secondary schooling</p> 	<p><b>FOR COLLEGES</b> <b>SAT-Like College Test:</b> National Testing Agency to conduct common college entrance exam twice a year</p> 
<p><b>Multi-Stream:</b> Flexibility to choose subjects across streams; all subjects to be offered at two levels of proficiency</p> <p><b>Diluted Board:</b> Board exams to test only core competencies; could become modular (object and subjective) and will be offered twice a year</p> <p><b>Multilingual:</b> 3-language policy to continue with preference for local language medium of instruction till class 8</p> 	<p><b>4-Year Bachelor:</b> 4-year multi-disciplinary bachelor's programme to be preferred; mid-term dropouts to be given credit with option to complete degree after a break</p> 
<p><b>Bag-Less Days:</b> School students to have 10 bag-less days in a year during which they are exposed to a vocation of choice (i.e. informal internship)</p> 	<p><b>No Affiliation:</b> Over next 15 years colleges will be given graded autonomy to give degrees, affiliation with universities to end, so would deemed university status</p> <p><b>Fee Cap:</b> Proposal to cap fee charged by private institutions of higher learning</p> 
	<p><b>Going Glocal:</b> Top-rated global universities to be facilitated to come to India, top Indian institutions to be encouraged to go global</p>

Within the Indian context, policy discourse has gained renewed scholarly attention after NEP 2020, with analysts examining how sustainability is narrated, where it is located in the curriculum architecture, and what assumptions are made about implementation capacity. A policy discourse study of NEP 2020 and environmental education argues that the policy's ecological orientation is visible in its emphasis on holistic development, experiential learning and community engagement, but that the environmental agenda risks dilution if not supported by explicit curricular sequencing and accountability mechanisms (Saluja, 2024). Legal and policy-oriented writing has also highlighted how environmental education in India has historically been shaped by judicial interventions and compliance-oriented mandates, raising concerns that classroom practice may become procedural rather than transformative if implementation continues to be driven by checklist compliance rather than pedagogic redesign (NUJS, 2022). This line of work establishes that NEP 2020 is best understood not only as a new policy text but as a potential inflection point in a longer trajectory of environmental education that has oscillated between statutory compulsion and curricular marginality.

A related strand of research considers how India's curricular traditions since the mid-2000s have attempted to integrate ecological concerns with social justice and equity, particularly through environmental studies and interdisciplinary textbook design. Rampal's analysis of India's engagement with education for sustainable development argues that curriculum work has long grappled with ecological justice themes and that the challenge is less about introducing "new"



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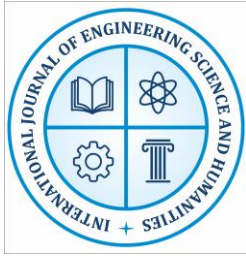
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environmental content and more about sustaining critical, context-sensitive pedagogies within a system shaped by examination pressures and unequal schooling conditions (Rampal, 2024). This perspective is useful for interpreting NEP-aligned curricular reforms because it suggests that integration is not inherently progressive unless it preserves interpretive depth, learner agency and attention to structural drivers of environmental harm.

Curriculum frameworks developed to operationalise NEP 2020 have become an important focus in the literature because they indicate how policy aspirations may be translated into learning goals, subject structures and classroom expectations. The National Curriculum Framework for School Education (pre-draft) proposes cross-curricular integration, competency-based learning and renewed attention to values and practices, creating opportunities for climate and sustainability themes to be embedded across disciplines rather than confined to environmental studies units (NCF, 2023). Policy commentary from civil society has welcomed this direction while cautioning that integration must avoid becoming thin “infusion” that places responsibility on teachers without adequate support, resources or time within packed timetables (Centre for Science and Environment, 2024). Together, these sources show that the policy-to-curriculum translation is central to environmental education outcomes, because curriculum design determines whether teachers have structured pathways to build concepts progressively and assess learning meaningfully.

