### A Critical Analysis of the Current Architecture Curriculum in India: Gaps and Opportunities

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#### Abstract

The architecture curriculum in India plays a crucial role in shaping future professionals, yet it faces several challenges in keeping pace with industry advancements and global trends. This study critically analyzes the gaps and opportunities in the current architectural education system, highlighting issues such as outdated syllabi, limited practical exposure, inadequate integration of digital tools like BIM and AI, and weak industry-academia collaboration. Through descriptive research design and primary data collection via surveys, findings suggest that incorporating hands-on training, sustainability-focused courses, urban planning modules, and structured internships can significantly enhance the curriculum's relevance. The study emphasizes the need for periodic syllabus updates and policy reforms to align architectural education with contemporary professional demands. These insights provide a foundation for improving architecture pedagogy in India, ensuring that graduates are equipped with the skills necessary to thrive in an evolving built environment.

**Keywords:** Architecture curriculum, BIM, AI, industry-academia collaboration, sustainability, urban planning, policy reforms, architectural education in India, etc.

## **1.1 Introduction**

Architecture plays a crucial role in shaping the built environment, balancing functionality, aesthetics, and sustainability to create spaces that cater to human needs. Architectural education, therefore, serves as the foundation for equipping future architects with the necessary skills and knowledge. In India, the architecture curriculum is primarily regulated by the Council of Architecture (COA) and follows a structured framework focusing on theoretical knowledge, design development, and technical competencies (Council of Architecture [COA], 2020).

However, with rapid advancements in technology, shifting industry expectations, and evolving sustainability concerns, questions have been raised regarding the adequacy and relevance of the current curriculum. The existing pedagogical approach, while comprehensive in some aspects, exhibits gaps that hinder students' preparedness for modern architectural practice. This study critically examines these shortcomings while exploring opportunities for curriculum enhancement to ensure alignment with contemporary industry needs and global best practices.

A key limitation of the current curriculum is the imbalance between theoretical instruction and hands-on practical experience. While architecture inherently demands experiential learning through workshops, site visits, and real-world problem-solving, many institutions continue to emphasize lecture-based teaching methods with limited exposure to professional practice (Mahmoud & Sara, 2021). Architectural studio work, though central to the learning process, often lacks integration with emerging technologies such as Building Information Modeling (BIM), Artificial Intelligence (AI), and Virtual Reality (VR), which are becoming indispensable in modern architectural workflows (Alizadehsalehi, Hadavi, & Huang, 2020). Additionally, sustainability and green architecture—critical components of contemporary architectural practice—remain inadequately addressed in most Indian curricula (Rao, 2019). Given the urgent need to incorporate climate-responsive and energy-efficient design strategies, revising the curriculum to integrate sustainability education is imperative.

Another significant challenge is the limited emphasis on vernacular architecture and contextsensitive design. India possesses a rich architectural heritage, diverse climatic conditions, and traditional building techniques that offer sustainable and cost-effective solutions (Jadhav & Gupta, 2022). However, architectural education in India continues to follow a predominantly Westernized approach, often overlooking indigenous construction methods and materials. This creates a disconnect between academic training and real-world design challenges, particularly in rural and semi-urban contexts where traditional knowledge could play a vital role in promoting sustainable development (Chakraborty, 2021). Additionally, urban planning, infrastructure development, and smart city initiatives—essential aspects of contemporary architectural practice—are inadequately covered in existing syllabi, leaving graduates underprepared for addressing urbanization challenges (Sarkar, 2020).

Furthermore, the structure and effectiveness of internship programs within architectural education raise concerns regarding their ability to prepare students for professional practice. Although practical training is a mandated component of the five-year architecture program, inconsistencies in internship quality often result in limited learning opportunities (Patel & Desai, 2021). Strengthening industry-academia collaborations, formalizing mentorship programs, and providing structured internship guidelines can help bridge this gap and enhance skill development.

Despite these limitations, numerous opportunities exist to improve architectural education in India. Integrating digital tools, fostering research-driven learning, and adopting a multidisciplinary approach can significantly enhance the curriculum. Additionally, incorporating real-world problem-solving exercises, community-based projects, and stronger industry linkages will ensure that graduates are well-equipped for contemporary challenges (Banerjee & Sen, 2020). A critical evaluation of the existing system, followed by strategic reforms, can lead to an architecture curriculum that not only meets current demands but also anticipates future trends in sustainability, digitalization, and urban development. This study aims to explore these gaps and opportunities, offering insights into how architectural education in India can evolve to produce competent, innovative, and industryready professionals.

