

# Grading on a Greener Scale

## Environmental studies turn practical and popular

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**A**s climate change restructures everyday life through rising temperatures, water scarcity and extreme weather events, educators across India are increasingly asking a pertinent question: are educational institutes doing enough to prepare students for a climate-challenged future?

From microbiology laboratories to environmental science classrooms, sustainability education is gradually evolving from a peripheral topic into a central academic concern which not only builds awareness but also equips students with practical solutions for the future. Dr Uttariya Roy, professor in the Department of Environmental Science at Budge Budge College under the University of Calcutta, says climate and sustainability education has undergone a significant transformation over the past decade.

“Climate and sustainability education has rapidly evolved from an optional science-oriented subject into an important multidisciplinary course,” he says. “Today, almost every school, college and university is integrating environmental studies into mainstream education.”

According to him, the National Education Policy (NEP) has accelerated this change by encouraging environmental studies across secondary and higher education. However, he believes there remains a major gap between theory and practice. “Current curricula mostly

emphasise theoretical concepts rather than converting knowledge into behavioural change or civic engagement,” Dr Roy explains. “There is also a lack of proper faculty training and practical implementation according to India’s socio-economic realities.”

Abhishek Pal, Assistant Professor in the Department of Microbiology at Ramakrishna Mission Vidyamandira, Belur Math, believes microbiology can play an important role in helping students understand climate change from a scientific perspective.

“Most students learn about carbon dioxide emissions from cars and factories, but they rarely realise that microbes produce and consume more greenhouse gases than all combined human activities,” he says.

He points to methanogenic archaea found in paddy fields and cattle rumen which release methane — a greenhouse gas far more potent than carbon dioxide. “Microbiology gives students a more complete idea about climate change and also shows that microbes can become allies in solving environmental problems,” he adds.

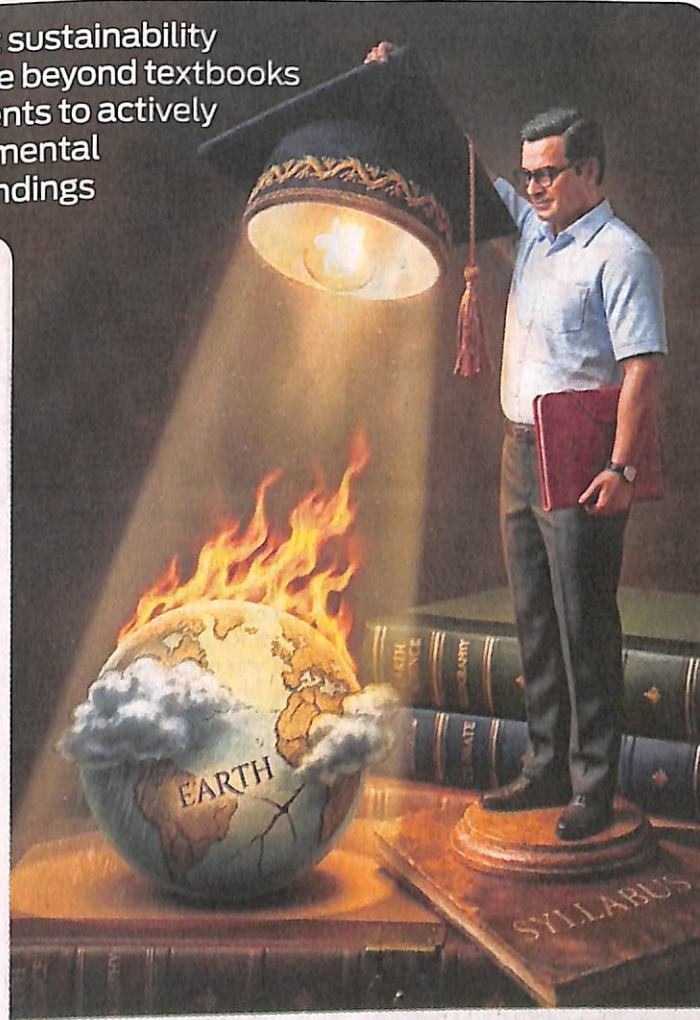
Practical learning, educators say, is necessary for developing

**Educators argue that sustainability education must move beyond textbooks and encourage students to actively engage with environmental issues in their surroundings**

environmental responsibility among students. Composting, water testing, soil analysis and studying biofertilisers can help students connect scientific concepts with real-world sustainability challenges. “Hands-on experiments help students understand how microbes reduce pollution, recycle nutrients and contribute to renewable energy solutions like biogas and biofuels,” says Pal. He also believes simple activities can make sustainability more engaging for younger learners. “Observing microbes in curd or conducting basic composting projects connects daily life with microbiology,” he says. “Storytelling and games can further attract younger students.”

Dr Roy emphasises that educational institutions themselves must become models of sustainability. He suggests promoting field trips, seminars, workshops and community-

class  
roots



based learning experiences to encourage sustainable behaviour in everyday life. “Universities can drive climate innovation by encouraging multidisciplinary research, green technologies and eco-friendly campus infrastructure,” he says. “Faculty exchange programmes and collaboration across departments can also strengthen climate research.”

Both educators agree that sustainability awareness should become mandatory across disciplines, regardless of academic stream. “Every individual should learn sustainability awareness from student life itself,” says Dr Roy. “Protecting ecosystems for future generations is everyone’s responsibility.”

At the same time, experts caution against ignoring indigenous and rural ecological knowledge systems. Dr Roy notes that climate education in India has historically been urban-centric, though recent efforts have begun recognising traditional environmental practices and local biodiversity knowledge.

While AI can improve access to information and accelerate learning, Dr Roy warns that advanced technologies themselves can place additional pressure on natural resources.

As India faces mounting environmental challenges, educators believe sustainability education can no longer remain confined to a chapter in textbooks. Instead, they argue, it should prepare students to understand climate change and actively shape a more sustainable future.