

Digital Pathways in NEP 2020: Building a Net Zero and Sustainable Education Ecosystem

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Abstract

The National Education Policy (NEP) 2020 articulates a holistic vision for Indian education, including fairness, diversity, and digital transformation. The policy primarily aims to enhance learning results, governance, and access, while also facilitating the alignment of education with broader sustainability and climate objectives. Digital platforms, integrated learning, and paperless governance systems advocated by NEP 2020 diminish dependence on resource-intensive methods and establish pathways aligned with the Net Zero vision. This study presents a conceptual and policy-oriented analysis of the potential contributions of NEP 2020 to the establishment of a sustainable education ecosystem. The study utilizes official policy papers, international literature, and sustainability frameworks instead of statistical or empirical information to elucidate the relationships between digital reforms in education and global climate pledges.

Keywords: National Education Policy 2020 (NEP 2020); Digital Education; Sustainable Education; Net Zero; ICT in Education; Higher Education

1. Introduction

One of the biggest problems of the twenty-first century is climate change. The Paris Agreement and other global agreements show how important it is to reach Net Zero emissions in order to protect the environment and ensure a sustainable future (United Nations, 2015). Education is a big part of this endeavor for two reasons: it gives students the knowledge and skills they need to deal with climate change, and it might also lessen its own environmental impact by using less resource-intensive methods. NEP 2020 wants to change India's education system so that it can meet the needs of a society based on knowledge. The policy puts a lot of emphasis on digital integration, with programs like DIKSHA, SWAYAM, and online teacher training platforms (Ministry of Education, 2020; Ministry of Education, 2023). These digital solutions not only make things easier to get to, but they also cut down on carbon emissions from commuting, paper-based systems, and physical infrastructure (Yin et al., 2022; Heller et al., 2022). Moreover, NEP 2020 mandates the incorporation of sustainability and environmental education into curricula, so synchronizing educational goals with enduring climate consciousness (Radha, 2023). International studies indicate that digital platforms and simulations can improve ecological literacy, rendering them beneficial for the preparation of future citizens.

Concurrently, structural obstacles persist. The UDISE+ 2022–23 research indicates that merely 38.9 percent of schools in India possess operational computers, and only 27 percent have internet

connectivity (UDISE+, 2023). These statistics underscore the digital divide that hampers the effective implementation of NEP 2020 in rural regions. Teacher training and digital literacy initiatives are also inconsistent, thereby diminishing the effectiveness of digital reforms (Sareen, 2024). Furthermore, ICT infrastructure consumes energy, indicating that the environmental advantages of digitalization can only be maintained through the adoption of sustainable ICT solutions (Lannelongue et al., 2020).

1.1 Contribution of the Study

This study enhances the developing literature on education policy and sustainability by reinterpreting the digital changes of the National Education Policy 2020 through the lens of Net Zero and environmental sustainability. Although current research predominantly focuses on NEP 2020 on access, governance, and learning outcomes, there is a paucity of emphasis directed towards its potential impact on diminishing the environmental footprint of educational systems. This study presents a fresh policy-oriented viewpoint by conceptually connecting digital education routes with sustainability and climate objectives, particularly pertinent for developing economies like India.

2. Objectives

The paper aims to:

1. Examine how the digital changes of NEP 2020 can theoretically mitigate the environmental impact of education.
2. Examine the potential of digital pedagogy as a medium for fostering climate knowledge and sustainability education.
3. Identify the infrastructural and policy challenges that affect the role of NEP 2020 in contributing to Net Zero targets.

3. Approach

The paper is conceptual and policy-oriented. It relies on official reports such as NEP 2020, DIKSHA and SWAYAM reports, UDISE+ data, and peer-reviewed international studies on digital education and sustainability. The analysis is guided by Human Capital Theory, Policy Implementation Theory, and the Sustainable Development Goals framework. These provide a lens to connect digital education with sustainability and climate policy.

3.1 Clarification of Conceptual Nature and Theoretical Use

This study is structured as a conceptual and policy-oriented analysis rather than an empirical examination. It does not depend on primary data or statistical modeling; rather, it integrates policy papers and academic literature to examine the correlation between digital education changes and sustainability outcomes. Human Capital Theory elucidates the manner in which expenditures in digital education augment the long-term societal capability for sustainable development. Policy Implementation Theory offers a framework for comprehending the infrastructural, administrative, and capacity-related limitations in the practical application of NEP 2020. The Sustainable Development Goals framework places the analysis within the context of global objectives, including SDG 4 concerning quality education and SDG 13 addressing climate action.

4. Discussion

The analysis indicates that NEP 2020 can facilitate Net Zero pledges via various interconnected channels. The policy's focus on digital and blended learning models, online platforms, and paperless

academic and administrative processes could help cut down on carbon emissions from things like daily commuting, printing a lot of papers, and keeping up with physical infrastructure that uses a lot of resources (Yin et al., 2022; Heller et al., 2022). Education systems can work with less energy and materials if they move some of their teaching, learning, testing, and governance online. This is especially true in higher education and teacher training.

Second, NEP 2020 makes it easier to use digital tools to add environmental awareness and climate literacy to lessons. Online simulations, virtual labs, and multimedia learning tools make it possible to teach sustainability concepts in many different subjects. This helps students better comprehend climate problems and how to live in a way that is good for the environment (Radha, 2023). Digital education under NEP 2020 helps make education more environmentally friendly by lowering its carbon footprint and by training people to be more aware of the environment, which will help with long-term sustainability transitions.

Third, these digital paths don't work as well as they could because of ongoing structural problems. Limited digital infrastructure, unequal access to devices and internet connectivity, inconsistent teacher preparedness, and the escalating energy demands of ICT systems represent substantial challenges to attaining sustainable results (UDISE+, 2023; Sareen, 2024). If digital growth depends a lot on electricity from fossil fuels or technologies that aren't very efficient, the environmental benefits of digitalization may not be as strong or may even be canceled out. These findings suggest that NEP 2020's role in achieving Net Zero goals is not guaranteed; it relies on sustainable implementation strategies, such as investments in green ICT, the integration of renewable energy, and capacity building for educators.

5. Limitations and Future Research

This study is constrained by its dependence on policy documents and secondary literature, without empirical evaluation of institutional-level implementation or reductions in carbon emissions. Subsequent research could enhance this study by case studies, quantitative assessments of the environmental effects of digital education, or comparative studies across areas to corroborate and refine the conceptual insights provided below.

6. Policy Implications

The analysis indicates various policy ramifications for enhancing the sustainability impact of NEP 2020. To start, the growth of digital education should be paired with investments in green ICT infrastructure, such as energy-efficient gadgets and digital systems driven by renewable energy, especially in rural and isolated locations. Second, teacher training and professional development programs should include climate literacy and digital pedagogy that focuses on sustainability. Third, education planning under NEP 2020 should include environmental indicators along with access and learning measures to make sure that India's long-term climate and sustainability goals are accomplished. These steps can help turn digital education from a technological change into a tool for long-term growth.

7. Conclusion

The NEP 2020 should be regarded not merely as an educational reform but also as a policy with sustainability ramifications. Its digital frameworks correspond with Net Zero objectives by reducing emissions and integrating climate literacy into schooling. To optimize these advantages, India must enhance digital infrastructure, implement sustainable ICT practices, and equip educators for technology-

integrated teaching methodologies. Through these approaches, NEP 2020 can serve as a twin reform that enhances education while advancing India's climate and sustainability obligations. The digital paths are especially important considering India's pledge to attain net zero carbon emissions by 2070, thereby placing education reform as a supportive tool in national climate policy.

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