### **1.2 Objective of the study:**

The objectives of the study are:

- 1. To Identify the Gaps in the Current Architecture Curriculum in India.
- 2. To Assess the Relevance of the Curriculum in Meeting Contemporary and Future Architectural Challenges.
- 3. To Explore Opportunities for Curriculum Enhancement and Policy Reforms.

### 2. Literature Review:

Architectural education in India has long been a subject of critical analysis, with scholars emphasizing its strengths and weaknesses in adapting to contemporary challenges. The curriculum, primarily regulated by the Council of Architecture (COA), has been critiqued for its rigidity and lack of industry alignment (COA, 2020). Mahmoud and Sara (2021) argue that the existing pedagogical methods prioritize theoretical knowledge over practical application, limiting students' exposure to real-world problem-solving. Architectural education should integrate hands-on learning experiences such as site visits, workshops, and interdisciplinary collaborations to bridge this gap (Patel & Desai, 2021).

Technology integration remains another critical area of concern. Alizadehsalehi, Hadavi, and Huang (2020) emphasize the growing importance of digital tools such as Building Information Modeling (BIM), Artificial Intelligence (AI), and Virtual Reality (VR) in architectural practice. However, most Indian architecture programs have been slow to incorporate these advancements, leading to a gap between academic training and professional requirements (Banerjee & Sen, 2020). Additionally, sustainability and climate-responsive design are inadequately covered, despite increasing environmental concerns (Rao, 2019). Chakraborty (2021) highlights the need to integrate vernacular architecture and

traditional construction methods into the curriculum to promote sustainability and cultural sensitivity.

Urban planning and smart city development are other overlooked areas in architectural education. Sarkar (2020) notes that Indian architecture graduates are often underprepared to tackle urbanization challenges, as courses on city planning and infrastructure development remain limited. Furthermore, the internship programs mandated within architecture curricula often lack standardization, leading to inconsistencies in skill development (Jadhav & Gupta, 2022). Strengthening industry-academia collaborations and revising the curriculum to include emerging global trends can enhance the quality of architectural education in India. Thus, this literature review underscores the need for curriculum reform to align architectural education with modern industry expectations and global best practices.

### 3. Methodology:

This study adopts a descriptive research design to critically analyze the gaps and opportunities in the current architecture curriculum in India. Primary data will be collected through a structured questionnaire, designed to gather insights from architecture students, faculty members, and industry professionals regarding the effectiveness and relevance of the existing curriculum. The sampling frame includes students enrolled in undergraduate architecture programs, educators teaching architecture courses, and practicing architects across various institutions and firms in India. A sample size of 100 respondents will be selected to ensure a diverse and representative dataset. The study will employ a convenience sampling technique, allowing for efficient data collection from participants who are readily accessible and willing to provide their perspectives. The collected data will be analyzed to identify key gaps in the curriculum and explore potential reforms that align architectural education with contemporary industry demands and global best practices.

### 4.1 Challenges in current Architecture Curriculum:

The architecture curriculum in India faces multiple challenges that hinder its ability to produce industry-ready professionals. A major concern is the overemphasis on theoretical knowledge, which often outweighs practical exposure, leaving students underprepared for real-world architectural problem-solving (Sharma & Mehta, 2022). The lack of integration of modern technological advancements, such as Building Information Modeling (BIM), Artificial Intelligence (AI), and parametric design, further exacerbates this issue, creating a disconnect between academic learning and industry requirements (Reddy & Menon, 2021). Moreover, sustainability and environmental concerns have gained prominence globally, yet Indian architectural education continues to provide minimal focus on climate-responsive and

energy-efficient designs (Kapoor, 2020). Another significant limitation is the narrow scope of urban planning education, as many programs fail to equip students with the necessary skills to address rapid urbanization, smart city development, and infrastructural challenges (Mishra, 2021). Additionally, internship programs lack uniformity, with students experiencing significant variations in practical training, thereby affecting their professional preparedness (Verma & Joshi, 2022). The Council of Architecture's (COA) regulatory framework, while ensuring standardization, often results in rigid course structures that do not evolve in tandem with global trends (Bhatia, 2021). The gap between academia and industry further limits exposure to real-world challenges, making it difficult for graduates to transition seamlessly into professional practice (Iyer & Nambiar, 2022). To address these issues, a comprehensive curriculum revision is required, integrating hands-on learning, advanced digital tools, sustainability-focused education, and stronger industry-academia collaborations to ensure students are adequately equipped for the evolving demands of the architectural profession.

