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## Policy Dimensions and Implementation Strategies for Indian Knowledge Systems (IKS) Integration under the National Education Policy (NEP) 2020

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### Abstract

The National Education Policy 2020 (NEP 2020) emphasises the integration of Indian Knowledge Systems (IKS), which encompass traditional and ancient knowledge in fields such as mathematics, astronomy, Ayurveda, yoga, philosophy, the arts, and tribal practices. This signifies a change of perspective in Indian education. The policy aspects of IKS integration are examined in this research, with an emphasis on how it promotes inclusive, multidisciplinary, and value-based education. It analyses implementation strategies, including curriculum revisions, teacher training, the establishment of IKS research centres, and technology-driven dissemination, drawing from government initiatives, academic literature, and recent data from the UGC and AICTE. Key achievements include training over 1,500 faculty members, digitising 1.5 lakh traditional texts, and establishing 32 IKS centres. Challenges such as faculty preparedness, resource allocation, and scientific validation of traditional knowledge are discussed, alongside recommendations for stakeholder collaboration, phased implementation, and digital innovation. The paper argues that effective IKS integration can position India as a global knowledge leader while promoting cultural pride and sustainable development.

**Keywords:** NEP 2020, Indian Knowledge Systems, IKS Integration, Education Policy, Curriculum Reform, Traditional Knowledge, Holistic Education, Teacher Training, Digital Dissemination

### Introduction

The National Education Policy 2020, approved on July 29, 2020, by the Government of India, envisions a transformative education system "rooted in Indian ethos" that aligns with 21st-century global demands. Central to this vision is the integration of Indian Knowledge Systems (IKS), encompassing ancient intellectual traditions in mathematics (e.g., the concept of zero, decimal system), astronomy (e.g., Surya Siddhanta), and medicine. Yoga, Ayurveda, Siddha, Vedanta, Nyaya, architecture, and the arts are among the disciplines that are practiced alongside ethnic and tribal customs. IKS is not a static relic but a dynamic framework that integrates intellectual, emotional, physical, and spiritual dimensions, offering solutions to contemporary challenges like sustainability, mental health, and social equity.

Historically, India's education system, influenced by colonial frameworks, marginalized indigenous knowledge in favour of Western paradigms. NEP 2020 seeks to reverse this by embedding IKS into mainstream education, fostering cultural pride and innovation. The policy aligns with India's ambition to become a global knowledge superpower by 2047, as outlined in Vision 2047. This paper examines the policy dimensions of IKS integration, detailing its multidisciplinary and inclusive approach. It explores implementation strategies through government initiatives, institutional efforts, and technological advancements, supported by data such as the training of 1,500 faculty members and the establishment of IKS centres across 32 institutions. Challenges and recommendations are also discussed to ensure effective execution, emphasizing collaboration and innovation.

## Literature Review

The incorporation of Indian Knowledge Systems (IKS) into contemporary educational frameworks has surged in prominence following the introduction of the National Education Policy (NEP) 2020, fostering a burgeoning array of scholarly works that delve into its conceptual foundations, practical applications, and evidence-based evaluations. NEP 2020 draws upon the legacy of historic Indian learning centres such as Takshashila, Nalanda, and Vikramashila, which exemplified integrated approaches to disciplines encompassing natural sciences, creative arts, and useful abilities, thereby acting as models for contemporary multimodal education. Initial contributions, including those akin to Aggarwal's 2023 insights, emphasise the importance of revitalising Sanskrit and its associated cultural elements through interactive teaching methods, such as narrative-based learning and on-site explorations, to effectively advance IKS within educational settings.

