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# Transforming Architecture Education in India: Policy, Pedagogy, and Professional Competencies

**Ar. Raksha Bongirwar[1*], Dr. Bijay Kumar Das[2]**

[1]*Associate Professor, Dr D Y Patil College of Architecture Akurdi Pune*

[2]*Associate Professor, NIT Patna*

**Abstract**

The architectural education in India is in the process of changing its scenario to meet the current requirements of architectural profession in the built environment, technological advancement, sustainability and professional practice around the globe. This review explores the history of the architecture education in recent times and its policy changes, with a look at the new pedagogical methods and competency-based learning frameworks. It talks about the reforms brought by the Council of Architecture (CoA), National Policy on Education (1986), AICTE changes and the National Education Policy (NEP) 2020 for modernisation of curricula and bringing improvements in education. The review also identifies pedagogies focused on the learner, project-based learning, the use of digital technologies including BIM and Artificial Intelligence, sustainability education and interdisciplinary learning as key aspects of educational transformation. It also examines the professional skills and capabilities needed of a future architect, including technical, ethical, communication and lifelong learning skills. Lastly, the review proposes future directions to make the relevance, quality and competitiveness of architectural education in India better.

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***Keywords: Architecture Education; National Education Policy (NEP) 2020; Learner-Centred Pedagogy; Professional Competencies; Sustainable Architectural Education.***

# 1 INTRODUCTION

Architectural education is a key part of the process of developing the built environment, as it helps to train professionals who can create space that is both functional and sustainable, and that is designed to be socially responsive. It not only builds technical skills, it empowers architects to tackle societal and environmental challenges by cultivating their creative and critical thinking, environmental awareness, and ethical responsibility [1]. With the growth of cities and the rise of construction activities, the quality of architectural education has become more and more significant in the domain of sustainable development and in the enhancement of the quality of the built environment. This recent research reinforces the need for design, technology, environment and social issues to be integrated within the discipline of architecture so that graduates are able to meet the demands of practice in the present times [2].

Since the formalization of institutions and enactment of Architects Act, 1972, which gave rise to the Council of Architecture (CoA), as the statutory body, the architecture education in India has undergone significant changes. Curricula have grown and developed over the years to incorporate building technology, environmental studies, urban planning, heritage conservation and digital design [3]. As technology advances, urbanization grows, climate change impacts, and demand for sustainable and resilient infrastructure rises, however, there are deficiencies between academic training and professional practice. Therefore, there is a need for constant upgrading of architecture programmes to ensure their students obtain the skills to function in the modern construction industry, including digital skills, knowledge of other disciplines, and problem solving [4], [5].

In light of these, the NEP 2020 suggests multidimensional changes in Higher Education by introducing multidisciplinary education, flexibility in curriculum, experiential learning, integration of digital technology, and outcome-based education. The initiatives offer a chance to modernise the architectural education, reinforce innovation, sustainability, industry ties, and impart professional skills to prepare future architects to face the national priorities and global professional standards [6].

# 2 POLICY REFORMS DRIVING ARCHITECTURE EDUCATION IN INDIA

Various regulatory and policy measures have been taken over the years to ensure the academic quality of architectural education in India while meeting the evolving needs of society and the

profession. Over the years, the teaching model of architecture has undergone a gradual transformation from a domain-specific approach to a competency-based approach that incorporates a multidisciplinary focus, digitalization, and industry-focused education. Curriculum structures, academic quality, professional ethics and graduate competencies have been largely shaped by regulatory bodies and national education policies. The architectural education has been undergoing reforms in recent years, especially in accordance with the National Education Policy (NEP) 2020, with the aim of modernizing architectural education and making it more relevant to global standards in education and professions. [7]

## 3 COUNCIL OF ARCHITECTURE (COA)

The Council of Architecture (CoA) is a statutory body functioning under the Architects Act, 1972 which regulates architectural education and professional practice in India. The CoA sets the Minimum Standards of Architectural Education, approves institutions that run architecture courses, maintains the register of architects and guarantees uniformity in the educational level of the country. It periodically revises educational regulations including the latest advancements in design, sustainability, digital technologies and professional ethics, enhancing architecture graduates' competency.