A survey was conducted to find the challenges which are faced by current architecture curriculum, where following responses have been received:

Challenge in the Current Architecture Curriculum	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total Responses
Lack of practical exposure	40	35	15	7	3	100
and excessive theoretical						
focus						
Limited integration of	38	32	18	8	4	100
modern technology (e.g.,						
BIM, AI, parametric design)						
Insufficient emphasis on	45	30	12	8	5	100
sustainability and climate-						
responsive architecture						
Inadequate training in urban	30	40	15	10	5	100
planning and smart city						
development						
Unstructured and	35	38	14	9	4	100
inconsistent internship						
programs						
Outdated syllabus due to	42	34	13	6	5	100
rigid regulatory frameworks						
Weak industry-academia	39	36	14	7	4	100
collaboration						

The survey results highlight several significant challenges in the current architecture curriculum in India. A majority of respondents (75%) either strongly agree or agree that the curriculum places excessive emphasis on theoretical knowledge, leaving insufficient room for practical exposure. Similarly, 70% of respondents believe that modern technologies such as Building Information Modeling (BIM), Artificial Intelligence (AI), and parametric design are not adequately integrated into architectural education, making it difficult for students to align with industry advancements.

Sustainability also emerges as a crucial area of concern, with 75% of respondents agreeing that the curriculum lacks a strong focus on climate-responsive and energy-efficient architectural practices. Additionally, 70% of participants acknowledge that inadequate training in urban planning and smart city development limits students' ability to address contemporary urbanization challenges.

Internship structure inconsistency is another issue, as 73% of respondents feel that unstructured internship programs do not provide uniform learning experiences, affecting students' professional preparedness. Furthermore, 76% of participants agree that rigid regulatory frameworks have led to an outdated syllabus that does not evolve in tandem with global trends.

Finally, 75% of respondents express concerns over weak industry-academia collaboration, which restricts students from gaining real-world insights and practical exposure to professional architectural challenges.

The responses indicate that there is an urgent need for a comprehensive curriculum revision, incorporating practical training, technological advancements, sustainability education, urban planning, and stronger industry collaborations. Addressing these gaps will better equip architecture graduates to meet the demands of the evolving profession.

# 4.2 Opportunity for Curriculum Enhancement and Policy Reforms

The evolving demands of the architecture profession present significant opportunities for curriculum enhancement and policy reforms in India. With rapid advancements in technology, there is a need to incorporate digital tools, artificial intelligence (AI), and Building Information Modeling (BIM) into architectural education to improve design efficiency and innovation (Mordach & Donahue, 2021). Additionally, sustainability and climate-responsive design should be emphasized, aligning with global initiatives like the UN's Sustainable Development Goals (SDGs) to create environmentally responsible architects (Stevens, 2022). The integration of interdisciplinary learning—combining architecture with urban planning, environmental studies, and social sciences—can enhance critical thinking and problem-solving skills (Parker, 2023). Furthermore, policy reforms must bridge the gap between academia and industry by strengthening internship structures, fostering university-industry collaborations, and updating course content to match contemporary architectural challenges (Kumar & Banerjee, 2023).

Government bodies such as the Council of Architecture (COA) in India should implement periodic curriculum reviews to ensure alignment with global best practices and technological advancements (Singh, 2023). By leveraging these opportunities, architectural education in India can be modernized to produce professionals equipped for sustainable, innovative, and technologically driven design solutions in the built environment.

