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# Curriculum Redesign and Pedagogical Innovation under NEP 2020: Institutional and State-Level Adaptability in Indian Higher Education

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## Abstract

The National Education Policy 2020 proposes a transformative approach to Indian higher education through multidisciplinary curricula, flexible academic pathways, competency-based learning, and technology-driven teaching methods. However, its successful implementation depends on the ability of institutions and states to adapt. This paper uses a descriptive research method with secondary data from policy documents, guidelines, and state reports to analyse curriculum redesign and pedagogical innovation under NEP 2020. It investigates structural reforms, pedagogical changes, digital integration, and governance across various Indian states. The results show that adaptability through modular curricula, outcome-based education, faculty development, and coordinated state efforts serves as a key factor bridging policy goals and institutional change. This analysis aims to provide a clear framework for understanding systemic reforms in Indian higher education within a federal governance setting.

**Keywords:** NEP 2020, curriculum redesign, pedagogical innovation, higher education reform, multidisciplinary education

## 1. Introduction

The adoption of the National Education Policy 2020 marks a significant milestone in the evolution of India's education system. The policy seeks to transform higher education institutions (HEIs) into multidisciplinary, flexible, and learner-centred ecosystems aligned with global standards and national developmental goals. Central to this transformation are two interlinked dimensions: curriculum redesign and pedagogical innovation.

Historically, higher education in India has been characterised by rigid disciplinary boundaries, content-heavy syllabi, and examination-centric evaluation systems. NEP 2020 challenges this traditional paradigm by promoting modular credit frameworks, multiple entry-exit options, experiential learning, digital integration, and competency-based education. The policy emphasizes that structural curriculum reform must be accompanied by innovative teaching-learning methodologies to achieve meaningful transformation.

This paper explores how curriculum redesign and pedagogical innovation are being operationalized under NEP 2020, with particular emphasis on institutional and state-level adaptability strategies.

## 2. Objectives of the Study

The study aims to:

1. Examine key provisions of NEP 2020 related to curriculum and pedagogy.
2. Analyse implementation strategies adopted by institutions and state-level bodies.
3. Identify adaptability mechanisms facilitating reform.
4. Highlight challenges and best practices in implementation.

## 3. Research Methodology

This study employs a **descriptive research design** based on secondary data. Sources include:

- NEP 2020 policy document (Ministry of Education, 2020)
- Guidelines issued by the University Grants Commission (UGC)
- Directives from the All India Council for Technical Education (AICTE)
- Reports and curriculum frameworks issued by state higher education councils
- Institutional reform documentation

Thematic analysis was conducted under four domains: structural reforms, pedagogical innovation, technological integration, and governance adaptability.

#### 4. Curriculum Redesign under NEP 2020

##### 4.1 Multidisciplinary and Modular Frameworks

The NEP 2020 aims to transform Indian higher education by replacing rigid, discipline-specific degrees with flexible, multidisciplinary, and modular frameworks. This creates well-rounded graduates with critical thinking, research skills, employability, and adaptability. A notable example is the University of Delhi's Four-Year Undergraduate Programme (FYUP), aligning with NEP's goal of academic flexibility and multiple entry-exit options.

NEP 2020 advocates for transforming higher education into multidisciplinary institutions that integrate sciences, social sciences, arts, and vocational studies. This promotes cross-disciplinary exposure and holistic education, allowing students like those in Economics or Engineering to take minors or electives in areas like Psychology or Ethics, enhancing skills and employability. The approach involves restructuring curricula to include major-minor pathways, research, and skill modules.

##### B. Modular Academic Design

The modular framework breaks down degree programs into stackable, credit-based components instead of a single rigid path. Courses are divided into smaller units (modules) with defined credits and outcomes.

Key features include:

- Clearly defined Course Outcomes (COs) and Programme Outcomes (POs)
- Credit transfer and accumulation
- Flexible learning pace
- Multiple entry and exit options

Students can exit after one year with a certificate, after two with a diploma, after three with a bachelor's, or continue into a four-year research track.

This approach improves accessibility, supports lifelong learning, and aligns Indian higher education with global credit systems.

##### C. Semester-Based Credit System

The Semester-Based Credit System (SBCS) standardizes workload measurement and academic mobility by assigning credits based on instructional hours, requiring a set number per semester, and integrating continuous assessment with exams. Its advantages include transparency, uniform workload, easy credit transfer, and compatibility with the Academic Bank of Credits (ABC), which stores and allows students to redeem credits digitally, enhancing flexibility and mobility.

## **D. Interdisciplinary Electives**

Interdisciplinary electives are key to NEP's curriculum, fostering skills like data analysis, communication, ethics, and addressing issues like climate change and digital transformation. Students gain industry-relevant skills; for example, Commerce students learn AI basics, while Political Science students explore Data Visualization. This promotes innovation, collaboration, and research-based learning, reflecting complex real-world problems.

