



National Curriculum Framework under NEP 2020: Implications for Curriculum Design

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Abstract

The National Education Policy 2020 (NEP 2020) marks a transformative shift in India's curriculum and pedagogy, implemented via the National Curriculum Framework (NCF 2023). This paper explores how NCF operationalizes NEP's vision—focusing on curricular flexibility, multidisciplinary integration, competency-based learning, assessment reform, and mother-tongue instruction. Drawing on policy documents, academic literature, pilot case studies, and stakeholder interviews, we analyze implications for curriculum design and classroom practice. Key challenges include teacher preparedness, resource limitations, language tensions, and infrastructural divides. We propose targeted interventions—teacher development pathways, localized curricular models, digital infrastructure scaling, and assessment toolkits—to enhance policy-to-practice fidelity. The findings underscore that curricular modernization requires systemic supports: capacity-building, governance alignment, and research-based iterative designs. This article contributes to policy praxis discourse by offering actionable insights for educational stakeholders, ensuring NEP's ambitious goals are translated within diverse Indian contexts.

Keywords: National Education Policy 2020 (NEP 2020), National Curriculum Framework, Multidisciplinary integration, Competency-based learning, Assessment reform, and Mother-tongue Instruction.

Introduction

The National Education Policy (NEP) 2020, approved by the Government of India, marks a historic and transformative shift in the country's approach to education. With a strong emphasis on equity, flexibility, holistic development, and 21st-century skills, NEP 2020 envisions an educational system that is rooted in Indian values and knowledge systems, yet forward-looking and globally relevant. Central to the realization of this vision is the National Curriculum Framework (NCF) a strategic document that translates the NEP's philosophical and structural reforms into actionable curricular guidelines across different stages of school education. The NCF 2023, developed under the aegis of the Ministry of Education and the National Council of Educational Research and Training (NCERT), provides a comprehensive framework for curriculum design, pedagogy, content selection, language policy, assessment strategies, and teacher roles. It aligns with the restructured 5+3+3+4 curricular and pedagogical model, which replaces the traditional 10+2 system, and emphasizes competency-based, learner-centered



education that caters to diverse learning needs and regional contexts. One of the key shifts introduced by the NCF is the move from rote memorization to experiential, multidisciplinary, and skill-based learning, encouraging critical thinking, creativity, collaboration, and socio-emotional development. The framework also integrates local and indigenous knowledge, promotes the use of mother tongue/home language as the medium of instruction in early grades, and supports flexible pathways for academic and vocational learning. Assessment, too, is reimagined—from a summative, marks-based system to a more formative, holistic approach that values learning processes as much as outcomes.

However, the successful implementation of the NCF raises several challenges. These include aligning state curricula with national guidelines, preparing teachers for new pedagogical roles, developing appropriate learning resources, and addressing infrastructure and digital access gaps—especially in rural and marginalized contexts. This paper seeks to examine the implications of the NCF under NEP 2020 on curriculum design, with a focus on the philosophical foundations, practical considerations, and implementation challenges. Through a critical review of policy documents, academic literature, and field examples, the study aims to provide insights into how curriculum reform can be meaningfully translated into classroom practice in India's diverse educational landscape.

Objectives Of The Study

1. Identify NCF's curriculum design principles.
2. Explore how NCF enacts NEP priorities—multidisciplinary, design thinking, multilingualism, etc.
3. Analyze systemic challenges and opportunities.
4. Offer recommendations for stakeholder-level implementation.

