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Study of Sustainability in Indian Design Education: A Pedagogical Approach in Ahmedabad

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Abstract
Sustainability has become a fundamental concern in design education because the decisions made by future designers directly influence environmental performance, resource use, and the quality of the built environment. In the Indian context, and particularly in Ahmedabad, there is a growing need to examine how sustainability is being addressed within design curricula and teaching practices. This study investigates the presence of sustainability in Indian design education, evaluates faculty readiness and student awareness, and identifies the pedagogical and institutional barriers that limit effective integration. The research adopts a survey-based approach supported by interviews with educators to understand current classroom practices and curriculum structure. Findings suggest that sustainability is often introduced in an informal or fragmented manner rather than as a structured part of design education. Although many educators express interest in sustainability, several report limited training, inadequate learning resources, and overloaded curricula as major challenges. The study proposes that sustainability should be introduced early and reinforced across studio, theory, and technical courses through a holistic teaching model. It also recommends the use of contemporary pedagogical tools, local case studies, and digital technologies to strengthen sustainability learning in design programs.
Keywords: Sustainability, design education, pedagogy, curriculum integration, Ahmedabad, India

1. Introduction

The role of design education has expanded significantly in response to environmental change, urban growth, and the increasing complexity of the built environment. Today, design schools are expected not only to develop creativity and technical competence, but also to prepare students to design responsibly in relation to ecological, social, and cultural conditions. Sustainability is therefore no longer a supplementary topic; it is an essential component of contemporary design thinking.

In India, the need to integrate sustainability into design education is especially urgent. Rapid urbanization, changing climate patterns, pressure on natural resources, and growing concerns about waste and energy consumption have made environmental responsibility a core educational issue. Ahmedabad, as a major center for design education and practice, provides an important context for examining how sustainability is being taught and understood. The city's design institutions have the potential to influence broader national conversations on responsible design pedagogy.

Design programs now need to prepare students to address environmental responsibility as a core part of studio and theory teaching. When sustainability is treated as an isolated topic, students may perceive it as optional rather than essential. A more effective approach is to integrate it across the curriculum so that learners encounter it repeatedly in design projects,

materials studies, building technology, and professional practice. This allows sustainability to become part of the student's design habit rather than a one-time lesson.

This study explores the current status of sustainability in Indian design education with a particular focus on Ahmedabad. It examines how educators understand sustainability, how prepared they feel to teach it, and what barriers prevent its wider adoption. The study also considers how a pedagogical framework can support deeper integration of sustainability into the curriculum. By focusing on teaching methods as well as content, the paper aims to contribute to a more future-oriented model of design education.

2. **Literature Survey**

Sustainability in design education has been widely discussed as both a conceptual and practical concern. Most scholars agree that sustainable design should not be reduced to the use of eco-friendly materials alone. Instead, it should include resource efficiency, environmental awareness, life-cycle thinking, indoor environmental quality, and longterm user wellbeing. In this sense, sustainability represents a broader design ethic that influences every stage of the creative and technical process.

Previous studies in design and architecture education show that sustainability is most effective when taught as an integrated theme rather than as a separate subject. A fragmented model can create awareness, but it often fails to build confidence or applied skill. When sustainability is embedded across studios, lectures, and technical courses, students are more likely to connect environmental principles with actual design decisions. This interdisciplinary approach reflects the complexity of real-world practice.

The literature also emphasizes the importance of faculty preparedness. Educators play a decisive role in shaping how students understand sustainability. If teachers are unfamiliar with current sustainability concepts, they may struggle to incorporate them meaningfully into the classroom. Many studies have found that faculty often rely on self-learning, informal reading, conferences, and digital resources to gain knowledge in this area. While such efforts are valuable, they are not a substitute for structured professional development.

Another key point in the literature is the need for contextual relevance. Sustainability education cannot be identical across all regions because climate, culture, material availability, and building traditions differ. In India, teaching sustainability must reflect local realities such as heat-responsive design, water conservation, vernacular wisdom, and material efficiency. Ahmedabad is especially relevant in this regard because it has both a strong design education culture and an environmental context that makes sustainable pedagogy highly meaningful.

Recent developments in digital technology have added a new dimension to sustainability education. Tools such as building simulation software, digital material libraries, and lifecycle assessment platforms can help students understand the performance consequences of their design choices. These technologies make abstract sustainability principles more visible and measurable. As a result, they can strengthen both teaching and learning in design classrooms.

