Integrating Indian Knowledge Systems (IKS) into Teacher Education Curriculum: Framework Design, Challenges, and Strategic Interventions in the Context Of NEP (2020)

Kiranmayee Kar

Ph.D. Research Scholar

Department of Education

Central University of Odisha, Koraput, Odisha, India

kiranmayeekar810@gmail.com

How to Cite this Article:

Kar, K. (2026). Integrating Indian Knowledge Systems (IKS) into Teacher Education Curriculum: Framework Design, Challenges, and Strategic Interventions in the Context Of NEP. International Journal of Creative and Open Research in Engineering and Management, 02(03). https://doi.org/10.55041/ijcope.v2i3.012

https://doi.org/ 10.55041/ijcope.v2i3.012

Abstract

The integration of Indian Knowledge Systems (IKS) into teacher education curriculum represents a transformative step toward developing culturally rooted, holistic, and value-oriented educators. In alignment with contemporary educational reforms such as the National Education Policy 2020, there is an increasing emphasis on incorporating indigenous knowledge traditions, ethical foundations, and interdisciplinary perspectives into formal education. This paper proposes a comprehensive framework for integrating IKS into teacher education programs, focusing on curriculum design, pedagogical approaches, assessment strategies, and institutional preparedness. The study adopts a conceptual and policy-analytical approach to identify core domains of IKS such as Indian philosophy, ecological wisdom, traditional sciences, arts, and community-based knowledge and examines their relevance in preparing reflective, context-sensitive, and socially responsible teachers. The paper further explores key challenges in implementation, including epistemological resistance, lack of trained faculty, curriculum rigidity, limited authentic resources, and concerns regarding standardization and academic rigor. Structural and attitudinal barriers within teacher education institutions are also critically analysed. To address these challenges, the study proposes strategic interventions such as capacity-building programs, interdisciplinary curriculum restructuring, collaborative research initiatives, community engagement models, and policy-level support mechanisms. Emphasis is placed on aligning IKS integration with global competencies while preserving indigenous intellectual traditions. The proposed framework aims to bridge traditional wisdom and contemporary pedagogical needs, fostering a teacher education system that promotes holistic development, cultural continuity, critical thinking, and sustainable practices. Integrating IKS meaningfully can contribute significantly to the revitalization and contextualization of teacher education in India.

Keywords: Indian Knowledge Systems (IKS), Teacher Education Curriculum, Framework Design, Challenges, Strategic Interventions and NEP (2020)

1. Introduction

The growing emphasis on contextualized, culturally responsive, and value-based education has renewed scholarly interest in integrating indigenous knowledge traditions into formal education systems. In India, this momentum has been institutionally reinforced through the National Education Policy 2020, which explicitly calls for the incorporation of Indian Knowledge Systems (IKS) across disciplines and levels of education, including teacher education. The policy envisions an education system rooted in Indian ethos while remaining globally relevant, thereby promoting holistic development intellectual, ethical, aesthetic, and spiritual.

Indian Knowledge Systems encompass a vast intellectual heritage reflected in classical texts such as the Vedas and Upanishads, as well as in traditions of mathematics, astronomy, medicine, arts, governance, ecology, and pedagogy. Historically, institutions like Nalanda University exemplified interdisciplinary and dialogic approaches to knowledge construction. Contemporary scholarship recognizes that indigenous knowledge systems offer sustainable, community-centred, and experiential models of learning that align with modern constructivist and transformative pedagogies (Semali & Kincheloe, 1999; Battiste, 2002).

Teacher education plays a pivotal role in translating curricular reforms into classroom practices. However, prevailing teacher education curricula in India have largely been influenced by Western epistemological paradigms, often marginalizing indigenous intellectual traditions (Kumar, 2005). Integrating IKS into teacher preparation is therefore not merely an additive exercise but a paradigmatic shift that redefines knowledge hierarchies, pedagogical processes, and educational purposes.

This paper proposes a conceptual framework for integrating IKS into teacher education, identifies implementation challenges, and outlines strategic interventions grounded in contemporary educational research and policy discourse (Agrawal, 1995).

2. Conceptual Foundations of Indian Knowledge Systems in Education

2.1 Understanding Indian Knowledge Systems

Indian Knowledge Systems refer to the cumulative intellectual traditions developed in the Indian subcontinent across millennia. These systems are characterized by holistic ontology, interconnectedness of knowledge domains, ethical orientation, and experiential learning (Rao, 2017). Unlike fragmented disciplinary structures, IKS emphasizes integrative thinking where philosophy, science, art, and spirituality coexist in dynamic interaction. Scholars argue that indigenous knowledge is context-specific, community-validated, and sustainable (Agrawal, 1995). In the Indian context, IKS integrates empirical inquiry with ethical reflection, evident in classical treatises on mathematics, environmental practices, linguistics, and governance. Such epistemological plurality challenges the dominance of Eurocentric knowledge hierarchies in contemporary education (Battiste, 2002).