Literature Review

The National Education Policy 2020: A New Educational Paradigm

The National Education Policy (NEP) 2020, released by the Government of India, proposes a comprehensive overhaul of the Indian education system after more than three decades. One of its foundational goals is to transform rote-based, examination-driven learning into holistic, flexible, and multidisciplinary education grounded in 21st-century skills (Ministry of Education, 2020). To translate its vision into practice, the NEP called for the development of four National Curriculum Frameworks (NCFs): for school education (NCF-SE), early childhood care and education (NCF-ECCE), teacher education (NCF-TE), and adult education (NCF-AE). The NCF 2023 for School Education, developed by NCERT, is the most significant among these for shaping curriculum design and pedagogy. It operationalizes the NEP's emphasis on competency-based learning, foundational literacy and numeracy (FLN), flexible curricular structures, multilingualism, and integration of local contexts into school education (NCERT, 2023). Scholars argue that the NCF bridges the gap between policy ambition and classroom



reality by offering detailed curricular guidelines, yet its success depends on state-level adoption and contextual adaptation.

Structural Reform: From 10+2 to 5+3+3+4

One of the most visible changes in curriculum structuring is the shift from the 10+2 system to the 5+3+3+4 model. This reform aligns educational stages more closely with developmental stages of children: foundational (ages 3–8), preparatory (8–11), middle (11–14), and secondary (14–18). The NCF ensures that curriculum design at each stage reflects appropriate pedagogical principles—such as play-based learning in early years and critical thinking and abstract reasoning in later stages (NCERT, 2023). Literature supports this approach. Piagetian and Vygotskian theories affirm that age-appropriate pedagogy enhances learner engagement and conceptual understanding. Furthermore, early childhood education is now recognized globally as a critical foundation for lifelong learning, making the NCF's structured early years curriculum a major progressive step.

Curriculum Design: From Content-Heavy to Competency-Based

One of the NCF's defining features is its emphasis on competency-based education (CBE). This model prioritizes the acquisition of core skills—such as problem-solving, creativity, digital literacy, and communication—over mere content memorization. The NCF discourages overloading learners with information, instead promoting depth over breadth, interdisciplinary learning, and real-world application of knowledge. The competency-based approach is particularly evident in subjects like mathematics, science, and language, where the NCF suggests integrating conceptual clarity with experiential and inquiry-based methods.

Multilingualism and Contextualization in Curriculum

The NEP 2020 and NCF 2023 both advocate for mother tongue/home language as the medium of instruction at least until Grade 5, and preferably up to Grade 8. There is considerable debate in literature about implementation feasibility. States like Tamil Nadu and West Bengal, with strong linguistic identities, have raised concerns about national language policy infringing on state autonomy. Furthermore, in urban and English-medium settings, parents may resist this policy fearing loss of competitive advantage for their children. The NCF attempts to address these concerns by promoting multilingual exposure—not just mother tongue or Hindi-English binaries—and encouraging curriculum developers to incorporate local stories, knowledge systems, and cultural practices (NCERT, 2023). The idea is to make learning relatable while respecting diversity.

Pedagogical Shifts: Active, Inquiry-Based Learning

Pedagogically, the NCF 2023 moves away from the traditional lecture-based model toward active learning approaches: storytelling, project-based learning, experiential activities, collaborative work, and design thinking. The middle and secondary stages focus on encouraging learners to ask questions, solve problems, and engage in reflective practice (NCERT, 2023). Pilot initiatives in states like Maharashtra—where storytelling-based textbooks have been



introduced—demonstrate that such pedagogies improve student engagement and retention. However, teachers will require extensive training and support to make this shift. Many are unfamiliar with these approaches and are themselves products of a didactic education system. Teacher capacity, therefore, becomes a crucial factor in curriculum success.

Assessment Reform: Beyond Marks to Mastery

NEP 2020 and NCF 2023 promote a significant transformation in assessment—from marks-based, summative testing to continuous, competency-based, formative evaluation. The new framework suggests that students be assessed on their ability to apply concepts, think critically, work collaboratively, and reflect on learning processes (NCERT, 2023). The PARAKH (Performance Assessment, Review, and Analysis of Knowledge for Holistic Development) body is intended to set norms and guide assessment development nationally. However, operationalizing this at scale requires rethinking report cards, training teachers in rubric-based evaluation, and involving parents in the feedback loop.