Overall, the literature suggests that successful sustainability education depends on three things: curriculum integration, faculty support, and contextualized pedagogy. These themes shape the framework of the present study.

3. **Methodology**

This study uses a mixed-method approach to examine sustainability in Indian design education. The research combines survey data with qualitative interviews in order to capture both broad patterns and deeper educational insights. The survey focuses on faculty awareness, teaching preparedness, student engagement, and the presence of sustainability in the curriculum. The interviews help explain how sustainability is currently interpreted and taught in classroom practice.

The study is situated in Ahmedabad because the city is an important design education hub in India and offers a relevant setting for understanding pedagogical developments. Academic staff from design institutions were invited to participate in the survey. The questionnaire included questions about curriculum structure, teaching experience, familiarity with sustainability, willingness to teach the subject, preferred level of integration, and obstacles to implementation.

The data collected from the survey were analyzed using descriptive methods to identify general trends. The interviews were used to interpret these findings and to explore institutional and

pedagogical issues in greater depth. The qualitative responses provided insights into curriculum design, faculty training, student response, and the role of technology in sustainability teaching. This design is appropriate because sustainability education involves both measurable curriculum conditions and subjective teaching experiences. A combined method allows the study to identify not only what is happening, but also why it is happening and how it may be improved.

4. Results and Discussion

The findings show that sustainability is present in Indian design education in an incomplete and uneven manner. In many cases, it appears through individual faculty initiative rather than through a formal curriculum framework. This indicates that sustainability is recognized as important, but not yet fully embedded as a consistent educational principle.

Most educators expressed interest in sustainability and agreed that it should be part of design education. However, interest did not always correspond to confidence in teaching. Several respondents reported that they did not feel fully prepared to teach sustainability, especially when the topic involved technical knowledge, environmental analysis, or newer digital tools. This suggests that faculty development remains a critical need.

The study also found that many educators learn about sustainability independently through books, research articles, internet sources, and occasional workshops or conferences. While self-learning reflects commitment, it can result in uneven teaching quality and fragmented understanding. If sustainability is to be taught effectively, institutions must provide more structured support through training, resources, and curriculum planning.

A strong preference emerged for a holistic teaching model. Rather than offering sustainability as a stand-alone subject, many respondents favored teaching it across multiple courses. This approach is pedagogically stronger because sustainability is not limited to one domain. Studio courses can address design application, materials courses can address resource selection, theory courses can address ethics and social responsibility, and technology courses can address environmental performance. Such integration helps students understand sustainability as a normal part of design thinking.

The timing of sustainability introduction also matters. Some educators believed it should be introduced in the foundation years, while others preferred later years when students have stronger design skills. The most balanced view was that sustainability should begin early and continue throughout the program. Early exposure helps students build awareness, and repeated reinforcement helps them apply sustainability more confidently in later design work.

The study identified several barriers to effective sustainability teaching. These include limited faculty training, shortage of updated learning materials, insufficient institutional support, overcrowded syllabi, weak policy emphasis, and low student awareness in some settings. Some respondents also felt that sustainability is conceptually broad and difficult to teach in a practical way. These barriers show that the problem is not only curricular, but also pedagogical and institutional.

Ahmedabad offers a valuable opportunity to address these issues through more context sensitive teaching. Design institutions in the city can connect sustainability with local building practices, climate-responsive strategies, material traditions, and contemporary digital tools. This would make sustainability more concrete and relevant for students. In
this way, pedagogy can bridge the gap between abstract principles and applied design practice.

5. Conclusion and Future Enhancement

The study suggests that sustainability in Indian design education is acknowledged but not yet systematically embedded in the curriculum. Faculty members show interest, but structural and pedagogical support remains limited. As a result, sustainability is often taught in isolated ways rather than as a core design principle.

To improve this situation, sustainability should be integrated across the curriculum from the early years and reinforced through studio teaching, theory courses, and technical subjects. Faculty development should be strengthened through workshops, collaborative teaching, and access to updated resources. Institutions should also create locally relevant teaching material so that sustainability is grounded in Indian design realities.

Future enhancement should focus on linking sustainability education with emerging technologies, including digital simulation, material databases, and life-cycle assessment tools. These resources can help students understand environmental performance more clearly and

support better design decisions. Stronger collaboration with industry and professional practitioners can also help align education with real-world sustainability demands.

A pedagogical approach to sustainability can make design education more responsive, ethical, and future-oriented. By combining curriculum reform, faculty support, and technology-enabled learning, design institutions in Ahmedabad can prepare students to design responsibly for a changing world.

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