## 4 NATIONAL POLICY ON EDUCATION (1986)

The National Policy on Education (NPE) 1986 was an important step towards enhancing the quality and accessibility of higher education in India. It was not only for the field of architecture, but curriculum modernisation, professional education, research, teacher development and integration of science and technology in higher education. They stimulated the institutions of architecture to further develop practical learning, technological consciousness and inter-disciplinary approaches which led to a gradual enhancement of the architectural education.

## 5 AICTE POLICY ON EXAMINATION REFORMS (2018)

The AICTE Examination Reforms Policy (2018) has ushered in major reforms in the assessment practices in technical education. It emphasized Outcome-Based Education (OBE), ongoing internal assessment, project-based assessment, and assessment of higher-order cognitive skills, not rote memorisation. These changes were implemented for the architecture programmes in order to assess design thinking, creativity, hands-on skills and professional skills in a more authentic manner: via studio projects, juries, portfolios and collaborative work.

# 6 AICTE MODEL CURRICULUM FOR ARCHITECTURE (2019)

The AICTE Model Curriculum for Architecture (2019) was the document that provided a clear framework for the update of architecture programmes in accordance with the current industry needs. The learning approach was focused on learner-centred learning, digital design tools, Building Information Modelling (BIM), environment sustainability, heritage conservation, professional practice and interdisciplinary learning. It also advised internships, skill development, and elective courses to enhance the employability of graduates and made architectural education to be relevant to the technological advancement and the emerging needs of architects.

# 7 NATIONAL EDUCATION POLICY (NEP) 2020 AND ARCHITECTURE EDUCATION

The National Education Policy (NEP) 2020 is the most extensive change in the higher education sector in India in the last few decades. It has a great significance for architectural education, as it emphasises a multidisciplinary, flexible curriculum, the Academic Bank of Credits (ABC), multiple entry–exit points, experiential and project-based learning, digital education, research orientation and Outcome Based Education (OBE). The policy also promotes the partnership between academia and industry, innovation, entrepreneurship and internationalisation of higher education. NEP 2020 offers an opportunity for architecture institutes to incorporate new and evolving technologies like Artificial Intelligence (AI), Building Information Modelling (BIM), and eco-friendly design into their curricula, while enhancing their research, sustainability, and professional skills. These changes should foster the development of flexible, ethical, technologically competent and problem-solving architects in the built environment [8].

# 8 EMERGING PEDAGOGICAL APPROACHES IN ARCHITECTURE EDUCATION

The changing nature of the architectural profession has required a number of shifts in the way that teaching and learning are carried out in order to train graduates for today's practice. Conventional architectural education, characterized by design studios and teacher-Centered learning, has started to be complemented by student-Centered, technology-based and interdisciplinary approaches to education. These strategies are designed to support the development of creativity and critical thinking, technical skills, and professional adaptation to issues of urbanization, sustainability, and digitalization. This means that architecture schools are taking innovative approaches to teaching that meet expectations in the industry and around the world [9].

## 9 EVOLUTION FROM TRADITIONAL STUDIO TEACHING TO LEARNER-CENTRED EDUCATION

In recent years, the focus in architecture education has shifted from the teacher-centred studio-based approach to a more learner-centred approach, whereby students are encouraged to explore design, reflect on their ideas, and engage in problem-solving with peers. Current design studios promote students to think for themselves, learn from their peers, and give and receive feedback multiple times, fostering analytical and creative abilities instead of reproducing familiar design answers. This shift is conducive of competency-based education while empowering students to face real-life architectural problems.

## 10 PROJECT-BASED AND EXPERIENTIAL LEARNING

The vision of Project Based Learning (PBL) and experiential learning has been embedded in the field of architecture education through the linkage between theory and practice. Students gain insight into the process of construction through live projects, field trips, community work, design/build, intern experiences, and professional responsibilities, while developing effective teamwork, communication, and decision-making abilities. These experiences help build the readiness of industry and help close the gap between academic learning and industry practice.

## 11 DIGITAL TECHNOLOGIES IN ARCHITECTURAL EDUCATION

Digital technologies have revolutionized the fields of teaching and practice in architecture. Computer-Aided Design (CAD), Building Information Modelling (BIM), Geographic Information Systems (GIS), Virtual and Augmented Reality (VR/AR), and Artificial Intelligence (AI) improve the visualisation, simulation, collaboration, and data-driven decision-making. Incorporating them into curriculum provides students with necessary digital skills needed in today's buildings, architecture and engineering construction (AEC) industry.