## **E. Research-Oriented Final Year Options**

A key feature of NEP's undergraduate reform is a research-intensive fourth year requiring students to complete a major research project, receive research methodology training, and demonstrate analytical skills. This enhances research culture, eases transitions to postgraduate and doctoral studies, and aligns Indian undergraduate education with international four-year honours systems, boosting global recognition.

## **F. Institutional Implications**

Curriculum redesign under NEP 2020 requires restructuring in faculty development for interdisciplinary teaching, curriculum mapping, digital credit tracking, governance reforms for flexibility, and assessment redesign. States and universities should adopt phased strategies to balance autonomy and regulation.

The NEP 2020's multidisciplinary, modular framework shifts from content-heavy, exam-driven curricula to flexible, outcome-focused, learner-centric education. It promotes credit mobility, interdisciplinary exposure, and research, aligning Indian higher education with global standards and national goals. When implemented with institutional adaptability and faculty readiness, this transformation can boost quality, relevance, and competitiveness.

### **4.2 Academic Bank of Credits (ABC)**

The Academic Bank of Credits facilitates the accumulation and transfer of credits across institutions.

Implementation strategies adopted by states include:

- Institutional registration under ABC
- Credit mapping systems
- Digital academic tracking

This framework enhances student mobility and academic flexibility.

## Academic Bank of Credits (ABC): State-Level Implementation Framework

The **Academic Bank of Credits (ABC)** is a digital credit repository system introduced under the University Grants Commission as part of the structural reforms under the National Education Policy 2020. The ABC enables students to digitally accumulate, store, transfer, and redeem academic credits earned from recognized higher education institutions across India.

It functions as a national-level academic credit ledger, ensuring interoperability among institutions and promoting flexibility in higher education pathways.

### Core Functional Objectives of ABC

1. **Credit Accumulation** – Students can accumulate credits earned across semesters and institutions.
2. **Credit Transfer** – Credits may be transferred when students shift institutions or re-enter academic programs.
3. **Multiple Entry–Exit Facilitation** – Supports certification, diploma, and degree exit options under FYUGP.
4. **Lifelong Learning Enablement** – Encourages modular learning and re-enrollment flexibility.

### Contribution to Student Mobility and Academic Flexibility

The ABC framework strengthens higher education reform in the following ways:

1. Enables **horizontal mobility** (inter-university transfers).
2. Facilitates **vertical mobility** (certificate → diploma → degree progression).
3. Reduces academic discontinuity due to personal or financial constraints.
4. Supports interdisciplinary transitions under the multidisciplinary FYUGP model.
5. Aligns Indian higher education with global credit transfer systems.

The Academic Bank of Credits represents a structural backbone of NEP's modular higher education architecture. While policy design is robust, the effectiveness of ABC depends on technological integration, institutional preparedness, and student awareness. States demonstrating coordinated digital infrastructure and standardized credit mapping are better positioned to realize the intended gains in flexibility and mobility.

## 5. Pedagogical Innovation under NEP 2020

The National Education Policy 2020 transformed Indian higher education by shifting from traditional lectures to competency-led, learner-centered, tech-enabled teaching. Institutions now adopt innovative models focusing on measurable outcomes, experiential learning, and digital ecosystems. NEP 2020 promotes a dynamic, learner-focused ecosystem emphasizing outcome-based education, practical skills, and expanded digital access. These reforms aim to produce graduates who are not only academically sound but also adaptable, skilled, and prepared to tackle societal challenges.

### 5.1 Outcome-Based Education (OBE)

Outcome-Based Education (OBE) represents a paradigm shift from input-based teaching (content coverage) to outcome-oriented learning, where the primary objective is the achievement of clearly defined competencies and skills by students.

Under OBE, regulatory frameworks established by bodies such as the University Grants Commission require higher education institutions to align curriculum design, teaching strategies, and assessment mechanisms with measurable learning outcomes. The emphasis is placed on what students are able to demonstrate, apply, and perform after completing a course or program.

Key institutional practices adopted under OBE include:

#### 1. Course Outcome (CO) and Program Outcome (PO) Mapping

Institutions map individual course outcomes with broader program outcomes to ensure curriculum coherence and learning progression.

- Course Outcomes (COs): Specific competencies students acquire in a particular course
- Program Outcomes (POs): Broad abilities expected from graduates of a program

This mapping allows departments to track whether individual courses contribute effectively toward achieving overall program objectives. Many universities have integrated CO–PO mapping into academic audits and accreditation documentation.

#### 2. Rubric-Based Assessments

Traditional evaluation methods focused primarily on examinations. OBE introduces rubric-based assessment frameworks that measure performance across defined competency levels.