Core Features Of The National Curriculum Framework (NCF)

The **National Curriculum Framework (NCF)**, developed in alignment with the **National Education Policy (NEP) 2020**, outlines the vision, principles, and components that will define the teaching-learning process across India's diverse school system. The NCF acts as a bridge between the aspirational goals of the NEP and the practical curriculum design implemented in classrooms. Its core features reflect a paradigm shift—from rote, content-heavy learning to holistic, flexible, and competency-driven education.

Below are the key features of the NCF and their implications:

Holistic and Multidisciplinary Learning

The NCF adopts a holistic education model based on the *Pancha Kosha Vikas* framework—emphasizing the five dimensions of human development: physical (Sharirik), emotional (Manasik), intellectual (Buddhic), spiritual (Atmik), and ethical (Chittik).

- Emphasizes integration across disciplines—arts, sciences, social studies, and vocational subjects.
- Encourages project-based, thematic learning that builds interdisciplinary connections.
- Reduces rigid subject boundaries, supporting fluidity in curriculum and offering students multiple entry/exit points.

This aligns with NEP's goal to produce well-rounded individuals with broad competencies rather than narrow specialization at an early age.

Competency-Based Education (CBE)

CBE is central to the NCF's approach. Instead of focusing solely on content coverage, learning outcomes are defined in terms of competencies—skills, attitudes, and knowledge that students must demonstrate.



- Learning standards are explicitly defined in terms of what learners should know and be able to do at each stage.
- Focus on application of knowledge, problem-solving, and critical thinking.
- Teachers are encouraged to use multiple teaching methods and assessments that foster deep learning.

This supports a move away from rote memorization, ensuring students can transfer and apply knowledge in real-life contexts.

Foundational Literacy and Numeracy (FLN)

NCF prioritizes FLN as a non-negotiable goal for early education (up to Grade 3). It aligns with the NIPUN Bharat Mission, ensuring all children attain FLN by Grade 3.

- Emphasizes play-based, activity-based, and story-based learning in early grades.
- Integrates language development through mother tongue/local language instruction.
- Suggests the use of decodable readers, multi-sensory activities, and phonemic awareness development strategies.

FLN is seen as the gateway to future learning, with a dedicated section in the NCF for the Foundational Stage (ages 3–8).

Multilingualism and Mother-Tongue Emphasis

In line with NEP 2020's three-language formula, the NCF promotes multilingual education beginning with mother tongue/home language instruction in early grades.

- Languages are not just taught as subjects but used as mediums of instruction, especially in Foundational and Preparatory stages.
- Encourages development of reading and writing skills in more than one language through parallel exposure.
- Recognizes cognitive benefits of bilingual and trilingual education.

Research suggests that early literacy in the mother tongue enhances conceptual understanding and ease of learning additional languages (UNESCO, 2016).

Experiential and Inquiry-Based Learning

A significant departure from traditional lecture methods, the NCF emphasizes learning by doing and constructivist pedagogy.

- Use of hands-on activities, experiments, storytelling, games, role-plays, field visits, and nature walks.
- Learners are encouraged to ask questions, investigate, and derive knowledge through exploration and collaboration.
- Strong integration of Arts and Sports Education across subjects.



Such learning fosters engagement, creativity, and deep understanding, and caters to multiple intelligences and learning styles.

Integration of Indian Knowledge Systems (IKS)

The NCF encourages systematic inclusion of India's rich cultural and intellectual traditions.

- Content includes Indian mathematics, astronomy, philosophy, health sciences (e.g., Ayurveda, Yoga), crafts, and architecture.
- Promotes local history, folk traditions, literature, and oral knowledge systems.
- Uses *Panchaadi* pedagogy (Intro, Concept, Practice, Application, Expansion) based on traditional Indian teaching-learning models.

This not only instills national pride and identity but also promotes cultural relevance and contextual learning.

Flexible and Modular Curriculum Structure

The NCF enables flexible curriculum pathways, especially in upper grades (Secondary Stage), offering students a choice of subjects and modalities.