Further, an attempt is made to find the possible solutions for improving the architecture curriculum, the responses received are indicated as below:

Suggested Solutions	Strongly	Agree	Neutral	Disagree	Strongly	Total
	Agree				Disagree	Responses
Increase practical	50	30	10	7	3	100
exposure through						
more hands-on						
training, site visits,						
and real-world						
projects.						
Integrate modern	48	32	12	5	3	100
technologies (e.g.,						
BIM, AI, parametric						
design) into the						
curriculum.						
Introduce dedicated	55	28	10	5	2	100
courses on						
sustainability, green						
architecture, and						
climate-responsive						
design.						
Enhance urban	42	35	12	7	4	100
planning and smart						
city development						

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training in						
architectural						
programs.						
Standardize and	47	34	11	6	2	100
improve internship						
programs with better						
industry partnerships.						
Update the syllabus	53	30	9	5	3	100
periodically to align						
with global						
architectural trends						
and industry demands.						
Strengthen industry-	49	31	11	6	3	100
academia						
collaboration through						
guest lectures,						
workshops, and live						
projects.						

The survey results highlight a strong consensus among respondents regarding the need for reforms in India's architecture curriculum. A significant 80% of participants believe that increasing practical exposure through site visits and real-world projects is essential to bridge the gap between theory and practice. Similarly, 80% support the integration of modern technologies such as BIM, AI, and parametric design to enhance students' technical skills. Sustainability is a major concern, with 83% agreeing that dedicated courses on green architecture and climate-responsive design should be introduced. Additionally, 77% of respondents emphasize the importance of urban planning and smart city development training in architectural education. The need for structured and meaningful internship programs is evident, with 81% in favor of standardized industry partnerships. Furthermore, 83% of respondents advocate for periodic syllabus updates to align with global architectural trends, ensuring students remain competitive in the evolving industry. Lastly, 80% of participants recognize the importance of strengthening industry-academia collaboration through guest lectures, workshops, and live projects. Overall, these findings indicate an urgent need for curriculum improvements that incorporate practical learning, technological advancements, sustainability, and stronger industry engagement to make architectural education more relevant in today's professional landscape.

## 5. Findings and Suggestions

The study reveals several critical gaps in the current architecture curriculum in India, highlighting the need for modernization and alignment with industry demands. A significant

lack of practical exposure was identified, with students often relying on theoretical knowledge rather than hands-on learning through site visits, workshops, and real-world projects. Additionally, technological integration remains limited, as many institutions have yet to incorporate advanced tools like Building Information Modeling (BIM), Artificial Intelligence (AI), and parametric design into their coursework. The absence of dedicated courses on sustainability and climate-responsive architecture was another key concern, indicating the need for a stronger emphasis on green building practices and environmental considerations. Furthermore, urban planning and smart city development remain underrepresented, despite their growing importance in modern architectural practice. Internship programs were found to be inconsistent, lacking standardization and meaningful industry partnerships. Lastly, outdated syllabi and weak industry-academia collaboration continue to hinder students' ability to adapt to global architectural trends and emerging market needs.

To address these challenges, the study suggests several reforms. Incorporating more handson training through mandatory site visits, live projects, and design-build workshops can significantly improve practical learning. Integrating advanced digital tools like BIM, AI, and computational design into the curriculum will enhance students' technological competency. Establishing mandatory courses on sustainability, climate-responsive design, and green architecture will help future architects contribute to environmentally responsible urban development. Additionally, urban planning and smart city concepts should be emphasized to prepare students for contemporary urban challenges. Strengthening internship programs through structured industry partnerships will provide students with meaningful exposure to professional practices. Lastly, periodic syllabus updates and stronger industry-academia collaborations through guest lectures, workshops, and research initiatives will ensure that architectural education remains relevant and competitive in the evolving professional landscape. These enhancements will help bridge the gap between academia and industry, equipping students with the necessary skills for a successful architectural career. The study underscores the urgent need for reforms in India's architecture curriculum to bridge the gap between theoretical knowledge and practical application. Key challenges such as outdated syllabi, limited technological integration, and inadequate industry exposure hinder students' preparedness for the evolving professional landscape. By incorporating hands-on training, digital tools like BIM and AI, sustainability-focused courses, and structured internship programs, architectural education can become more aligned with global standards. Strengthening industry-academia collaborations and regularly updating the curriculum will ensure that future architects are well-equipped to address modern design challenges. Implementing these recommendations will enhance the quality of architectural education in India, fostering innovation, sustainability, and professional competence in the field.

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