Rubrics generally evaluate parameters such as:

- Conceptual understanding
- Analytical ability

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- Application of knowledge
- Communication skills
- Problem-solving capacity

This structured assessment approach improves transparency and allows both instructors and students to understand expected performance standards.

### 3. Continuous Internal Evaluation

Continuous Internal Evaluation (CIE) replaces the earlier model of single high-stakes examinations. Institutions now conduct multiple forms of assessment throughout the semester, including:

- Assignments
- Case studies
- Presentations
- Quizzes
- Project-based evaluations

This approach promotes sustained engagement and encourages deeper conceptual learning rather than short-term memorization.

### 5.2 Experiential and Skill-Based Learning

NEP 2020 strongly advocates experiential learning approaches that connect academic knowledge with real-world applications. Institutions are encouraged to integrate internships, community engagement initiatives, and industry collaborations within undergraduate curricula.

Experiential learning enhances employability by allowing students to apply theoretical knowledge in practical environments.

A significant example of this reform can be observed in the initiatives of the Andhra Pradesh State Council of Higher Education, which mandated internship credits and community service projects as integral components of undergraduate degree programs across affiliated colleges.

Under this model:

- Students undertake structured internships in industry or service organizations
- Community service projects expose learners to grassroots developmental challenges
- Skill development modules focus on communication, digital literacy, and entrepreneurship

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Similarly, universities in the state of Karnataka have introduced Skill Enhancement Courses (SECs) and value-added modules as part of undergraduate programs. These courses often cover areas such as:

- Data analytics and digital skills
- Entrepreneurship development
- Professional communication
- Financial literacy

Such initiatives strengthen the practical orientation of higher education and support the employability goals of NEP.

### 5.3 Blended and Digital Learning

Another major dimension of pedagogical innovation under NEP 2020 is the adoption of blended learning models that integrate traditional classroom teaching with digital learning platforms.

Guidelines issued by the University Grants Commission permit institutions to combine face-to-face instruction with online learning components, thereby enhancing flexibility and accessibility.

Many institutions have adopted the following digital learning practices:

#### 1. Learning Management Systems (LMS)

Universities are implementing institutional LMS platforms that enable:

- Course material distribution
- Assignment submission
- Online discussions
- Student performance tracking

This digital infrastructure supports both synchronous and asynchronous learning environments.

#### 2. Flipped Classroom Models

In flipped classrooms, students review lectures or learning materials online before attending class. Classroom sessions are then used for discussions, problem-solving exercises, and collaborative activities.

This model promotes active learning and improves conceptual clarity.

### 3. Online Assessment Platforms

Digital assessment systems facilitate:

- Online quizzes and examinations
- Automated grading mechanisms
- Remote evaluation and feedback

These tools improve assessment efficiency and support continuous evaluation practices.

A prominent example of digital innovation aligned with NEP is the flexible online degree programs launched by the Indian Institute of Technology Madras. These programs combine online coursework, remote assessments, and modular certification pathways, thereby expanding access to quality higher education.

## 6. State-Level Implementation Strategies

The NEP 2020 implementation in Indian states shows a decentralised approach to higher education reform. While the central policy offers guiding principles, state governments and councils adapt these reforms based on their capacities, structures, and priorities. Andhra Pradesh, Karnataka, and Maharashtra illustrate different approaches to curriculum redesign, pedagogical innovation, and governance.

### 6.1 Andhra Pradesh

In Andhra Pradesh, NEP 2020 reforms, led by the Andhra Pradesh State Council of Higher Education, aim to improve employability and align education with industry. Key changes include a revised credit-based undergraduate curriculum that emphasises outcome-based learning, interdisciplinary and competency-based education, and mandatory internships to provide practical experience in sectors such as IT, healthcare, and public administration. Centralised oversight ensures uniform standards and performance evaluation across institutions. Faculty development programs focus on outcome-based education, digital pedagogy, and assessment strategies to support these reforms.

### 6.2 Karnataka

Karnataka adopted a phased strategy for NEP reforms, allowing gradual transition for universities and colleges. This helped institutions adapt without major disruptions. A key reform is the four-year undergraduate programs (FYUGP), which offer multiple exit options, such as certificates, diplomas, or degrees, with research opportunities in the final year. The state emphasises integrating multidisciplinary electives to broaden student exposure and foster cross-disciplinary learning, aligning with NEP's goal of holistic education. To ensure curriculum quality, Karnataka set up review committees that periodically update syllabi and course content, involving experts and policymakers to keep pace with industry needs and evolving knowledge.

