THE STRUCTURAL METAMORPHOSIS OF INDIAN HIGHER EDUCATION: A MULTIDIMENSIONAL ANALYSIS OF NEP 2020 IMPLEMENTATION (2020–2026)

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Abstract
The National Education Policy (NEP) 2020 represents the most significant structural overhaul of the Indian education system since the 19th-century Minute on Indian Education. By 2026, the transition from a silo-based, rigid disciplinary model to a flexible, credit-based, and multidisciplinary ecosystem has reached its operational peak. This paper examines the technical and philosophical integration of four core pillars: (1) Multidisciplinary Pedagogy, (2) the Indian Knowledge System (IKS), (3) the Multiple Entry and Multiple Exit (MEME) framework, and (4) the Anusandhan National Research Foundation (ANRF). Through an analysis of the National Credit Framework (NCrF) and the Academic Bank of Credits (ABC), we demonstrate how these mechanisms foster a "Viksit Bharat" (Developed India) by 2047.
Keywords: *NEP 2020, NCrF, IKS, MEME, ABC, ANRF, HECI, Higher Education Reform, Holistic Pedagogy.*

Introduction

An important factor in determining a country's intellectual, economic, and technical future is higher education. The higher education system in India has undergone numerous reforms over the years, but structural issues including disciplinary fragmentation, inflexible curricula, little integration of research, and limited academic mobility remained for decades. Acknowledging these difficulties, the Indian government launched the National Education Policy (NEP) 2020, which was one of the most extensive changes to the country's educational system since independence.

With a comprehensive, adaptable, multidisciplinary, and learner-centric approach, NEP 2020 seeks to transform higher education. The Higher Education Commission of India (HECI), the National Credit Framework (NCrF), the operationalization of the Academic Bank of Credits (ABC), the integration of Indian Knowledge Systems (IKS), and the promotion of research through the Anusandhan National Research Foundation (ANRF) are just a few of the structural reforms proposed by the policy. Together, these changes aim to transform the conventional inflexible academic framework into a vibrant environment that fosters lifelong learning, interdisciplinary study, and innovative research.

The operationalization of these reforms in Higher Education Institutions (HEIs) has advanced significantly between 2020 and 2026. Multidisciplinary curricula, Multiple Entry and Multiple Exit (MEME) systems, and credit accumulation and transfer procedures that promote student mobility are all being progressively adopted by universities and colleges. A paradigm change from restricted specialization to holistic knowledge growth is further reflected in the STEAM model's integration of the arts, humanities, sciences, and technology.

A multifaceted examination of the structural transformation taking place in Indian higher education during the early stages of NEP 2020 implementation (2020–2026) is presented in this research. With an emphasis on four main pillars—multidisciplinary pedagogy, Indian Knowledge Systems, the MEME framework, and research enhancement through ANRF—it explores the conceptual underpinnings and technical mechanisms that propel the shift. The study attempts to assess how these structural innovations support the development of a globally competitive and knowledge-driven educational environment in line with the goal of "Viksit Bharat 2047" by examining institutional reforms, legislative frameworks, and new academic practices.

Pillars of NEP

I. Pillar I: Multidisciplinary Pedagogy – The Epistemological Convergence

Multidisciplinary pedagogy is the foundational shift from specialized "silos" to "integrated inquiry." In 2026, this is no longer a localized experiment but a mandated institutional requirement for all Higher Education Institutions (HEIs).

A. The Structural Shift from STEM to STEAM

The traditional STEM framework—often critiqued for producing "decontextualized" specialists—has been superseded by the STEAM (Science, Technology, Engineering, Arts, and Mathematics) model.

1. **Integrative Design:** Curricula are structured to ensure that "Hard Sciences" are grounded in "Humanistic Logic." For instance, a degree in Artificial Intelligence (AI) now necessitates mandatory credits in **Ethical Philosophy** and **Digital Sociology** [1.1], [6.1].
2. **Major-Minor Flexibility:** The 2026 academic standards allow a student to pursue a "Major" in a core technical field (e.g., Mechanical Engineering) while maintaining a "Minor" in a completely disparate field (e.g., Classical Music or Linguistics). This is facilitated by the **Four-Year Undergraduate Programme (FYUP)**, where the first year is dedicated to a broad-based "Common Core" [1.2].