Scholarly investigations from 2024 to 2025 have established solid conceptual structures for IKS incorporation. A notable contribution from Banaras Hindu University outlines a systematic model for integrating IKS elements into the National Curriculum Framework (NCF) at various levels, including foundational, preparatory, middle, and secondary, proposing optional subjects such as Vedic computational techniques and Ayurvedic principles to align with the NEP's holistic vision. A separate 2025 examination assesses NEP 2020's objectives for comprehensive learning, pinpointing deficiencies in educator readiness and infrastructural support, while advocating for region-specific adaptations that merge ancestral insights with current requirements to enhance educational relevance and efficacy. Sarma's 2024 analysis highlights the need for empirical verification to ensure IKS achieves international recognition, suggesting methodological alignments between traditional epistemologies and scientific inquiry within the framework of the NEP. Similarly, Hazarika's 2024 work highlights strategies for safeguarding digital archives of historical manuscripts and verbal legacies, emphasizing technological tools to preserve and disseminate IKS in line with NEP's cultural revitalization goals. Emerging 2025 inquiries, including a questionnaire-driven exploration of IKS within NEP 2020, illuminate viewpoints from educators, learners, and policymakers on embedding systems like Ayurveda, employing in-depth interviews and thematic study to identify consciousness levels and execution constraints. Additional 2025 publications probe instructional advancements. One investigation into aligning IKS with educational practices examines cooperative methodologies, utilizing archival policy reviews and real-world examples to tackle institutional hurdles like curriculum rigidity and resource constraints. Another manuscript scrutinizes the renewal of native wisdom under NEP 2020 in tertiary settings, conducting a SWOT (strengths, weaknesses, opportunities, threats) evaluation to highlight benefits such as cultural enrichment and sustainable practices, alongside challenges like faculty training gaps and integration complexities. Studies on assimilating IKS into teacher preparation programs accentuate NEP 2020's contribution to cultivating cultural grounding, offering qualitative data on bolstering analytical skills via novel teaching strategies that incorporate indigenous philosophies and experiential

learning. A 2025 appraisal of ancestral Indian wisdom in advanced academia discusses forward-looking transformations, advocating for cross-disciplinary methodologies and synchronization with worldwide standards to foster innovation and ethical development.

Official documentation and contemporary advancements bolster the factual foundation. The Ministry of Education's IKS Division, initiated in 2020, has made advancements such as the creation of 32 specialised research hubs and the electronic archiving of over 1.5 lakh historical documents. Updates in 2025 include competitive research grants and internship schemes to propel the IKS scholarship. According to UGC regulations, IKS modules must account for at least 5% of academic credits, with a focus on cross-field research to incorporate traditional views into core curricula. AICTE's endeavours encompass converting approximately 200 engineering resources into 12 vernacular tongues and endorsing programs in native dialects to broaden access and inclusivity. A 2025 in-depth qualitative assessment of enacting NEP 2020's IKS advocacy explores the systemic incorporation of this initiative, drawing on stakeholder dialogues to reveal insights into implementation, successes in curriculum improvement, and enduring problems like scalability and validity.

Recent gatherings, such as the 2025 TISS-IATLIS National Conference, focused on rethinking Library and Information Science (LIS) education via IKS amalgamation, facilitating dialogues on joint structures, featuring sessions on the merger of social sciences and best practices for information distribution in NEP-2020. IKS's ability to overcome colonial educational legacies and address urgent global issues like social justice and environmental stewardship is confirmed by these components, which align with UNESCO's support for indigenous knowledge in promoting sustainable development.

## Objectives

1. To examine the policy dimensions of Indian Knowledge Systems (IKS) integration in NEP 2020.
2. To assess the implementation strategies for IKS in curricula, teacher training, research, and digital platforms.
3. To identify challenges in IKS integration, including faculty preparedness, validation, resources, and resistance to change.
4. To recommend strategies for addressing these challenges and aligning IKS with Vision 2047.

## Policy Dimensions of IKS Integration in NEP 2020

NEP 2020 outlines a comprehensive framework for IKS integration, emphasizing four key policy dimensions: multidisciplinary education, preservation of languages and cultural heritage, value-based learning, and research-driven innovation.

## Multidisciplinary and Holistic Education

A holistic educational approach that incorporates intellectual, artistic, social, physical, emotional, and moral growth is promoted by NEP 2020. IKS is integrated into this framework by the integration of conventional knowledge from several fields. For instance, mathematics curricula include Vedic mathematics and contributions like the Sulba

Sutras, which detail geometric principles used in ancient architecture. Science education highlights astronomical texts like the Aryabhatiya, while vocational education promotes “Lok Vidya” (local knowledge), such as traditional crafts, weaving, and organic farming. This aligns with Sustainable Development Goal 4.4, aiming for 50% of learners to have vocational exposure by 2025. The policy also encourages flexibility, allowing students to combine IKS subjects with modern disciplines, fostering creativity and critical thinking.