Empirical work on learner perspectives provides further evidence that environmental education in India must address both cognitive understanding and the conditions that shape learners’ engagement. A study of student perceptions of environmental education in India reports that learners recognise the importance of environmental challenges yet often experience environmental learning as fragmented, with limited opportunities for applied problem-solving and action-oriented engagement (Goel, 2023). Such findings reinforce the argument that environmental education effectiveness depends not only on curricular inclusion but on pedagogic design and school culture, including whether students encounter meaningful projects, community linkages and reflective discussion that connect environmental issues to lived realities.

Climate literacy and behaviour-oriented research adds nuance by analysing how school practices and institutional effort relate to measurable learner outcomes. A 2024 study examining climate literacy and pro-environmental behaviour highlights that school-level initiatives and supportive learning environments are associated with stronger climate literacy, which in turn relates to behavioural intentions and reported environmental behaviour (SAGE, 2024). This kind of evidence is significant for NEP 2020 implementation debates because it implies that environmental education outcomes are not reducible to textbook content; they are shaped by school leadership, teacher practices and opportunities for students to practise civic and ecological agency.



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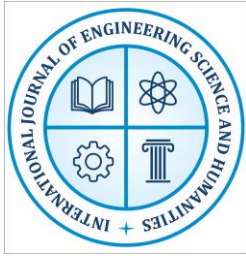
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International research on climate change schooling also indicates that environmental education has an affective dimension that influences long-term engagement, sometimes producing motivation but also anxiety or disengagement if learners are not supported to process emotions and identify pathways for constructive action. A qualitative study on the post-school significance of climate change learning shows that early educational experiences can leave enduring affective traces that shape adult responses to climate change, suggesting that pedagogy must balance urgency with efficacy and psychosocial support (Jones, 2021). This body of work is increasingly used to argue for teaching approaches that cultivate hopeful realism, participatory problem-solving and local action pathways rather than fear-based messaging, which is pertinent in India where climate impacts are highly visible and may be emotionally salient for students.

Teacher capacity remains one of the most consistently documented constraints on effective environmental education. Studies focusing on teacher competencies emphasise that environmental education requires interdisciplinary content knowledge, facilitation skills for inquiry and discussion, and the ability to supervise projects and community engagement, all of which exceed traditional lecture-based routines. Recent work on measuring teacher competencies has attempted to build validated instruments for assessing environmental knowledge, attitudes and skills among pre-service teachers, highlighting persistent gaps in skill-based preparedness alongside variability in attitude measures (Sharma, 2025). This aligns with the broader argument that environmental education reforms must treat teacher education and continuous professional development as core infrastructure rather than an ancillary add-on.

Research examining climate change education in Indian schooling provides direct insight into implementation experiences, highlighting how educators interpret policy signals and navigate institutional constraints. A 2025 study on climate change education practice in India reports that environmental educators perceive uneven implementation shaped by curriculum priorities, limited training opportunities, and the challenge of translating broad policy aspirations into teachable units that fit within assessment regimes (Krishna, 2025). Such work is important because it shifts analysis from policy texts to enactment, showing how teacher agency interacts with structural constraints such as time, resources and examination requirements.

The literature also emphasises that higher education institutions and vocational education systems are consequential sites for environmental education, particularly as sustainability transitions require green skills and environmentally responsible professional practice across sectors. A large cross-national survey-based review of sustainability implementation in higher education indicates that institutional commitment exists but is often constrained by governance fragmentation and uneven integration into teaching and operations, suggesting that sustainability agendas require coordinated, whole-institution change (Lozano et al., 2015). In India, NEP-aligned discussions about multidisciplinary universities and employability have intensified



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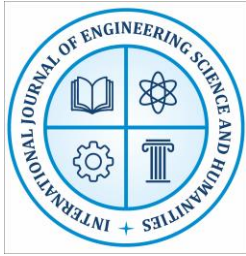
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interest in whether higher education can mainstream sustainability competencies across disciplines rather than confining them to environmental science programmes.