B. Problem-Based and Transdisciplinary Learning

Additive manufacturing (AM) is poised to expand into new frontiers, including bioengineering and space. The ability to create complex, lightweight structures with minimal material waste is driving new applications in aerospace, healthcare, and infrastructure development.

Pedagogy has evolved from "Instruction-Based" to "Discovery-Oriented."

1. **Theme-Based Learning:** Instead of studying subjects in isolation, universities have adopted **SDG-Linked Modules**. A course on "Urban Sustainability" requires students to synthesize knowledge from Civil Engineering, Environmental Science, Urban Economics, and Social Policy.
2. **Experiential Credits:** 25% of the curricular time in 2026 is dedicated to internships, community service, and field projects, which are evaluated and creditized under the NCrF [1.3], [6.2].

II. Pillar II: The Indian Knowledge System (IKS) – The Philosophical Anchor

IKS is defined by the Ministry of Education as the "systematized body of knowledge developed in India over millennia." Its integration is not merely cultural but aims to provide a "rooted" lens to modern scientific challenges.

A. The 5% Credit Mandate and NCrF Architecture

The **National Credit Framework (NCrF)** provides the mechanical link for IKS. As of 2026, every degree student must earn at least **5% of their total credits** through IKS-certified modules [2.1], [5.1].

- **Credit Assignment:** IKS is categorized into two tiers:
  - **Tier 1 (Foundational):** Overview of Indian civilizational history, logic (*Nyaya*), and ethics (*Dharma*).
  - **Tier 2 (Domain-Specific):** Ancient Indian contributions to specific fields—e.g., *Sushruta Samhita* for medical students, *Vastu Shastra* for architects, and *Arthashastra* for management students [2.2], [5.3].

B. Scientific and Logical Applications of IKS

The integration of IKS in 2026 focuses on "Functional Relevance":

- **Computational Logic:** Using Paninian linguistics to teach formal grammar in Computer Science.
- **Metallurgy:** Studying high-carbon steel (*Wootz*) and corrosion-resistant alloys from ancient Indian texts to develop sustainable modern materials.
- **Sustainable Agriculture:** Reviving *Vrkshayurveda* for organic soil health and natural pest management in alignment with global climate goals [11], [19].

III. Pillar III: Multiple Entry and Multiple Exit (MEME) – The Structural Safety Net

The MEME framework, supported by the **Academic Bank of Credits (ABC)**, transforms the educational journey into a "non-linear" and "lifelong" process.

A. The Certification Ladder

The degree program is no longer an "all-or-nothing" commitment. It is structured into annual milestones:

1. **1st Year (40 Credits):** Undergraduate Certificate.
2. **2nd Year (80 Credits):** Undergraduate Diploma.
3. **3rd Year (120 Credits):** Bachelor's Degree.
4. **4th Year (160 Credits):** Bachelor's with Research/Honours [3.2], [6.2].

B. Mechanics of the Academic Bank of Credits (ABC)

The ABC is a centralized digital repository hosted on the **DigiLocker** platform.

- **Credit Storage:** Credits remain "live" for a **shelf-life of 7 years**, allowing students to pause their education for professional or personal reasons and return without loss of progress.
- **Inter-Institutional Mobility:** A student can earn 40 credits at a State University, 40 via the **SWAYAM** (MOOCs) platform, and 40 at a Central University to qualify for a degree, provided the credit transfers are approved by the "Home" institution [3.1], [13].

C. Recognition of Prior Learning (RPL)

The NCrF (2023) introduced the "RPL" mechanism where non-formal skills (e.g., high-level coding skills learned independently or traditional crafts) can be assessed and converted into formal credits. This allows "out-of-school" learners to enter the formal system at an advanced level (e.g., Level 5.0 or 5.5) [5.1].

IV. Pillar IV: Anusandhan National Research Foundation (ANRF) – The Innovation Engine

The ANRF, established through the ANRF Act (2023), replaces the Science and Engineering Research Board (SERB) with a much broader, strategic mandate.

A. Funding and Industry-Academia Synergy

With a corpus of **₹50,000 crore**, the ANRF functions as a "High-Level Strategic Director" for Indian research.