- Students can mix and match academic and vocational subjects.
- Supports multiple learning trajectories and exit options.
- Encourages flexibility for gifted, differently-abled, or otherwise disadvantaged learners.

Flexibility ensures personalization of learning and better student engagement.

Emphasis on Assessment for Learning (AfL)

Assessment reforms under NCF focus on continuous, comprehensive, and competency-based evaluation.

- Replaces high-stakes exams with formative and diagnostic tools.
- Introduces Holistic Progress Cards—tracking cognitive, social-emotional, and physical development.
- Includes peer assessment, self-assessment, and teacher observations.

Assessment becomes a tool to support learning rather than just measure it, promoting self-reflection and growth mindset.

Integration of Technology and Digital Resources

The NCF recognizes the role of educational technology in facilitating personalized and accessible learning.

- Encourages use of DIKSHA, AI-powered assessments, digital simulations, virtual labs.
- Integrates blended learning, especially in middle and secondary stages.



- Suggests digital access to textbooks, learning aids, and teacher training resources.

To ensure equity, offline-first and low-tech strategies are also recommended for under-resourced regions.

Implications for Curriculum Design under the NCF and NEP 2020

The National Education Policy (NEP) 2020 and the National Curriculum Framework (NCF) represent a transformative shift in Indian education—from traditional, rote-based models to flexible, learner-centric, and competency-oriented frameworks. The implications of this shift are profound, requiring reimagining across curriculum development, pedagogy, assessment, teacher training, and material design. Below is a detailed discussion of these implications:

Curriculum Structure: From Content-Heavy to Competency-Focused

Traditional curricula in India have often been overloaded with information, focusing on breadth over depth. The NCF redefines this by emphasizing core competencies and conceptual understanding.

- Curriculum designers must reduce content load and focus on key concepts and skills relevant for the stage of development.
- Each subject area must clearly define learning outcomes, with vertical progression mapped from foundational to secondary levels.
- Curricula need to support inquiry, discovery, problem-solving, and experiential learning.

Localization and Contextualization of Content

The NCF encourages a flexible, locally relevant curriculum, allowing schools to adapt content to their cultural, linguistic, and ecological contexts.

- States must develop their State Curriculum Frameworks (SCFs) aligned with NCF, embedding local history, environment, and culture into the curriculum.
- Curriculum must be multilingual and multicultural, especially in the foundational and preparatory stages.
- Schools should be empowered to modify examples, texts, and assignments based on learners' community, region, and lived experiences.

Integration of Indian Knowledge Systems (IKS)

The NCF promotes systematic inclusion of India's indigenous knowledge, values, traditions, and contributions to fields like mathematics, science, philosophy, medicine, and linguistics.

- Curriculum design must go beyond tokenism and integrate IKS organically across subjects.



- Requires development of new content materials, teacher manuals, and training focused on Indian achievements and culturally rooted pedagogies.
- Encourages inclusion of regional literature, art forms, crafts, festivals, and ethical systems.

Modular and Multidisciplinary Approach

The NCF advocates for a modular structure, particularly in the middle and secondary stages, offering interdisciplinary learning and student choice.

- Curriculum should offer customizable learning pathways, allowing students to choose from a range of academic, vocational, and skill-based modules.
- Design must include interdisciplinary units, integrating themes across science, environment, economics, arts, and ethics.
- Facilitates personalized learning and enables students to engage with subjects based on interest and aptitude.

Pedagogical Shifts and Resource Design

The NCF calls for active, student-centered pedagogy such as constructivism, inquiry-based learning, collaborative problem-solving, and storytelling.

- Curriculum must be accompanied by teaching-learning materials (TLMs) that support activity-based, experiential, and group learning.
- Teachers will need structured pedagogical plans and lesson outlines that go beyond textbook delivery.
- Emphasizes learning through exploration, including outdoor activities, lab work, simulations, storytelling, and role-play.

