



Original Article

Sustainability Practices of College Teachers in Karnataka: A Conceptual Exploration

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Manuscript ID:

IBMIIRJ -2026-030565

Submitted: 23 Apr. 2026

Revised: 30 Apr. 2026

Accepted: 20 May 2026

Published: 31 May 2026

ISSN: 3065-7857

Volume-3

Issue-5

Pp. 335-339

May 2026

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Quick Response Code:



Web: <https://ibrj.us>



DOI: 10.5281/zenodo.22140955

DOI Link:

<https://doi.org/10.5281/zenodo.22140955>



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Abstract

Sustainability has become a central concern in higher education in India, especially after the National Education Policy (NEP) 2020 and the growing emphasis on environmental education and green campus initiatives. College teachers in Karnataka are in a strategic position because they work directly with young adults, participate in institutional committees, and often lead extension activities that can shape sustainable behaviours and campus culture. This conceptual paper discusses how sustainability is understood in higher education, summarises key Indian and Karnataka-based studies on environmental awareness and green campus initiatives, and then proposes a simple framework for understanding the sustainability practices of college teachers in Karnataka. The paper highlights three broad domains of practice—classroom teaching, campus and community engagement, and personal behaviour—and links these with individual, institutional, and policy-level influences. It concludes with suggestions for future empirical research and points out how teacher development, institutional support, and policy alignment can strengthen the role of college teachers as sustainability change agents in Karnataka.

Keywords: Sustainability Practices, College Teachers, Higher Education, Karnataka, Environmental Education, Green Campus, National Education Policy (NEP) 2020, Sustainable Development Goals (SDGs), Sustainability Education, Conceptual Framework

Introduction

Sustainability in higher education means integrating care for the environment, concern for social justice, and attention to long-term economic well-being into teaching, research, and campus management. In India, this agenda is strongly supported by national policies, including environmental education mandates, teacher education reforms, and NEP 2020, which connects education with the Sustainable Development Goals (SDGs). Teachers in colleges and universities are expected not only to teach subject content but also to model and promote responsible environmental behaviour among students and the wider community. Karnataka has a large and diverse higher education system covering government, aided, and private institutions in urban and rural regions. Reports and case examples show that colleges in the state are starting to implement green campus measures such as tree planting, water conservation, waste management, and awareness programmes. At the same time, studies indicate that awareness and practice are not uniform and that many teachers require better support, training, and institutional structures to translate sustainability ideas into daily action. This paper focuses on the sustainability practices of college teachers in Karnataka and develops a conceptual foundation that researchers and practitioners can use for further work.

This paper is conceptual and context-specific. It draws on existing literature but does not present primary survey or experimental data. Its aims are to:

1. Explain the background of sustainability and environmental education in Indian higher education, with a focus on Karnataka.
2. Summarise key empirical and conceptual work on teachers' environmental awareness, environmental education in teacher education, and green campus initiatives in India.

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How to cite this article:

Sharada R. (2026). Sustainability Practices of College Teachers in Karnataka: A Conceptual Exploration. *InSight Bulletin: A Multidisciplinary Interlink International Research Journal*, 3(5), 335–339. <https://doi.org/10.5281/zenodo.22140955>

3. Propose a simple conceptual framework that links teacher characteristics, institutional conditions, and policy context to sustainability practices.
4. Suggest directions for future empirical research and practical interventions.

Because this is a conceptual paper, it uses secondary sources and policy documents and does not claim to measure actual practices; instead, it points to key dimensions that future studies can operationalise.

Policy and Institution Context

1. Environmental and Teacher Education Policy in India

For several decades, Indian policy documents have highlighted the importance of environmental education and sustainable development. The National Policy on Education (1986, revised 1992) called for environmental consciousness to be built into all stages of education. The National Council for Teacher Education (NCTE) and National Council of Educational Research and Training (NCERT) has since issued frameworks that integrate environmental themes into school curricula and teacher education programmes. Recent work on environmental education in teacher education shows that environmental topics have been included as compulsory or elective courses in B.Ed. and D.Ed. programmes, and that teacher educators are expected to prepare future teachers to handle environmental issues in a cross-curricular manner. However, implementation is uneven, and scholars argue that pre-service and in-service teacher education still needs deeper engagement with sustainability pedagogy, local environmental issues, and practical, community-based work.

2. NEP 2020, SDGs, and Higher Education

NEP 2020 emphasises holistic, multidisciplinary education and explicitly links Indian education reforms to SDG 4 (quality education) and related goals on equality, environment, and sustainable development. Analyses of NEP 2020 note that the policy encourages institutions to adopt flexible curricula, experiential learning, digital tools, and research-based learning, while also calling for environmental awareness, sustainable lifestyles, and social responsibility. Scholars have discussed how aligning NEP 2020 with SDGs can help higher education institutions integrate sustainability across teaching, research, and operations. This includes revising curricula to reflect SDG themes, strengthening teacher training on sustainability, and creating campus initiatives that demonstrate sustainable practices. In this policy environment, college teachers are expected to connect classroom teaching with broader sustainability goals through both content and pedagogy.