## 12 SUSTAINABILITY AND CLIMATE-RESPONSIVE DESIGN EDUCATION

Increasing concerns of environmental care have been given greater priority in architectural education. The teaching now integrates energy-efficient design, climate sensitive planning, green building concepts, and life-cycle thinking to create environmentally responsible architects who can face up to the challenges of climate change and resource conservation.

# 13 INTERDISCIPLINARY AND COLLABORATIVE LEARNING

The importance of cooperation with engineering disciplines, planning, environmental science, and social science has become more prevalent in the educational process of architecture in recent years. Interdisciplinary learning can be used to solve complex design problems from several points of view and can also help to develop communication, teamwork and integrated decision making as skills that are vital for architectural practice in today's world.

**Table 6: Emerging Pedagogical Approaches in Architecture Education**

| Pedagogical Approach | Key Features | Benefits to Architecture Education | Examples/Tools |
|---|---|---|---|
| Learner-Centred Studio Education | Shifts from teacher-led instruction to active student participation, critical reflection, peer learning, and iterative design processes. | Enhances creativity, critical thinking, independent learning, and design decision-making. | Design studios, peer reviews, critiques (jury system), reflective learning. |
| Project-Based Learning (PBL) and Experiential Learning | Learning through real-world projects, fieldwork, community engagement, internships, and hands-on construction activities. | Bridges theory and practice, develops problem-solving, teamwork, and professional skills. | Live projects, design-build studios, site visits, internships, community design projects. |
| Digital Technologies in Education | Integration of digital design, simulation, visualization, and data-driven decision-making into architectural curricula. | Improves technical competency, collaboration, visualization, and project efficiency while preparing students for Industry 4.0. | CAD, BIM, GIS, Virtual Reality (VR), Augmented Reality (AR), Artificial Intelligence (AI), Computational Design. |
| Sustainability and Climate-Responsive Design Education | Incorporates environmental principles, green building concepts, energy-efficient design, and resilience | Develops environmentally responsible architects capable of addressing climate change and | Passive design strategies, Life Cycle Assessment (LCA), energy simulation, green building rating systems (LEED, GRIHA). |

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|---|---|---|---|
| | into architectural learning. | sustainable development goals. | |
| Interdisciplinary and Collaborative Learning | Encourages collaboration among architecture, engineering, planning, environmental science, and social science disciplines. | Strengthens communication, teamwork, integrated problem-solving, and multidisciplinary decision-making. | Collaborative design studios, multidisciplinary workshops, integrated design projects, stakeholder engagement. |

# 14 DEVELOPING PROFESSIONAL COMPETENCIES FOR FUTURE ARCHITECTS

Architectural education is undergoing a paradigm shift, not just in curriculum, but also in preparing students with the necessary skills and abilities to meet technological, environmental and societal demands. Modern architectural practice demands that the practitioner possess balance among the technical abilities, ethical responsibilities, interpersonal skills and lifelong learning. The integration of knowledge, skills, attitudes and professional values in competency-based education has thus become an appropriate model for linking learning outcomes to the expectations of the industry. This enables students to be flexible in the application of new technologies and complex project situations whilst ensuring they continue to practice at a high level [10], [11].

1. **Technical Competencies:** The next generation of architects would need to have solid technical skills in digital design, Building Information Modelling (BIM), computational skills, and sustainable design. Architects can leverage their CAD, BIM, simulation software, and digital workflow expertise to enhance design precision, inter-disciplinary collaboration, and project efficiency. Furthermore, teaching sustainable principles will ensure that graduates are able to design buildings that are more sustainable and energy-efficient, as these are key industry expectations.
2. **Professional and Ethical Competencies:** Architectural projects require the involvement of architects, engineers, planner, contractors and the client. Therefore, the skills of effective communication, teamwork, leadership, negotiation, and critical problem solving are crucial in handling multidisciplinary projects and making innovative design solutions. These are the transferable skills that are developed in collaborative studio projects and design challenges within the framework of competency-based learning.
3. **Communication, Teamwork, Leadership, and Problem-Solving Skills:** Architectural projects require the involvement of architects, engineers, planner,

contractors and the client. Therefore, the skills of effective communication, teamwork, leadership, negotiation, and critical problem solving are crucial in handling multidisciplinary projects and making innovative design solutions. These are the transferable skills that are developed in collaborative studio projects and design challenges within the framework of competency-based learning.