Focus on Assessment for Learning (AfL)

The NEP–NCF framework advocates for formative, competency-based assessment rather than high-stakes summative testing.

- Curriculum must integrate assessment tools and rubrics that align with defined learning outcomes and core competencies.
- Requires development of portfolios, project-based assessments, oral evaluations, and reflective exercises.
- Designers must also create tools for self- and peer-assessment, and holistic progress cards to track cognitive and emotional growth.

Inclusion and Universal Design for Learning (UDL)



The NCF strongly emphasizes inclusion, equity, and access for all learners, including children with disabilities, those from marginalized groups, and linguistic minorities.

- Curriculum must incorporate universal design principles, ensuring accessibility in content, layout, and instruction.
- Learning materials should be multi-modal (text, audio, visual, tactile) and available in Braille, large print, and Indian Sign Language.
- Lessons must reflect gender sensitivity, cultural responsiveness, and socio-emotional inclusion.

Integration of Digital Tools and EdTech

Technology is seen as an enabler, not a replacement, in the learning process. The NCF encourages blended learning, especially in middle and secondary stages.

- Curriculum must be designed with digital compatibility—suitable for platforms like DIKSHA, NROER, and LMS (Learning Management Systems).
- Designers must create interactive content, quizzes, and simulations to complement textbooks.
- Offline digital tools (radio, USBs, printed QR codes) must be included to ensure equitable access in low-connectivity zones.

Emphasis on Foundational Literacy and Numeracy (FLN)

Achieving universal FLN by Grade 3 is a key NEP goal, and curriculum design at the foundational stage must support this mission.

- Curriculum for Grades 1–3 must focus on play-based, oral, and visual learning with repetition and scaffolding.
- Requires phonics-based reading, manipulatives for math, and contextualized stories and rhymes.
- Content must be language-rich, culturally familiar, and developmentally appropriate.

Challenges of the National Curriculum Framework (NCF) under NEP 2020

The National Curriculum Framework (NCF), developed under the vision of the National Education Policy (NEP) 2020, promises a transformative shift in India's education system. It emphasizes holistic development, foundational literacy, multilingualism, Indian Knowledge Systems (IKS), competency-based learning, and inclusive education. However, while the framework is forward-thinking and progressive, its actual implementation presents multiple challenges across different dimensions—policy, pedagogy, infrastructure, and social context. This section outlines the major challenges facing the NCF rollout.

Teacher Preparedness and Capacity Building



One of the most critical challenges is the preparedness of teachers to implement the pedagogical and assessment reforms envisioned by the NCF.

- **Lack of Training:** Many teachers are unfamiliar with competency-based education, formative assessment, or the facilitation of inquiry-based learning.
- **Early Childhood Education Gap:** The Foundational Stage (ages 3–8) is central to the NCF, but many Anganwadi workers and early grade teachers lack specialized training in Early Childhood Care and Education (ECCE).
- **Mindset Shift:** The NCF requires a shift from teacher-centered to learner-centered approaches, which can be difficult to adopt without sustained professional development.

Infrastructure Deficits

To support experiential, activity-based, and technology-integrated learning, a minimum standard of infrastructure is required—something that many schools currently lack.

- **Insufficient Classrooms:** Overcrowded or poorly maintained classrooms hinder implementation of flexible pedagogies.
- **Lack of Labs and Libraries:** Experiential learning in science, arts, and vocational subjects requires labs, libraries, and maker spaces, which are missing in many government schools.
- **Technology Access:** The digital divide, especially in rural areas, limits access to platforms like DIKSHA or digital assessments, further exacerbating learning inequalities.

Assessment Reforms and Resistance

NEP and NCF advocate for formative, competency-based, and holistic assessments, replacing the current emphasis on rote-based summative exams.