3. Karnataka's Higher Education and Green Campus Initiatives

Karnataka hosts numerous universities and colleges, and several have started documenting sustainability-related best practices. Institutional reports from Karnataka mention initiatives such as rainwater harvesting, sewage treatment plants, solar installations, waste segregation, herbal gardens, and plastic-free campus campaigns. For example, one deemed university in Tumkuru reports using a sewage treatment plant, recycling treated water for gardens and cleaning, and controlling vehicle use on campus to reduce pollution. A study on green campus awareness among institutions in North Karnataka found that many colleges are aware of the green campus concept and some have started implementing measures like energy-efficient lighting, water management, and waste management. However, the study also shows that implementation is uneven, that awareness is often higher among teachers than management, and that financial and infrastructural constraints limit deeper changes. These findings suggest that teachers often recognise sustainability issues but rely on institutional leadership and policy support to act at scale.

Review of Related Literature

1. Environmental Awareness among Teachers and Students

Studies in different Indian contexts show that teachers and student-teachers generally display moderate to high levels of environmental awareness, although practice does not always match awareness. A study of teachers and university students in Himachal Pradesh reported that all sampled teachers had high environmental awareness, while a majority of students also scored high, but with more variation. Another national-level study on student teachers and teachers found relationships between environmental awareness and emotional intelligence, particularly among male teachers, suggesting that socio-emotional factors may influence how teachers engage with environmental issues. Research focusing on school education underlines the critical role of teachers in shaping students' environmental knowledge, attitudes, and behaviour. Teachers who are themselves aware and motivated can foster environmental awareness through curricular integration, co-curricular activities, and modelling of pro-environmental behaviour. These insights are relevant for college teachers as well, considering that higher education students are at a stage where they can engage with complex sustainability debates and community projects.

2. Environmental Education in Teacher Education Programmes

Work on environmental education in teacher education in India highlights the inclusion of environmental themes in B.Ed. curricula, D.El.Ed. programmes, and in-service courses. One review note that environmental education has been placed within B.Ed. syllabi as courses on environmental and population education and that national frameworks like NCF 2005 and NCFTE 2010 emphasise the need for teachers to handle environmental issues using participatory, activity-based methods. However, the same literature points out practical challenges: limited time within packed syllabi, uneven preparation of teacher educators, and occasional treatment of environmental education as purely theoretical. These limitations may carry over into higher education settings, where college teachers have varied exposure to sustainability concepts depending on their discipline, training, and institutional culture.

3. Green Campus and Institutional Practices in India and Karnataka

Green campus initiatives in India aim to reduce the environmental footprint of educational institutions while using campus infrastructure as a learning resource. The North Karnataka study describes how colleges are encouraged by UGC and renewable energy programmes to adopt energy-efficient lighting, renewable energy sources, rainwater harvesting, and waste management

systems. It also reports that while a majority of institutions claim awareness of green campus principles, actual implementation of measures like renewable energy or comprehensive waste management is still limited. Institutional "best-practices" documents from Karnataka colleges show examples of tree-planting drives, cleanliness campaigns, plastic-free initiatives, and environmental awareness programmes led by faculty coordinators and student volunteers. These examples indicate that teachers often occupy key roles in planning and monitoring sustainability initiatives, even when formal job descriptions do not explicitly include such tasks.

4. Integrating NEP 2020 and SDGs in Higher Education

Recent articles on NEP 2020 and SDGs argue that higher education institutions can serve as hubs for sustainable development by aligning curricula, research, and teacher training with SDG themes. For example, one paper discusses how integrating SDGs into teacher training and curriculum design can help future teachers understand sustainability in a holistic way and support NEP 2020 objectives. Conceptual work on NEP 2020 also stresses that teachers need ongoing support, such as workshops and communities of practice, to internalise policy goals and translate them into classroom and campus-level innovations.

Conceptualising Sustainability Practices of College Teachers

a. Three Domains of Practice

Based on the reviewed literature and Karnataka examples, sustainability practices of college teachers can be grouped into three overlapping domains:

Because this is a conceptual paper, it uses secondary sources and policy documents and does not claim to measure actual practices; instead, it points to key dimensions that future studies can operationalise.

Policy and Institution Context

1. Environmental and Teacher Education Policy in India

For several decades, Indian policy documents have highlighted the importance of environmental education and sustainable development. The National Policy on Education (1986, revised 1992) called for environmental consciousness to be built into all stages of education. The National Council for Teacher Education (NCTE) and National Council of Educational Research and Adopting everyday practices such as reduced paper use, responsible electricity and water use, and avoidance of single-use plastics on campus and at home.

Choosing sustainable modes of transport where possible and acting as a visible role model for students and colleagues.

These domains overlap in practice: for example, a teacher may design a course project that supports an ongoing campus waste-management initiative and, at the same time, personally model waste segregation for students.