### 6.3 Maharashtra

In Maharashtra, NEP reforms focus on curriculum flexibility and industry-aligned skill development. The state adopted modular curriculum structures, enabling credit transfer and supporting the Academic Bank of Credits for flexible learning. It also emphasises industry-linked skill courses within undergraduate programs, designed in collaboration with industry partners to boost employability and relevance, covering areas such as digital technology, entrepreneurship, and professional communication. Additionally, Maharashtra promotes blended learning guidelines that integrate online platforms and digital resources with traditional teaching to improve accessibility, engagement, and flexibility in learning environments. Table 1 provides a vivid picture of the implementation of FYUGP and Modular Curriculum Reforms Across Select Indian States and the key issues faced during implementation.

## 7. Discussion

The curriculum redesign and pedagogical innovation are deeply interconnected. Structural reforms without pedagogical transformation remain superficial, while innovative teaching methods require supportive curriculum frameworks.

Adaptability emerges as the key determinant of reform success. Institutions demonstrating proactive governance, faculty orientation, and digital integration show smoother transitions. Conversely, challenges persist in areas such as faculty resistance, infrastructural disparities, and administrative constraints.

State councils play a critical mediating role by contextualising national directives within regional realities.

## 8. Conclusion

Curriculum redesign and pedagogical innovation under NEP 2020 represent systemic transformation rather than incremental reform. Implementation across states demonstrates diverse adaptability strategies shaped by institutional capacity and governance frameworks.

The study concludes that structural, pedagogical, technological, and governance adaptability collectively determine the effectiveness of NEP 2020 implementation. Continued monitoring, faculty capacity building, and infrastructure strengthening are essential for sustainable reform.

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**Table 1: Comparative Implementation of FYUGP and Modular Curriculum Reforms Across Select Indian States**

State / University System	Start Year of FYUGP Implementation	FYUGP Structure	Major–Minor vs Single Major	ABC Readiness	Multiple Entry–Exit Operationalization	Internship / Research Mechanism	Key Implementation Issues
Delhi (University of Delhi)	2022–23	4-Year UG with Honours / Honours with Research (4th year optional)	Major–Minor combinations with multidisciplinary electives	High – Integrated with Academic Bank of Credits (ABC)	Operational (Certificate after 1 year, Diploma after 2 years, Degree after 3 years, Honours/Research after 4 years)	Structured 4th-year dissertation; research methodology training	Faculty workload restructuring; curriculum transition adjustments
Maharashtra	2023–24	3-Year Degree + Optional 4th-Year Honours/Research	Major–Minor permitted; university-level flexibility	Moderate – In transition phase	Formally adopted but implementation clarity varies across universities	Internship and skill courses integrated; research in 4th year	Regulatory coordination gaps; ambiguity in workload norms
Karnataka	2021–22 (Phased)	4-Year UG (FYUGP) under state NEP framework	Major–Minor structured framework	High – State NEP plan aligned	Operational with state-level monitoring	Compulsory internship credits; research track in final year	Initial political transition slowed uniform continuity

State / University System	Start Year of FYUGP Implementation	FYUGP Structure	Major–Minor vs Single Major	ABC Readiness	Multiple Entry–Exit Operationalization	Internship / Research Mechanism	Key Implementation Issues
<b>Kerala</b>	2023–24	FYUGP with outcome-based curriculum	Major–Minor structure with multidisciplinary exposure	with ABC Moderate to High – University integration ongoing	Implemented across state universities	Research project in 4th year; mandatory internship component	Concerns regarding internship quality and regulatory autonomy debates
<b>Andhra Pradesh</b>	2020–21 (Revised 2022–23)	4-Year UG Honours Model	Predominantly Single Major orientation	Moderate – ABC adoption progressing	Structured exit framework as per UGC guidelines	Research option in 4th year; skill/internship modules embedded	Transition from earlier 3-year curriculum restructuring challenges
<b>Telangana</b>	Partial adoption (2022 onward)	Mixed model – Institutions incorporating NEP features	Varies by university	Moderate – Select universities linked with ABC	Flexibility exists but not uniformly institutionalized	Internship-based credits in select programs	Lack of uniform statewide policy declaration; low student awareness
<b>Madhya Pradesh</b>	2022–23	FYUGP implemented	Major–Minor permitted	Moderate	Formally available but	Research option	Low student enrollment in research

State / University System	Start Year of FYUGP Implementation	FYUGP Structure	Major– Minor vs Single Major	ABC Readiness	Multiple Entry–Exit Operationalization	Internship / Research Mechanism	Key Implementation Issues
					low 4th-year uptake	available in 4th year	preference for professional exams
<b>Tamil Nadu</b>	Limited / Selective adoption	3-Year dominant model (Policy debate on FYUGP)	Traditional major structure largely retained	Low to Moderate	Not uniformly operational	Internship embedded in select autonomous colleges	Policy-level resistance and federal autonomy debates

Source: Published reports

The above table gives an overview of the NEP 2020 implementation strategies in Major states of India and the specific Challenges encountered in the process of implementation.