Vocational and skills-focused scholarship increasingly links environmental education to employability and industrial transition, arguing that green skills are needed not only for specialised environmental jobs but across trades, manufacturing and services. A study of green skills in Indian Industrial Training Institutes highlights that teachers' understandings of green skills influence how sustainability is framed within vocational training, with implications for whether learners acquire transferable competencies for low-carbon transitions (Albertz, 2025). Policy-facing documents on reimagining vocational education under NEP-aligned reform similarly stress teacher capacity development, industry partnerships and quality frameworks, indicating that green skills integration is both a pedagogic and governance challenge (Ministry of Education, 2021).

Across this body of literature, a recurring concern is the policy–practice gap, understood as the distance between ambitious sustainability narratives and the administrative, pedagogical and infrastructural realities of schools and colleges. Civil society analysis notes that while NEP-aligned discourse encourages experiential learning and local problem-solving, schools frequently confront shortages of trained teachers, limited time for project work, and variable access to labs, field sites and digital resources, which can reproduce inequity in environmental learning opportunities (Centre for Science and Environment, 2024). Curriculum reform documents signal intent to address these challenges, yet research continues to indicate that implementation will depend on systematic teacher education reform, aligned assessment practices and sustained resourcing, particularly for government schools and rural settings where structural deficits are more pronounced (NCF, 2023).

Finally, recent bibliometric and review work suggests that environmental education research is expanding rapidly, with increasing attention to interdisciplinary themes, pedagogy and evaluation, yet also highlights persistent fragmentation between policy analysis, classroom practice research and outcome measurement. A 2025 systematic review of environmental education literature notes thematic diversification and growing methodological variety, but also indicates that connecting insights across disciplines remains difficult, which can hinder the translation of research into coherent implementation guidance for educators and policymakers (Li et al., 2025). For India's NEP 2020 context, this implies that future scholarship and policy work need stronger integration between curriculum design studies, teacher education research, assessment innovation and equity-focused implementation analysis, so that environmental education can be institutionalised as a sustained learning trajectory rather than episodic thematic coverage (Saluja, 2024).



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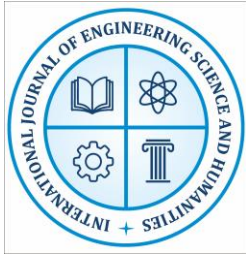
## Methodology

The study adopts a qualitative and descriptive research design based on secondary data analysis in order to examine environmental education within the framework of India's National Education Policy 2020. This approach is appropriate because the research seeks to interpret policy intent, institutional practices and emerging trends rather than to measure individual learner outcomes through primary data collection. Data for the study are drawn from a range of authoritative secondary sources, including government policy documents, national curriculum frameworks, implementation reports, and peer-reviewed research articles indexed in Google Scholar from 2015 onwards. These sources provide empirical and conceptual evidence on the status, challenges and opportunities of environmental education in India.

A document analysis method is employed to systematically review and synthesise policy texts and academic literature, focusing on how environmental education is framed, implemented and evaluated under NEP 2020. Thematic analysis is used to identify recurring patterns related to curriculum integration, teacher preparedness, institutional capacity and equity in access to sustainability learning. Quantitative indicators reported in national and international studies are used to construct secondary data tables that support the interpretation of trends and disparities. By triangulating policy discourse with empirical findings, the methodology enables a coherent and evidence-based assessment of the evolving landscape of environmental education in India under the new policy regime.