2.2 Philosophical Underpinnings

IKS-based education draws from philosophical principles such as advaita (non-duality), sarva dharma sambhava (pluralism), and lokasangraha (social responsibility). These principles foreground interconnectedness, inclusivity, and ethical action. Dewey's (1938) theory of experiential education resonates with traditional Indian pedagogical practices emphasizing dialogue (shastrartha), reflection, and lived experience.

Furthermore, constructivist approaches (Vygotsky, 1978) align with the community-based and collaborative modes of knowledge transmission found in indigenous traditions. Thus, integrating IKS does not imply rejecting modern educational theories but contextualizing them within indigenous epistemologies.

3. The National Education Policy 2020 (NEP 2020) for integration of Indian Knowledge Systems (IKS):

The National Education Policy 2020 (NEP 2020) strongly advocates the integration of Indian Knowledge Systems (IKS) into all levels of education, including teacher education. It envisions an education system rooted in India's cultural heritage while maintaining global relevance. In teacher education, NEP proposes a four-year integrated B.Ed. program with multidisciplinary and experiential learning approaches, creating space to incorporate Indian philosophy, traditional sciences, arts, languages, and ethical values into the curriculum. The policy emphasizes holistic development, critical thinking, environmental awareness, and constitutional values core principles aligned with IKS. It also encourages research and innovation through initiatives such as the National Research Foundation to promote indigenous knowledge scholarship. However, effective implementation requires faculty training, academic resources, and curriculum restructuring. Overall, NEP 2020 provides a strong policy framework for embedding IKS meaningfully within teacher preparation programs.

4. Rationale for Integrating IKS in Teacher Education

4.1 Cultural Rootedness and Identity Formation

Education contributes significantly to cultural identity formation. Kumar (2005) highlights how colonial education reshaped Indian curricula, often sidelining indigenous knowledge. Reintegrating IKS restores epistemic dignity and promotes culturally responsive teaching.

4.2 Holistic Development

Holistic education addresses cognitive, affective, ethical, and spiritual dimensions of learning (Miller, 2007). IKS inherently promotes balanced development, integrating knowledge with values and action. Teacher education that incorporates IKS can prepare educators capable of nurturing students' overall growth.

4.3 Sustainability and Ecological Consciousness

Indigenous ecological practices emphasize harmony with nature. Contemporary environmental education scholars recognize the relevance of indigenous ecological wisdom in addressing climate crises (Kimmerer, 2013). Teachers trained in IKS can contextualize sustainability education within local knowledge systems.

4.4 Alignment with Policy Vision

The National Curriculum Framework 2023 advocates integrating Indian traditions, arts, languages, and knowledge forms into pedagogy. Teacher education institutions must align curricula accordingly to ensure policy coherence.

5. Objectives of the Study

1. To explore the conceptual foundations and educational relevance of Indian Knowledge Systems (IKS) in teacher education.

2. To analyse the policy provisions of the National Education Policy 2020 regarding the integration of IKS in teacher education.

3. To design a comprehensive framework for integrating IKS into teacher education curriculum.

4. To explore the major challenges faced by teacher education institutions in implementing IKS-based curriculum.

5. To propose strategic interventions for effective integration of IKS in teacher preparation programs.

6. Research Questions

1. What are the conceptual and philosophical foundations of Indian Knowledge Systems relevant to teacher education?

2. How does the National Education Policy 2020 support the integration of IKS in teacher education curriculum?

3. What components should be included in an effective IKS-based curriculum framework for teacher education?

4. What are the key academic, structural, and institutional challenges in integrating IKS into teacher education?

5. What strategic measures can ensure meaningful and sustainable implementation of IKS in teacher education programs?

7. Research Methodology

7.1. Research Design

The present study adopts a qualitative research design grounded in the interpretivist paradigm, as it seeks to explore conceptual foundations, policy perspectives, institutional challenges, and strategic interventions related to integrating Indian Knowledge Systems (IKS) into teacher education. Since the study aims at framework development rather than hypothesis testing, a descriptive and exploratory research design is considered appropriate.

Additionally, the study incorporates document analysis of policy texts such as the National Education Policy 2020 and the National Curriculum Framework 2023 to understand national directives concerning IKS integration.

7.2. Sources of Data

The study is based on secondary data sources, including National policy documents, Peer-reviewed journal articles, Books and edited volumes on indigenous knowledge and teacher education, Reports from educational bodies and academic institutions. These sources are selected based on relevance, authenticity, and academic credibility.

7.3. Sample

A purposive sampling technique is used to select relevant policy documents, scholarly publications, and reports that specifically address IKS, curriculum design, and teacher education reforms.

