

# Sustainable Practice in Educational Institutes

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**Abstract:** *As we move through a critical juncture in the fight against environment degradation, educational institutions are playing a bigger role in promoting sustainability and environment well-being. Educational institutions are essential in this critical era for promoting sustainable practice and cultivating a culture of environment responsibility. As architects, we provide sustainable concepts for classroom routines and infrastructure in educational institution. The growing carbon footprint is one of the most important environmental issues of our day. Education establishment, highly regarded as havens of wisdom and creativity, have a significant impact on this environment. Through intentional efforts to reduce carbon emission, educational institutions have the potential to significantly improve the state of environment worldwide. Educational institutions may lead the fight against the increase of carbon footprint by adopting energy efficient technologies, supporting environmentally friendly transportation options, and encouraging responsible resource use. The UJALA program seeks to lower upfront cost through demand aggregation, increase consumer knowledge of energy efficient equipment, and promote the use of LED lights as a means of increasing energy efficient efficiency in home setting. As a result, LED lighting is more widely adopted by residential users, which advances efforts to conserve energy overall.*

*“AS ARCHITECTS, WE POSSES A SPECIAL CHANCE TO MOLD THE EDUCATIONAL SETTING OF THE FUTURE, MAKING SURE THEY NOT ONLY FOSTER INNOVATION AND DEVELOPMENT BUT ALSO SERVE AS MODELS OF SUSTAINABLE LIVING”*

*Energy-efficient appliances and equipment, interactive energy dashboards, micro gridintegration, student-led energy conservation campaigns, solar-powered charging stations, pedal- powered generators, energy-generating dance floors, smart lighting systems, virtual learning platforms, and green building design and retrofits are some examples of solutions*

**Keywords:** Energy-saving technologies, Sustainable living, Educational institute, Environmental friendly solutions, and Sustainability.

## I. INTRODUCTION

Particularly when it comes to educational buildings, sustainability has grown to be a top priority in architectural design and construction in recent years. Encouraging better learning conditions and addressing environmental issues are two benefits of incorporating sustainable practices into educational building design, which enhances the educational experience for both professors and students. The purpose of this introduction is to examine the fundamentals and importance of sustainable construction methods in the design of educational facilities.

Often called green architecture or eco-friendly design, sustainable architecture places a strong emphasis on resource efficiency, minimizing environmental effect, and enhancing occupant well-being. These ideas are especially important when it comes to educational facilities since colleges and universities are centers of research, creativity, and community involvement.

One of the primary objectives of sustainable practice in educational building design is to minimize the environmental footprint of these structures. This involves various strategies, such as incorporating energy-efficient systems, utilizing renewable energy sources, optimizing building orientation for natural light and ventilation, and employing sustainable materials with low embodied energy and minimal environmental impact.

Sustainable educational buildings put occupant health and well-being above environmental concerns. Important elements that affect the learning environment are access to natural light, thermal comfort, acoustic performance, and indoor air quality. Educational buildings can improve focus, productivity, and general student and faculty pleasure by using biophilic design concepts, which aim to integrate building inhabitants with nature.

Moreover, environmentally friendly educational structures work as teaching instruments in and of themselves, providing possibilities for experiential learning and interaction with environmentally friendly activities and technologies. Green roofs, rainwater harvesting systems, and solar panels are a few examples of features that can be incorporated into a building's design to demonstrate sustainability in action and encourage students to take up environmental stewardship. Sustainable building design techniques can result in long-term cost savings through decreased energy and water use, as well as cheaper maintenance and operating expenses, in addition to the benefits to the environment and education. Designing educational buildings with sustainable practices in mind takes a comprehensive approach that takes social, economic, and environmental aspects into account. Educators may design places that foster learning and creativity while also helping to ensure a more sustainable future for future generations by incorporating sustainable ideas into their architectural designs.

## II. LITERATURE REVIEW

The integration of sustainable practices in educational institutes has become increasingly important in addressing environmental concerns and fostering a culture of sustainability among students, faculty, and staff. This literature review aims to examine existing research on sustainable practices in educational institutes, focusing on initiatives, challenges, and outcomes in various aspects of sustainability.

The importance of sustainable campus operations, such as waste minimization, water conservation, energy management, and transportation planning, has been highlighted in numerous studies. According to research by Leal Filho et al. (2019), integrating sustainable practices into campus operations is crucial for minimizing environmental impact and fostering resource efficiency.