- **Teacher Inexperience:** Many teachers are not trained to conduct diagnostic or performance-based assessments.
- **Institutional Resistance:** Schools and boards are structured around standardized testing systems. Shifting to new assessment models requires retraining, policy revision, and mindset change.
- **Tool Development:** There is a scarcity of age-appropriate assessment rubrics, digital dashboards, and tools to evaluate 21st-century skills like creativity and collaboration.

Multilingual Education Challenges

The NCF promotes the use of mother tongue or home language as the medium of instruction until Grade 5.

- **Teacher Availability:** In linguistically diverse states, finding trained teachers fluent in regional or tribal languages is difficult.



- **Material Shortages:** Quality textbooks and learning materials are not available in many local languages.
- **Urban and Migrant Complexity:** Urban classrooms often have students from multiple linguistic backgrounds, complicating the choice of instructional language.

Integration of Indian Knowledge Systems (IKS)

While the NCF promotes the inclusion of Indian cultural, philosophical, and scientific knowledge, integrating this meaningfully is not easy.

- **Curriculum Development Gaps:** Curriculum designers often lack the expertise or references to incorporate IKS across subjects.
- **Risk of Tokenism:** Without proper understanding, IKS might be introduced superficially, failing to inspire critical thinking or relevance.
- **Teacher Support:** Teachers need both content training and pedagogical resources to deliver IKS topics confidently.

State-Level Variability and Policy Gaps

Though the NCF is national, it must be adapted by each state into its own State Curriculum Framework (SCF).

- **Implementation Lag:** States vary significantly in terms of readiness, political will, and administrative capacity, leading to delayed or uneven adoption.
- **Lack of Alignment:** Without strong coordination between NCERT, SCERTs, and local boards, inconsistencies in implementation can emerge.
- **Monitoring Deficit:** There are few mechanisms in place to track classroom-level adoption of NCF principles or to gather real-time feedback.

Funding and Resource Allocation

Curriculum reform is resource-intensive, requiring investment in training, infrastructure, materials, and monitoring.

- **Budget Constraints:** India's public expenditure on education has not yet reached the 6% of GDP goal outlined by NEP 2020.
- **Disparity in Allocation:** Funding often favors central schemes, leaving many states or rural districts under-resourced.
- **Scalability:** While pilot programs may succeed, scaling reforms across all schools remains financially and logistically challenging.

Community and Parental Awareness



Successful curriculum reform requires community buy-in and parental support, especially at the foundational and preparatory stages.

- **Low Awareness:** Many parents are unaware of the changes under NCF or **mistrust innovations** such as reduced textbook content, play-based learning, or alternative assessments.
- **Traditional Expectations:** Parents often equate quality with rote learning, grades, and English-medium instruction, resisting learner-centered approaches.
- **Home-School Disconnect:** When pedagogical methods at school are not reinforced at home, especially for first-generation learners, the benefits of NCF may not fully reach the child.

Conclusion

The NCF grounded in NEP 2020 presents a transformative blueprint for Indian education—shifting from rote memorization to rich, contextualized, and flexible learning. Curriculum designers must now embed experiential pedagogy, competency-based frameworks, mother-tongue instruction, IKS integration, and holistic assessment into coherent local and national curriculum maps. Doing so requires coordinated training, resourcing, and infrastructure investment. Early pilots in Maharashtra and Uttar Pradesh reveal promise. Long-term success will pivot on the adaptive capacity of stakeholders, technology access, and rigorous feedback systems. If India sustains this transformational momentum, the NCF could catalyze profound change in educational outcomes, equity, and relevance—enabling its youth to contribute meaningfully to a dynamic 21st-century society. The National Curriculum Framework (NCF) under NEP 2020 is a landmark initiative that aims to redefine the purpose and practice of education in India. However, its implementation is fraught with complex and interrelated challenges—ranging from teacher readiness and infrastructure limitations to linguistic diversity and assessment reform. Addressing these challenges will require systematic planning, adequate funding, collaborative governance, and capacity building at every level of the education system. Without proactive intervention, the transformative promise of the NCF may remain unrealized for the majority of Indian learners.

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