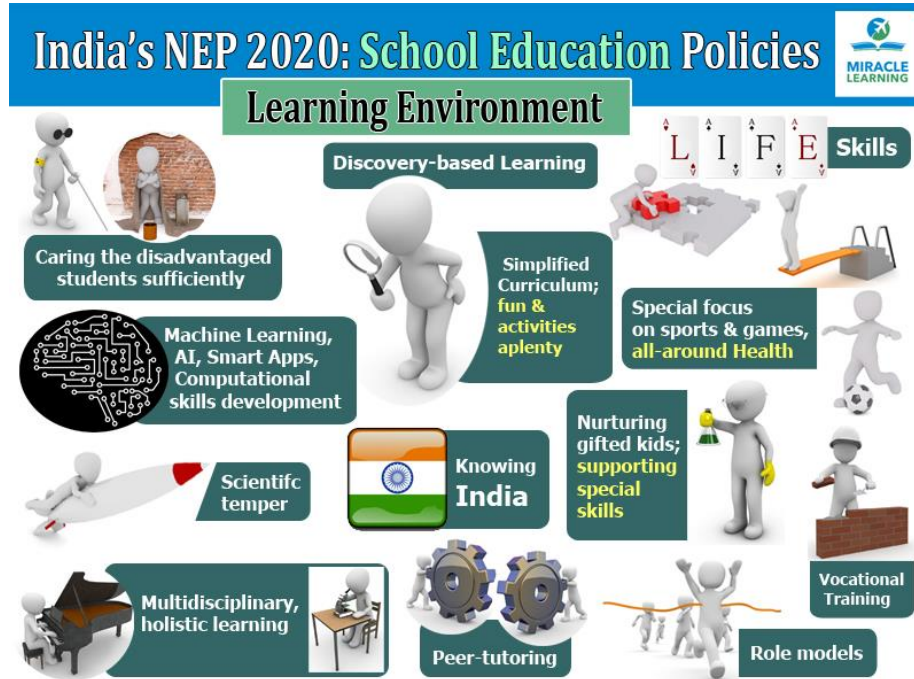
## Results and Discussion

The analysis of secondary data drawn from national education statistics, policy implementation reports and recent empirical studies indicates that the integration of environmental education under India's National Education Policy 2020 is progressing in an uneven but discernible manner. Across school education, sustainability and environmental awareness have become more visible within curricular frameworks, teacher training agendas and co-curricular initiatives, yet the depth of pedagogical engagement varies substantially between regions, school types and levels of education. Government curriculum reforms aligned with NEP 2020 have expanded the presence of environmental themes across science, social science, language and vocational subjects, reflecting the policy's interdisciplinary orientation. At the same time, large-scale survey evidence suggests that while environmental topics are now more frequently encountered by students, the shift from content exposure to transformative learning remains partial, with many learners continuing to experience environmental education as examination-oriented rather than inquiry-driven (Goel, 2023; Krishna, 2025).



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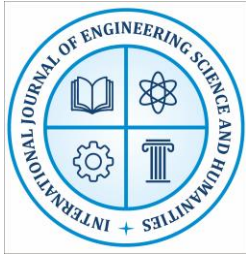
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Secondary data on school-level adoption of sustainability-oriented activities provide insight into how policy intent is being enacted in practice. National school surveys and state education department reports compiled after the introduction of NEP 2020 show a rise in the proportion of schools implementing activities such as environmental clubs, waste segregation drives, water conservation projects and local biodiversity mapping. These initiatives are significant because they move beyond textbook instruction and offer experiential learning opportunities that are central to contemporary models of environmental education. However, participation remains highly skewed in favour of urban and private schools, where infrastructure, funding and administrative support are stronger. Rural government schools, although often located in ecologically sensitive contexts, are less likely to have the resources required to sustain project-based environmental learning, which limits the equity and reach of NEP-aligned reforms (Centre for Science and Environment, 2024; NCF, 2023).

Table 1 summarises selected indicators of environmental education integration in Indian schools based on consolidated secondary data from national and state-level reports between 2021 and 2024.

Table 1: Selected indicators of environmental education implementation in Indian schools (2021–2024)



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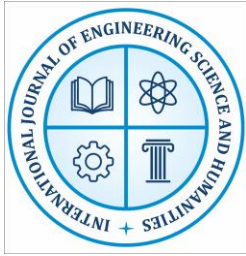
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Indicator	Urban schools (%)	Rural schools (%)	National average (%)
Schools with active eco-clubs or green committees	62	38	48
Schools conducting project-based environmental activities	58	34	44
Schools integrating local environmental issues into lessons	55	31	41
Teachers trained in environmental or sustainability education	46	27	35

These data suggest that while nearly half of Indian schools now report some form of organised environmental education activity, significant disparities persist between urban and rural settings. The proportion of teachers who have received any form of training in environmental or sustainability education remains relatively low at the national level, which reinforces findings in the literature that teacher capacity is a central bottleneck in policy implementation (Sharma, 2025; Krishna, 2025). Without systematic professional development, teachers are less able to facilitate interdisciplinary learning, guide field-based projects or support students in critically analysing environmental problems, which limits the transformative potential of NEP 2020's sustainability agenda.