Enhancing the environmental performance of educational facilities is mostly dependent on green building design and construction practices. This involves using sustainable materials, creative design techniques, and energy-efficient building envelopes.

Research by Ayalon and Kellermanns (2018) and Smith et al. (2020) explore how the design, construction, and operation of educational facilities are affected by green building concepts.

Although there are still obstacles, India has been making progress in January 2022 in incorporating sustainable practices into educational institutions. An outline of the state of sustainable practices in Indian educational institutions can be found here:

**Government Initiatives:** The United Nations-adopted Sustainable Development Goals (SDGs) are among the many programs the Indian government has started to advance sustainability in education. In order to promote environmental education and sustainable practices in schools and higher education institutions, the Ministry of Environment, Forests, and Climate Change (MoEFCC) has been actively involved.

**Accreditation & Acknowledgment:** For new construction or restoration projects, a few Indian educational institutions are working for green building certifications, such as the Leadership in Energy and Environmental Design (LEED) accreditation. This accreditation aids organizations in showcasing their dedication to environmental responsibility and sustainability.

**Community Engagement:** More and more educational institutions are incorporating local communities, staff, instructors, and students in sustainability projects. This involvement promotes a sustainable culture on campus and beyond by creating relationships, increasing understanding, and building awareness.

**Obstacles:** In spite of advancements, adopting sustainable practices in Indian educational institutions still presents obstacles. These include insufficient funds and resources, a lack of knowledge and ability on the part of stakeholders, red tape, and conflicting priorities. Rapid industrialization and urbanization also present environmental problems that must be solved.

## III. RESEARCH GAP

Although there has been some progress, much more needs to be done to completely incorporate sustainable practices into Indian educational institutions. To solve issues and promote sustainability in the education sector, government agencies, academic institutions, civil society organizations, and other stakeholders must keep up their efforts.

AIM-

The goal of this study is to investigate sustainable practices in educational institutions in-depth, with an emphasis on filling in current research gaps and enhancing the body of knowledge in the area.

#### **OBJECTIVE–**

Use multi-year longitudinal studies to assess how sustainable practices in educational institutions affect long-term environmental, social, and economic consequences.

Look at what influences stakeholders' (students, teachers, and staff) engagement in sustainable practices and behavioral changes. This can help you find successful tactics for promoting a sustainable culture.

#### **DISCRIPTIVE ANALYSIS**

**Analyze the Long-Term Impact:** To assess the long-term effects of sustainable practices in educational institutions, multiple-year longitudinal studies should be conducted.

Track environmental results over time, including greenhouse gas emissions, water use, waste production, and energy consumption.

Evaluate social outcomes such as staff participation in sustainability projects, student behavior modifications, and community engagement.

Examine financial results, including savings, ROI, and the sustainability projects' financial sustainability.

**Know Engagement and Behavioral Change:** Examine the variables that affect stakeholder behavior with regard to sustainability, such as attitudes, perceptions, motives, and obstacles.

Employ both qualitative and quantitative techniques to investigate the involvement of staff, professors, and students in sustainable practices.

Determine the most successful tactics for encouraging a culture of sustainability and encouraging behavioral change, such as awareness campaigns, educational initiatives, and reward systems.

**Examine the Socioeconomic Aspects:** In order to comprehend the socioeconomic background of sustainable practices in educational institutions, particularly in various geographic locations and demographic contexts, case studies and surveys should be conducted.

Examine concerns of affordability, equity, and access in relation to the execution of sustainable projects.

Determine methods for reducing socioeconomic inequality and advancing inclusivity in sustainability initiatives.

Examine the Innovation and Adoption of Technology:

Assess how sustainable ideas and technologies are embraced and used in educational institutions.

Evaluate the viability of solutions like energy-efficient infrastructure, smart building technologies, renewable energy systems, and environmentally friendly transit choices.

Identify obstacles to innovation and the adoption of new technologies and suggest ways to get around them.

Analyze the implications for governance and policy:

Examine institutional, regional, and national policies pertaining to sustainability in educational settings.

Assess the efficacy of policy tools including rules, rewards, financing sources, and certification schemes.

Evaluate how leadership, stakeholder involvement, and governance frameworks contribute to sustainability.

#### **IV. CONCLUSION**

In order to foster social responsibility, environmental stewardship, and economic sustainability, educational institutions must use sustainable practices. Through the identification and filling of research gaps, multidisciplinary cooperation, policy backing, and cutting-edge technology, academic institutions may significantly contribute to the advancement of sustainability and the creation of a more sustainable future for future generations.

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