2. Influencing Factors

Sustainability practices are shaped by a combination of individual, institutional, and policy factors:

Individual factors: environmental awareness, attitudes, values, emotional intelligence, and sense of professional responsibility. Teachers who see sustainability as part of their role may be more proactive in integrating it into classes and activities. Institutional factors: leadership support, formal policies on green campus and extension work, availability of infrastructure such as rainwater harvesting, solar panels, and waste treatment plants, and recognition systems for sustainability work. Policy and regulatory factors: NEP 2020, UGC regulations on environmental education, accreditation criteria that reward green practices, and state-level directives that encourage or mandate sustainability reporting. Professional development factors: presence of orientation, refresher, and short-term courses on environmental education and sustainability for college teachers, as well as academic networks and conferences where teachers can share experiences. Together, these factors provide the conditions in which college teachers in Karnataka either expand or limit their engagement with sustainability practices.

3. A Simple Conceptual Framework

A simple conceptual framework for studying sustainability practices of college teachers in Karnataka can be described in words as follows:

1. Inputs: Teacher characteristics (awareness, attitudes, emotional intelligence), institutional context (green campus infrastructure, policies, leadership), and broader policy environment (NEP 2020, SDGs, UGC norms).
2. Processes: Teacher learning and reflection (through training and self-study), collaboration (with colleagues, students, community partners), and curriculum and activity design.
3. Outputs: Observed sustainability practices in classroom teaching, campus initiatives, and personal/professional behaviour.
4. Outcomes: Changes in student awareness and behaviour, improvements in campus environmental performance, and co Future empirical research can operationalise each of these elements through measurable indicators and test relationships among them using survey and mixed-method designs.

Directions for Future Empirical Research

Although this paper is conceptual, the reviewed literature suggests several directions for empirical work on college teachers in Karnataka: contributions to local sustainability efforts.

1. Survey-based studies can measure environmental awareness, attitudes, and self-reported sustainability practices among college teachers across different regions, types of institutions, and disciplines.
2. Case studies of selected colleges with strong green campus initiatives can explore how leadership, teacher engagement, and student participation interact to produce sustainable outcomes.
3. Mixed-method studies can combine questionnaires with interviews and observations to understand not only what teachers do but also why and how they do it, including the barriers they face and the strategies they use to overcome them.
4. Intervention studies can evaluate the impact of specific professional development programmes on teachers' sustainability

practices, for example, before and after workshops on integrating SDGs and NEP 2020 into college teaching.

Such studies would provide evidence to refine the conceptual framework and to design targeted support for college teachers in Karnataka.

Implications for Practice and Policy

1. Supporting Teachers as Sustainability Educators

The literature suggests that teachers are more likely to engage in sustainability practices when they feel confident, supported, and recognised. In Karnataka, this implies that higher education institutions could:

1. Include sustainability topics and local environmental issues in orientation and refresher courses for college teachers.
2. Encourage departments to integrate sustainability themes into their syllabi and assessment tasks, not only in science-related subjects but also in commerce, humanities, and social sciences.
3. Create internal awards or recognition systems for teachers who lead effective sustainability initiatives with students.

2. Strengthening Institutional and Policy Alignment

At the institutional level, college management can adopt clear green campus policies and designate committees that include teachers and students for planning and monitoring sustainability measures. Accreditation bodies and state-level authorities can reinforce these efforts by including explicit sustainability indicators in quality assessment and by encouraging colleges to report their green practices. At the policy level, continuing to align state-level higher education policies with NEP 2020 and SDGs can keep sustainability visible and relevant for institutions and teachers. This may include guidelines on integrating sustainability into institutional development plans, teacher appraisal systems, and extension activities. Conclusion and Ethical Note on AI Assistance Sustainability practices of college teachers in Karnataka sit at the intersection of individual commitment, institutional culture, and national policy. Studies on environmental awareness, teacher education, and green campus initiatives show that many Indian teachers are aware of environmental issues and that institutions are beginning to experiment with sustainable practices, though implementation remains uneven and resource-constrained. In this context, college teachers can act as important change agents by embedding sustainability into their classroom teaching, campus activities, and personal behaviour. This paper has offered a context-specific conceptual overview and suggested a framework and research directions for understanding and strengthening sustainability practices of college teachers in Karnataka. It is intended as a starting point: future studies using Karnataka-based data can further refine and test the ideas presented here.

Ethical note on authorship and AI use

This draft was prepared with the assistance of an AI-based language tool for structuring ideas and improving clarity. The responsibility for checking facts, aligning the content with local context and institutional data, verifying references, and ensuring originality against journal policies and plagiarism checks rests fully with the human author.

Acknowledgment

The author expresses sincere gratitude to the principal and colleagues of the Government First Grade College, PG & Research Centre, Hoskote, for their encouragement and support during the preparation of this conceptual paper. Heartfelt thanks are extended to all researchers, authors, and institutions whose published work provided valuable insights for developing the theoretical framework and literature review. The author also acknowledges the guidance offered by higher education policies and sustainability initiatives that inspired this study. Finally, the author is grateful to family and well-wishers for their constant motivation and support throughout the completion of this work.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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