### **Preservation and Promotion of Languages and Cultural Heritage**

NEP 2020 places a strong emphasis on preserving India's linguistic and cultural diversity. The policy promotes classical languages like Sanskrit, Tamil, Telugu, Kannada, Malayalam, Odia, Pali, Prakrit, and Persian, integrating their literature and knowledge systems into curricula. It advocates for mother-tongue-based multilingual education up to at least Grade 5, supported by initiatives like the Indian Institute of Translation and Interpretation (IITI) to develop IKS teaching materials in regional languages. Tribal and indigenous knowledge, such as ethno-medicinal practices and traditional ecological knowledge, is included as electives to promote inclusivity. For example, the policy encourages teaching tribal practices like the Apatani rice-fish farming system in Arunachal Pradesh, recognized globally for its sustainability.

### **Value-Based and Experiential Learning**

NEP 2020 emphasizes value-based education rooted in IKS principles like truth (Satya), nonviolence (Ahimsa), compassion (Karuna), and environmental stewardship. These values are integrated through experiential pedagogies, such as projects on Indian languages, cultural exchanges under the “Ek Bharat Shrestha Bharat” initiative, and field visits to historical sites like Hampi or Ajanta. In healthcare, the policy mandates basic AYUSH (Ayurveda, Yoga, Unani, Siddha, and Homoeopathy) training for allopathic medical students to promote integrative healthcare. For instance, yoga and meditation are incorporated into school curricula to enhance mental health, supported by studies showing their efficacy in reducing stress.

### **Research and Innovation Framework**

The policy establishes the National Research Foundation (NRF) to fund interdisciplinary IKS research, recognizing India's historical contributions to global knowledge. Areas like ancient metallurgy, Rasayanshastra (Indian chemistry), and sustainable architecture are prioritized. The policy encourages collaborations between traditional scholars (e.g., Sanskrit pandits) and modern scientists to validate IKS through contemporary methods. For example, research on Ayurvedic formulations is being conducted at institutions like IIT Madras to align with modern pharmacological standards.

### **Implementation Strategies**

Implementing IKS under NEP 2020 requires coordinated efforts across policy, institutions, and technology. The strategies that follow provide instances of advancement and real-world applications.

### **Curriculum Development and Integration**

The National Curriculum Framework (NCF) is being revised to embed IKS across educational stages. NCERT has developed textbooks incorporating IKS, such as Vedic mathematics for middle school and stories from the Panchatantra to teach ethics. IKS courses must account for at least 5% of credits in undergraduate and graduate programs, with 50% of the content related to the student's speciality, according to UGC guidelines published in 2022. For example, engineering students at IITs study traditional water management systems like the stepwells of Gujarat, integrating them with modern hydraulic engineering. Over 8,000 higher education institutions (HEIs) have adopted IKS curricula, digitizing 1.5 lakh traditional texts, including manuscripts on astronomy and medicine. AICTE has translated 200 technical textbooks into 12 Indian languages and approved 100 engineering colleges to offer programs in regional languages like Hindi, Tamil, and Telugu.

### **Teacher Training and Capacity Building**

Effective IKS integration hinges on faculty preparedness. UGC's April 2023 guidelines outline a three-tier training model: induction programs for new teachers, refresher courses for existing faculty, and specialized workshops for IKS-specific pedagogy. Over 70 faculty development programs have trained 1,500 professors across disciplines, with institutions like IIT Kharagpur hosting workshops on integrating IKS into STEM education. The policy also empanels traditional artisans and scholars as “master instructors.” For example, in Karnataka, folk artists teach Yakshagana as part of performing arts curricula. The 4-year integrated B.Ed. program, launched in 2022, incorporates IKS modules, training teachers in Indian values and pedagogies like Gurukul-style learning. Regional workshops, such as those in Assam, focus on tribal knowledge, training teachers to integrate local practices like Bodo weaving into vocational education.

### **Institutional and Research Initiatives**

The Ministry of Education's IKS Division has established 32 IKS research centres in HEIs, focusing on disciplines like ancient metallurgy, Rasayana, and tribal ethno-medicine. For instance, IIT Mandi's IKS centre researches Himalayan medicinal plants, collaborating with local healers to document and validate traditional remedies. Over 5,200 undergraduate internships have been offered, allowing students to engage in projects like digitizing Sanskrit manuscripts or studying traditional irrigation systems. The Dhara Conference series, organized by the IKS Division, has reached over 6 crore citizens through webinars and workshops, disseminating validated knowledge on topics like Ayurveda and sustainable agriculture. The NRF has allocated funds for 150 IKS research projects, fostering collaborations between traditional scholars and modern scientists. For example, IISc Bangalore's project on ancient Indian metallurgy explores corrosion-resistant alloys inspired by the Delhi Iron Pillar.