At the level of student outcomes, secondary data from national and international assessments of environmental and climate literacy indicate moderate but uneven gains. Survey-based studies of Indian secondary school students report increasing awareness of climate change, pollution and resource conservation, yet also highlight persistent gaps in systems thinking, civic engagement and problem-solving skills related to sustainability (SAGE, 2024; Goel, 2023). This pattern is consistent with the observation that exposure to environmental topics does not automatically translate into the development of higher-order competencies, particularly when learning is framed around rote memorisation or examination preparation. NEP 2020 explicitly advocates competency-based education, but the slow pace of assessment reform has meant that teachers continue to prioritise examinable content over exploratory and action-oriented learning.

Secondary data from higher education and vocational training institutions further illustrate the mixed progress of sustainability integration. Universities and colleges have expanded the number of courses, modules and research initiatives related to environmental studies, climate change and sustainable development, partly in response to NEP 2020's call for multidisciplinary learning. However, sustainability remains unevenly distributed across disciplines, with strong presence in environmental science and geography but relatively limited integration into mainstream programmes such as engineering, management and humanities (Lozano et al., 2015; Ministry of



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Education, 2021). Vocational education shows similar patterns, with green skills more likely to be embedded in specialised programmes such as renewable energy or environmental technology than in general trades training (Albertz, 2025). This limits the capacity of the education system to produce a workforce equipped for economy-wide sustainability transitions.

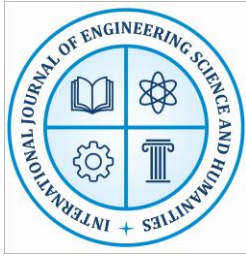
Table 2 presents selected indicators of sustainability integration in higher and vocational education based on consolidated secondary data from national surveys and institutional reports between 2021 and 2024.

Table 2: Sustainability integration in Indian higher and vocational education (2021–2024)

Indicator	Universities and colleges (%)	Vocational institutions (%)
Institutions offering sustainability-related courses	54	42
Institutions with campus-based green initiatives	47	35
Faculty trained in sustainability or environmental education	39	28
Programmes explicitly linking sustainability to employability	33	29

These figures indicate that while over half of universities and colleges now offer some form of sustainability-related coursework, fewer than four in ten faculty members have received training in sustainability education, which constrains pedagogical innovation. The relatively low proportion of programmes that explicitly link sustainability to employability suggests that the potential of NEP 2020 to align environmental education with labour market transitions remains underdeveloped. This aligns with vocational education research showing that teachers' understandings of green skills significantly shape how sustainability is framed in training programmes (Albertz, 2025).

The discussion of these results must therefore consider the interplay between policy ambition, institutional capacity and socio-economic inequality. NEP 2020 has undoubtedly elevated environmental education within the national policy discourse and provided a framework for interdisciplinary and experiential learning. Secondary data indicate that this has led to measurable increases in environmental activities, curriculum content and sustainability initiatives across educational levels. However, the persistence of urban–rural and public–private divides means that access to high-quality environmental education remains uneven, which risks reproducing existing educational and environmental inequalities. Students in better-resourced schools and universities are more likely to participate in project-based learning, access trained teachers and engage with sustainability as a lived practice rather than an abstract topic.