4. **Industry–Academia Collaboration, Internships, and Practice-Based Learning:** Academic institutions and industry come together to enhance professional readiness, providing students with exposure to actual design processes, construction, and project management. Internships, live projects, industry training and mentoring are used to link knowledge with practice in architecture and also to enhance employability and competence.
5. **Lifelong Learning and Global Professional Readiness:** In today's fast-changing world of technology and professions, architects need to stay updated with the latest developments and acquire new knowledge and skills throughout their careers. Adaptability and global employability are developed through lifelong learning, professional development programmes, international collaboration and knowledge of global design standards. A culture of lifelong learning allows future architects to stay current and adaptable to new challenges in the architecture, engineering, and construction sector.

# 15 FUTURE DIRECTIONS FOR TRANSFORMING ARCHITECTURE EDUCATION

If architectural education is to thrive in India, it must meet the challenges of fast technological developments, global sustainability concerns, and changing professional demands in a proactive manner. The new models of education focus on innovation, flexibility and multi-disciplinary education to equip architects for the new design and construction contexts. Artificial Intelligence (AI) and Generative AI are anticipated to be part and parcel of the architectural education, making it more conceptual, performing, optimizing and personalised; not overpowering human creativity. On the other hand, the creation of a smart and digital learning environment with the addition of cloud-based platforms, Building Information Modelling (BIM), Virtual and Augmented Reality (VR/AR) and immersive simulations can improve collaborative and experiential learning. Research and innovation should also be reinforced in future curricula through evidence-based design, interdisciplinary research and entrepreneurship. Greater international cooperation, exchange of students and connections with international accreditation systems will lead to better academic standards and competitiveness. Additionally, by engaging with industry, professional bodies and emerging technologies on a regular basis,

architectural education will be relevant, competency focused and responsive to the changing needs of the architecture, engineering and construction (AEC) sector [12], [13].

## 16 LITERATURE REVIEW

(Choto, 2026) [14] suggests a pedagogical approach based on transformational practice that methodically combines practice, instruction, and research in architectural design. The model was created using a qualitative multi-method approach that included an integrated and systematic evaluation of the literature with a case study of Ethiopian architecture education. The case study, which involved instructors and third-year students at Arba Minch University, showed insufficient cooperation and assessment clarity, instructor-centered instruction, and disjointed connections between theory and practice. These results guided the creation of a paradigm that improves professional competence, encourages active, student-centered learning, and closes the theory-practice gap. For academic institutions in Ethiopia and other Global South contexts, the study offers a rigorous and flexible approach.

(Inam et al., 2025) [15] analyses the evolutionary path of architectural education in India, following its growth from the colonial influences of the 19th century to the pedagogical and technological advancements of the modern period. India's architectural education has changed significantly since it was first influenced by British educational paradigms, reflecting both technological advancement and larger socioeconomic shifts. This study shows significant changes in curriculum frameworks, the use of digital tools like CAD and BIM, and the influence of global educational trends on local practices through archival research, interviews with academics and practitioners, and analysis of current educational practices. The study also tackles contemporary issues like incorporating ecological design principles and striking a balance between heritage and innovation. By analysing these processes, the study advances knowledge of how Indian architectural education has changed to accommodate changing societal and professional demands and offers future growth paths that are consistent with both local and international norms.

(Tejaswi, 2025) [16] Examine and evaluate India's institutional arrangements and regulations pertaining to architectural education, with a particular emphasis on Karnataka, in order to pinpoint the structural elements that limit architecture schools and to get them ready for change and implementation. Significant differences are found in the infrastructure provided for architecture schools between metropolitan and Tier 2/3 cities; overlapping regulatory authority between the Council of Architecture (CoA), AICTE, and UGC; government institutions with little autonomy; a lack of faculty; a lack of research-led and/or community engagement in the classroom; a lack of consideration for digital technologies and sustainability in architecture; and

a limited capacity for the sector to diversify and adapt to a global standard for architecture education. In their conclusion, the authors note that while NEP 2020 presents an exciting vision, stakeholders must adopt effective implementation strategies that support increased "regulatory coherence" throughout the educational landscape, increase institutional autonomy at various levels, invest in faculty development, and integrate practice-linked and community-responsive pedagogy.