- **Public-Private Partnership (PPP):** Over 70% of ANRF funding is projected to come from the private sector and Public Sector Enterprises (PSEs). For a university to receive a "High-Impact Grant," it must demonstrate an active industry collaboration [4.1], [17].
- **Democratization of Research:** The ANRF specifically targets "Seeding and Growing" research in State Universities and Tier-II colleges, which were historically excluded from major funding [18].

B. The MAHA Missions (2026 Focus)

The "Mission for Advancement in High-impact Areas" (MAHA) targets sectors critical to national security and the economy:

1. **Mission AI-SE:** AI for Science and Engineering, focusing on "Neural Operators" and "Biological Foundation Models" [4.2].
2. **EV-Mission:** Indigenous development of tropical battery cells, power electronics, and thermal management systems [4.3].
3. **Quantum Mission:** Developing secure communication protocols and quantum-sensing technologies.

V. Regulatory Overhaul: The Higher Education Commission of India (HECI)

By March 2026, the legislative process to replace the UGC and AICTE with the **Higher Education Commission of India (HECI)** has entered its final implementation phase. The HECI functions through four distinct "Verticals":

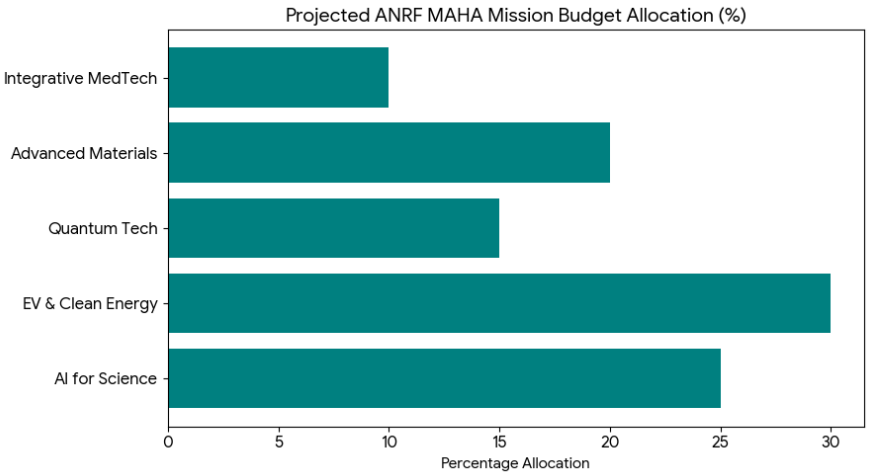
1. **NHERC (National Higher Education Regulatory Council):** The "Single Point" regulator for all HE (excluding medical and legal).
2. **NAC (National Accreditation Council):** A "Meta-Accreditor" that oversees independent accrediting agencies. The focus has shifted from "Infrastructure-based" to "Outcome-based" evaluation.
3. **HEGC (Higher Education Grants Council):** Responsible for the "Performance-based" funding and financing of HEIs.
4. **GEC (General Education Council):** Frames the "Graduate Attributes" and the National Higher Education Qualification Framework (NHEQF) [6.1], [7.2].

VI. Critical Challenges and the 2030 Vision

Despite the robust technical architecture, the 2026 status report identifies three critical hurdles:

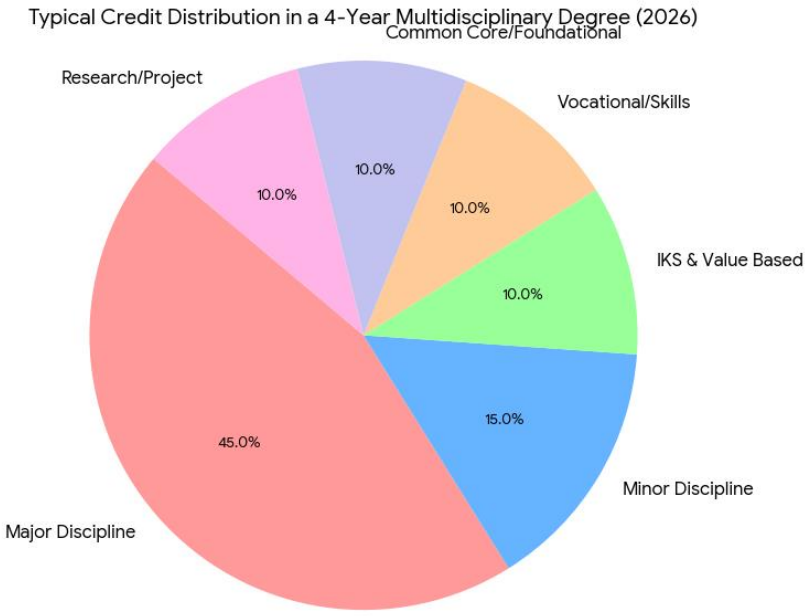
- **Faculty Training:** The **Malviya Mission** has retrained over 100,000 faculty members, but a psychological shift from "Teaching" to "Mentoring" remains a work in progress [2.1].
- **Standardization vs. Autonomy:** Balancing the "Light but Tight" regulatory approach with the need for institutional freedom is a delicate equilibrium.