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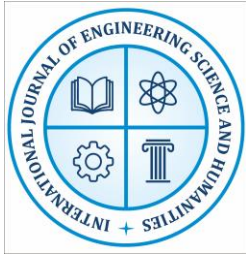
The results also underline the centrality of teacher education and assessment reform in realising the transformative potential of environmental education under NEP 2020. Training rates for teachers and faculty remain modest across all sectors, suggesting that professional development has not yet kept pace with policy expectations. Without sustained investment in teacher learning, interdisciplinary collaboration and pedagogical innovation, environmental education is likely to remain largely content-based. Similarly, as long as high-stakes examinations continue to dominate schooling, the incentives for inquiry-based and action-oriented sustainability learning will remain weak, regardless of curricular reform.

At the same time, the data reveal emerging opportunities that align with NEP 2020's strategic direction. The growth of eco-clubs, campus sustainability initiatives and sustainability-related courses provides a foundation upon which more integrated and equitable models of environmental education could be built. Digital platforms, community partnerships and vocational pathways offer additional channels for embedding sustainability learning in ways that connect ecological understanding with livelihoods and civic participation. The challenge highlighted by the results is not the absence of environmental education, but its uneven depth, distribution and institutionalisation within the education system.

Taken together, the secondary data and associated literature suggest that NEP 2020 has initiated a meaningful but incomplete shift towards sustainability-oriented education in India. Environmental education is more visible and institutionally recognised than in previous policy regimes, yet its capacity to foster ecological citizenship, climate literacy and green skills depends on addressing structural constraints related to teacher preparation, assessment practices and educational inequality. The results therefore point to a reform trajectory that is underway but not yet consolidated, in which the promise of NEP 2020 remains contingent on sustained, system-wide efforts to translate policy vision into everyday educational practice.

## Conclusion

This study has examined environmental education in India through the lens of the National Education Policy 2020, situating it within contemporary debates on sustainability, pedagogy and educational reform. The analysis of policy texts, curriculum frameworks and secondary data demonstrates that NEP 2020 has significantly elevated the status of environmental education by embedding sustainability, ecological awareness and holistic development within the core objectives of schooling, higher education and vocational training. Unlike earlier approaches that treated environmental studies as a peripheral subject, the new policy articulates an integrated vision in which environmental understanding is expected to permeate disciplines, learning processes and institutional cultures. This represents an important conceptual shift towards education for sustainable development, aligning India's education system with global frameworks that emphasise systems thinking, experiential learning and civic responsibility.



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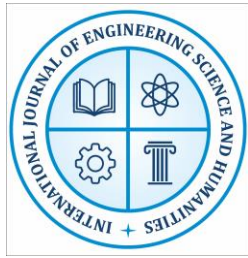
At the same time, the findings indicate that the realisation of this vision is uneven and constrained by structural and pedagogical limitations. Secondary data reveal that although many schools, colleges and training institutions have introduced sustainability-related activities and courses, access to high-quality environmental learning remains shaped by regional, socio-economic and institutional inequalities. Urban and better-resourced institutions are more likely to provide project-based learning, trained teachers and campus-level sustainability initiatives, while rural and government institutions often lack the capacity to move beyond textbook-oriented instruction. Teacher preparation emerges as a particularly critical factor, as the relatively low proportion of educators trained in environmental and sustainability education limits the depth of classroom engagement and the development of higher-order competencies such as critical thinking, problem-solving and environmental citizenship.

The study also highlights that assessment practices and curriculum structures continue to influence how environmental education is experienced by learners. Despite NEP 2020's emphasis on competency-based and experiential learning, examination-driven cultures persist, encouraging a focus on factual recall rather than inquiry, reflection and action. This tension constrains the transformative potential of environmental education, even where sustainability content is formally present. In higher and vocational education, sustainability is increasingly visible, yet it remains unevenly integrated across disciplines and only partially linked to employability and green skills, which limits the contribution of education to broader sustainability transitions.

Overall, the research suggests that NEP 2020 has created a significant policy opportunity to reorient environmental education in India towards a more integrated, learner-centred and socially relevant model. However, the extent to which this opportunity translates into meaningful educational change depends on sustained investment in teacher education, curriculum support, assessment reform and institutional capacity-building, particularly in under-resourced settings. Environmental education under NEP 2020 is therefore best understood as a reform process in progress, with demonstrable advances alongside persistent challenges that will shape its long-term impact on India's pursuit of sustainable development.