### **Technology and Outreach**

Technology plays a pivotal role in IKS dissemination. The IKS Division has developed digital platforms like the IKS

Portal, offering MOOCs on topics like Yoga, Ayurveda, and Vedic mathematics. To ensure accessibility, Project FIT (Future-ready Indian Translators) seeks to provide IKS content in 22 scheduled Indian languages. Over 1,000 e-learning modules have been created, with platforms like SWAYAM hosting IKS courses that have enrolled 50,000 students. To increase accessibility, entrance tests such as JEE, NEET, and CUET are currently offered in 13 Indian languages. Social media campaigns, such as #IKSPride on X, have amplified awareness, with over 10,000 posts engaging educators and students. Mobile apps like “Bhartiya Gyan” provide interactive content on traditional practices, downloaded by 2 lakh users.

### Phased Implementation and Governance

The Central Advisory Board of Education (CABE) is in charge of coordinating the phases of implementation. Phase 1 (2020–2023) focused on framework development and pilot projects, while Phase 2 (2023–2026) emphasizes scaling through teacher training and digital outreach. Public investment in education is targeted to reach 6% of GDP by 2027, with a significant portion allocated to IKS initiatives. State-level IKS committees ensure localized implementation, such as Tamil Nadu’s focus on Siddha medicine and Odisha’s emphasis on tribal art.

### Challenges

Despite progress, several challenges impede IKS integration:

1. **Faculty Preparedness:** Many educators lack expertise in IKS, requiring extensive training. For example, a 2023 UGC survey found that 60% of faculty felt underprepared to teach IKS subjects.
2. **Scientific Validation:** Traditional knowledge, such as Ayurvedic remedies, requires rigorous testing to gain global credibility, a process hindered by limited funding and expertise.
3. **Resource Disparities:** Rural and underfunded institutions face infrastructure and access issues, limiting IKS adoption.
4. **Resistance to Change:** Some stakeholders view IKS as outdated, necessitating awareness campaigns.

### Recommendations

1. **Enhanced Training Programs:** Expand faculty development programs with hybrid models, combining online and in-person training. For example, a national IKS training portal could offer certifications.
2. **Public-Private Partnerships (PPPs):** Leverage PPPs to fund IKS research and infrastructure. A wiki-like platform, similar to Wikipedia, could crowdsource and disseminate IKS content.
3. **Assessment Frameworks:** Develop standardized yet flexible assessment metrics that evaluate IKS learning outcomes, such as project-based assessments on traditional practices.
4. **Cross-State Collaboration:** Promote initiatives like “Ek Bharat Shrestha Bharat” to facilitate cultural exchanges, such as student exchanges between Kerala (Ayurveda) and Rajasthan (traditional architecture).
5. **Monitoring and Evaluation:** Strengthen State School Standards Authorities (SSSA) to monitor IKS

implementation, ensuring equity across urban and rural areas.

6. **In line with Vision 2047:** Develop a long-term plan for IKS integration that focuses on the worldwide distribution and is in line with India's objectives for its centennial of independence.

### Case Studies

1. **IIT Mandi’s Himalayan IKS Centre:** This centre collaborates with local communities to document medicinal plant knowledge, integrating it into pharmacology curricula. Over 200 plants have been catalogued, with 10 under clinical trials.
2. **Tamil Nadu’s Siddha Integration:** The state has introduced Siddha medicine courses in 50 colleges, training 1,000 students in traditional diagnostics alongside modern medicine.
3. **Odisha’s Tribal Art Program:** Schools in Odisha integrate tribal art forms like Pattachitra into vocational training, preserving cultural heritage while fostering entrepreneurship.

### Conclusion

The integration of Indian Knowledge Systems under NEP 2020 is a transformative endeavour to decolonize education, foster cultural pride, and address modern challenges through ancient wisdom. Policy dimensions like multidisciplinary learning, language preservation, value-based education, and research innovation provide a robust framework. Implementation strategies, including curriculum reforms, teacher training, institutional initiatives, and digital outreach, have achieved significant milestones, such as training 1,500 faculty and digitizing 1.5 lakh texts. However, challenges like faculty preparedness and resource disparities require sustained efforts. By adopting recommendations like enhanced training, PPPs, and cross-state collaborations, India can realize NEP 2020’s vision of a culturally rooted, globally competitive education system. IKS integration not only enriches education but also positions India as a leader in sustainable and inclusive knowledge systems by 2047.

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