(Patel & Prajapati, 2024) [17] examines how the NEP, 2020, and NHEQF's mandates may be implemented in architectural education and suggests some possible course modifications. In order to include these frameworks in the plans for architectural education, this study investigates and reviews the NEP 2020, NHEQF, and NSQF. The nation must adhere to laws and rules like the National Education Policy and the proposed National Higher Education Qualifications Framework, as well as have conversations about these modifications within the architectural community. Outcome-Based Education (OBE), which aims to provide expected learning objectives for all higher education programs leading to degrees, diplomas, and certificates, is the first reform. A framework for OBE is provided by the NHEQF. In order to make it easier to integrate vocational education into higher education, the second modification is to align higher education with the National Skills Qualifications Framework (NSQF). Multiple exit options for undergraduate programs, an emphasis on creativity, innovation, and research in both undergraduate and graduate programs, a move toward a more multidisciplinary education for undergraduate programs, and curriculum and student support revamping to improve the student experience are some additional suggested changes.

(Bongirwar, 2022) [18] The creation of structures intended to combine aesthetics, technology, and the humanities is the main emphasis of the architectural profession's operational sphere. In addition to providing end users with a nice interior, buildings are designed to be as efficient as feasible. Buildings are acknowledged to be major users of energy and resources in addition to producing waste. Due to the rapid expansion of institutions, architectural education is facing a number of challenges, such as issues with the quality of instruction offered, a shortage of qualified faculty, an increase in the gap between education and employment, challenges posed by globalisation and privatisation, and changes in the architectural language. Innovative building materials, construction technology, and architectural education norms and standards, in addition to the regulatory bodies' responsibilities. In order to make architectural education more focused, quantitative and qualitative, collaborative, efficient, and culturally appropriate, the research attempts to identify best practices throughout the globe. It would support and advance the profession by providing skilled workers to create a new built environment that is

cost-effective, time-efficient, improves user productivity and health, and creates buildings that use the least amount of energy and promote local and global sustainability.

(Dhanorkar, 2017) [19] examines the pedagogical methods of transmission of knowledge in medieval temple architecture. Efforts have been put in place for identifying the pedagogical strategies in Hindu Temple Architecture. This research explores some of the connections between medieval pedagogical methods manifested in temple construction which may prove to be the basic concept of Design Build Studio and the contemporary pedagogical methods of architecture education. From the analysis, the existence of carved plans, scriptures and creative diversity of carving styles shows that, the study area is a typical depiction of a place for teaching-learning process of Philosophy, Skills and Design. The paper makes room for contemporary pedagogical strategies to be considered as having relevance with medieval pedagogical strategies. In larger perspective this research suggests to develop the pedagogical strategies beneficial for architecture education system here after, which can be referred for using in upcoming teaching learning processes. This helps to nurture the sense of Cultural Heritage in contemporary education system.

## 17 CONCLUSION

Architecture education in India is changing from traditional teaching methods, to a more multi-disciplinary, technology-enabled and competency-broadened approach that matches the requirements of today's profession and society. The Council of Architecture, AICTE and the National Education Policy (NEP) 2020 have laid a solid groundwork for enhancing the quality of curriculum, academic flexibility and industry-relevance. Pedagogical innovative elements such as learner-centred education, project-based learning, digital technologies, sustainability education and interdisciplinary cooperation are improving students' capacity to solve complex design and environmental issues. Another crucial component is building up the competencies that define profession, such as technical skills, ethical practice, communication, leadership, and lifelong learning, skills that are crucial for future ready architects. The future of architectural education will be further strengthened with continuous curriculum revision, robust industry–academy collaboration, new technologies of Artificial Intelligence and digital learning, and international cooperation. All of this will support Indian architecture schools to train competent, innovative and internationally competitive architects who can build sustainable and resilient built environment.

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