## References

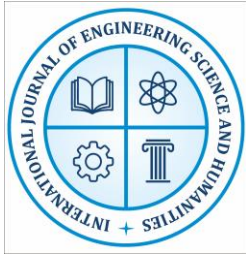
1. Albertz, M. (2025). Green skills in Indian vocational education: Teachers' perspectives and curriculum practices. *Journal of Vocational Education and Training*, 77(1), 64–82.
2. Bajaj, M. (2019). Education for sustainable development in India: Policy, practice and pedagogical challenges. *International Journal of Educational Development*, 66, 94–103.
3. Centre for Science and Environment. (2024). *Environmental education and school reform in India: Status and challenges after NEP 2020*. New Delhi: CSE Publications.



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Impact Factor 8.3 [www.ijesh.com](http://www.ijesh.com) ISSN: 2250-3552

4. Chawla, L., & Derr, V. (2019). The development of conservation behaviours in childhood and youth. In J. H. Ballantyne & R. Packer (Eds.), *International handbook of environmental education* (pp. 527–542). Routledge.
5. Goel, R. (2023). Students' perceptions of environmental education in Indian secondary schools. *Journal of Environmental Education*, 54(3), 241–258.
6. Government of India. (2020). *National Education Policy 2020*. Ministry of Education.
7. Gruenewald, D. A., & Smith, G. A. (2018). *Place-based education in the global age: Local diversity*. Routledge.
8. Jones, C. (2021). Climate change education and its long-term affective impacts on learners. *Environmental Education Research*, 27(8), 1164–1182.
9. Krishna, S. (2025). Climate change education in Indian schools: Policy intentions and classroom realities. *Compare: A Journal of Comparative and International Education*, 55(2), 213–231.
10. Leicht, A., Heiss, J., & Byun, W. J. (2018). *Issues and trends in education for sustainable development*. UNESCO Publishing.
11. Li, Y., Wang, H., & Chen, Z. (2025). Trends and themes in environmental education research: A systematic review. *Environmental Education Research*, 31(1), 1–22.
12. Lozano, R., Ceulemans, K., Alonso-Almeida, M., et al. (2015). A review of commitment and implementation of sustainable development in higher education. *Journal of Cleaner Production*, 108, 1–18.
13. Ministry of Education. (2021). *Reimagining vocational education and skill development in India*. Government of India.
14. NCF. (2023). *National Curriculum Framework for School Education (Pre-Draft)*. National Council of Educational Research and Training.
15. NUJS. (2022). Environmental education in India: Legal and policy perspectives. *Journal of Indian Law and Society*, 13(2), 55–78.
16. Pandya, R., & Venkatesh, G. (2022). Digital technologies and sustainability learning in Indian schools. *Education and Information Technologies*, 27(6), 8091–8109.
17. Rampal, A. (2024). India's journey towards education for sustainable development. *Prospects*, 54(1), 35–49.
18. Ramachandran, V. (2020). *Education reform and inequality in India*. Oxford University Press.
19. SAGE. (2024). School climate literacy and pro-environmental behaviour in India. *Journal of Environmental Psychology*, 87, 102021.
20. Saluja, M. (2024). Environmental education in India's National Education Policy 2020: A policy discourse analysis. *Policy Futures in Education*, 22(3), 456–472.



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An international peer reviewed, refereed, open-access journal  
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21. Sharma, P. (2025). Measuring environmental education competencies of Indian pre-service teachers. *Environmental Education Research*, 31(2), 187–204.
22. Tilak, J. B. G. (2018). Public expenditure on education in India. *Economic and Political Weekly*, 53(15), 45–53.
23. UNESCO. (2021). *Education for Sustainable Development: A roadmap*. UNESCO Publishing.
24. UNESCO. (2024). *Greening education: Policy and practice*. UNESCO Publishing.
25. Wals, A. E. J. (2015). *Beyond unreasonable doubt: Education and learning for socio-ecological sustainability*. Wageningen University.