The Rural-Urban Digital Divide: While the ABC and DigiLocker are mobile-ready, ensuring high-speed connectivity for real-time credit validation in remote clusters is a logistical priority [6.3].



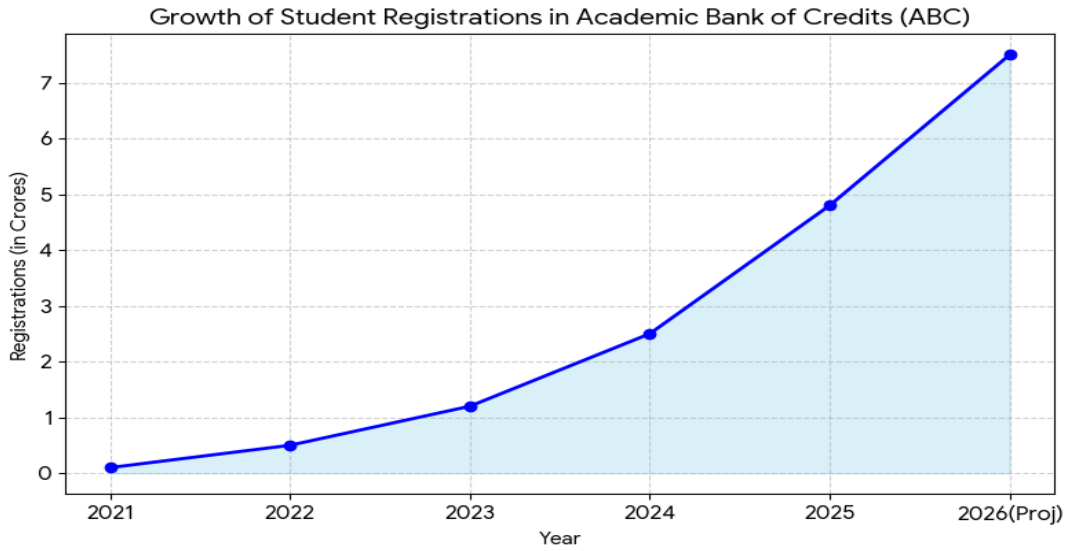
Graph 1: Percentage Allocation of ANRF MAHA Mission Budget Across Strategic Programs

Graph 1 shows how the Anusandhan National Research Foundation's (ANRF) Mission for Advancement in High-impact Areas (MAHA) budget is distributed among important strategic research initiatives. Artificial Intelligence for Science and Engineering (AI-SE), Electric Vehicle Technology (EV Mission), Quantum Technologies, and other emerging innovation fields are among the national priority sectors highlighted in the distribution. The chart shows how, under the NEP 2020 framework, the ANRF strategically directs research money into high-impact technical fields that support scientific advancement, economic growth, and national security.



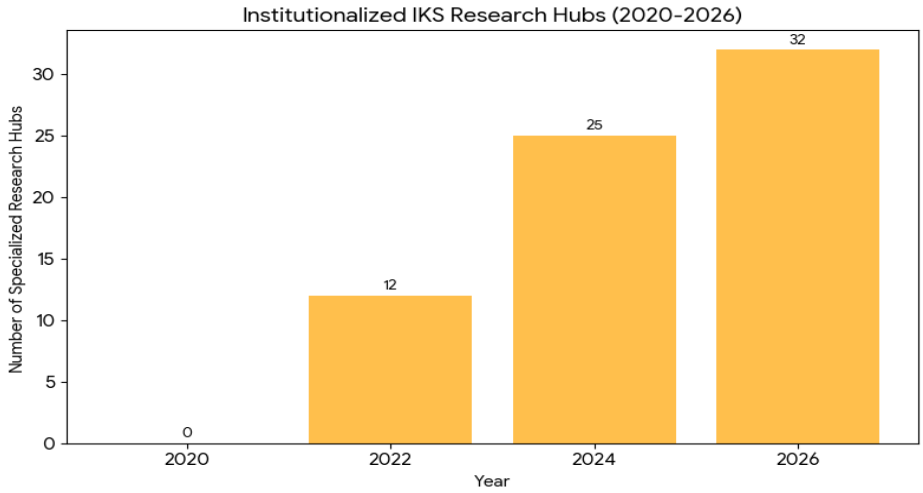
Graph 2: Typical Credit Distribution in a Four-Year Multidisciplinary Degree Programme (2026)

The average credit distribution pattern for a four-year, multidisciplinary undergraduate degree under NEP 2020 by 2026 is depicted in this pie chart. The percentage of credits allotted to major core courses, minor specialization courses, skill and vocational training, Indian Knowledge System (IKS) modules, experiential learning (internships/projects), and elective courses is shown in the chart. The distribution emphasizes the goal of the policy, which is to ensure that professional skills, cultural knowledge, and practical experience are integrated into the undergraduate curriculum while also encouraging flexible, transdisciplinary learning.



Graph 3: Growth of Student Registrations in the Academic Bank of Credits (ABC)

The Academic Bank of Credits (ABC) platform's yearly growth in student registrations after its deployment under the National Credit Framework (NCrF) is shown in this graph. Higher education institutions and students are increasingly adopting digital credit storage, transfer, and accumulation mechanisms, as seen by the rising trend. The image illustrates the increasing acceptability of inter-institutional mobility, flexible learning pathways, and the Multiple Entry–Multiple Exit (MEME) architecture, all of which work together to make higher education a more learner-centric system.



Graph 4: Institutionalization of Indian Knowledge System (IKS) Research Hubs (2020–2026)

This graph illustrates how Indian Knowledge System (IKS) research hubs were gradually established in higher education institutions between 2020 and 2026. The policy initiative to combine ancient Indian knowledge with contemporary scientific research and education is seen in the growing number of institutions implementing IKS research centers. The pattern illustrates how NEP 2020 pushes academic institutions to institutionalize research in fields including philosophy, traditional sciences, ancient technologies, sustainable practices, and multidisciplinary knowledge systems.

Conclusion

An important turning point in the development of India's higher education system has been reached with the introduction of NEP 2020. The policy has started a slow but important shift from a rigid, discipline-centric academic framework to a flexible, diverse, research-focused educational ecosystem between 2020 and 2026. The National Credit Framework (NCrF), Academic Bank of Credits (ABC), and Multiple Entry and Multiple Exit (MEME) are examples of structural systems that have redefined student mobility and academic

flexibility, allowing students to create individualized educational trajectories.

Additionally, by merging science, technology, the arts, and the humanities into a single framework for knowledge creation, institutions have been inspired to transcend traditional disciplinary silos through the promotion of multidisciplinary education. Incorporating Indian Knowledge Systems (IKS) is a deliberate attempt to bring contemporary education into line with India's intellectual legacy, promoting scholarship that is both culturally grounded and globally applicable. Concurrently, the creation of the Anusandhan National Research Foundation (ANRF) is anticipated to enhance the research environment by encouraging cooperation, creativity, and financial possibilities among institutions.

Despite these successes, there are still issues with infrastructure adaption, faculty training, institutional preparation, and consistent implementation across various educational institutions. The accomplishment of NEP 2020's goals will depend on ongoing policy support, capacity building, and technology integration.

All things considered, the structural transformation brought about by NEP 2020 portends a positive transition toward a comprehensive, inclusive, and innovative higher education system. By 2047, if these reforms are successfully maintained and expanded, they might turn India into a global center of knowledge and greatly advance the national goal of Viksit Bharat.

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