7.4. Data Analysis and interpretation

Data are analyzed using thematic analysis, involving Familiarization with documents, Coding of recurring themes, Categorization under subthemes (e.g., epistemological challenges, faculty preparedness, curriculum restructuring) and Synthesis of findings into a proposed IKS-based curriculum framework

8. Framework Design for IKS-Based Teacher Education Curriculum

8.1 Curriculum Components

An IKS-based teacher education curriculum may include:

Foundational Courses on IKS: Philosophical traditions, classical texts, indigenous sciences.

Pedagogical Applications: Integrating local knowledge into lesson planning.

Interdisciplinary Modules: Linking mathematics, environmental studies, and arts with traditional knowledge.

Community Engagement: Fieldwork with local artisans, farmers, and knowledge holders.

Reflective Practice: Dialogic and experiential learning processes.

8.2 Pedagogical Approaches

Pedagogical approaches include experiential and place-based learning, dialogic pedagogy, storytelling and narrative inquiry and collaborative knowledge construction. Such approaches resonate with constructivist frameworks (Vygotsky, 1978) and critical pedagogy (Freire, 1970).

8.3 Assessment Strategies

Assessment should move beyond standardized testing toward reflective journals, portfolios, community projects, and performance-based evaluation. Transformative assessment practices encourage critical engagement rather than rote memorization.

9. Challenges in Integrating Indian Knowledge Systems (IKS) into Teacher Education

9.1 Epistemological Hierarchies and Knowledge Legitimacy

One of the most fundamental challenges in integrating Indian Knowledge Systems (IKS) into teacher education lies in entrenched epistemological hierarchies that privilege Western scientific rationality over indigenous ways of knowing. Modern teacher education curricula in India evolved largely under colonial and postcolonial influences that emphasized positivist and Eurocentric paradigms (Kumar, 2005). As Agrawal (1995) argues, the artificial dichotomy between "scientific" and "indigenous" knowledge has historically marginalized local epistemologies. Consequently, IKS is sometimes perceived as cultural heritage rather than as a legitimate knowledge system with methodological rigor. Overcoming such deeply embedded assumptions requires epistemic reorientation within universities and regulatory bodies.

9.2 Conceptual Ambiguity and Lack of Clear Frameworks

Another major concern is the absence of standardized conceptual frameworks defining the scope, boundaries, and methodological foundations of IKS. The National Education Policy 2020 advocates integrating IKS but provides broad guidelines rather than operational models. This ambiguity often results in superficial inclusion, tokenistic courses, or isolated lectures without systemic integration. Without coherent curricular blueprints, institutions may struggle to align IKS components with existing pedagogical objectives and professional competencies required in teacher education.

9.3 Faculty Preparedness and Professional Capacity

Teacher educators are central to curriculum transformation, yet many lack formal academic training in IKS domains. Most teacher education faculty members have been educated within Western theoretical frameworks, with limited exposure to classical Indian texts, indigenous pedagogies, or interdisciplinary Indian traditions. As Battiste (2002) notes in indigenous education contexts, successful integration demands intellectual engagement rather than symbolic representation. Faculty hesitancy, discomfort, or insufficient scholarly grounding can hinder meaningful implementation. Moreover, the lack of peer-reviewed research in mainstream education journals further limits faculty confidence.

9.4 Curriculum Overload and Structural Constraints

Teacher education programs such as B.Ed. and M.Ed. are already dense with mandatory theoretical and practicum components. Integrating IKS without restructuring may lead to curriculum overload, reducing both depth and quality of engagement. The National Council for Teacher Education prescribes credit structures and regulatory norms that leave limited flexibility for innovation. Structural rigidity in semester design, credit allocation, and accreditation standards often constrains curriculum experimentation.

9.5 Resource Scarcity and Scholarly Documentation

Authentic, research-based academic resources on IKS suitable for teacher education are relatively limited in mainstream repositories. While classical texts such as the Upanishads and traditional treatises offer philosophical insights, pedagogically adapted materials are scarce. Many available resources are either highly Sanskritized, inaccessible to modern learners, or popularized narratives lacking critical scholarship. The absence of structured textbooks, digital repositories, and peer-reviewed empirical studies complicates systematic integration.

9.6 Risk of Romanticization and Ideological Misappropriation

Scholars caution against romanticizing indigenous traditions without critical examination (Agrawal, 1995). Uncritical glorification may lead to selective appropriation, mythologization, or politicization of knowledge systems. In a diverse and pluralistic society, IKS integration must avoid sectarian interpretations and ensure inclusivity. Teacher education institutions must engage with IKS critically, distinguishing between historically verifiable knowledge and cultural symbolism.

9.7 Assessment and Standardization Dilemmas

Traditional assessment mechanisms emphasize measurable cognitive outcomes, often privileging standardized examinations. However, IKS-based learning emphasizes reflection, experiential knowledge, ethical orientation, and community engagement. Aligning these qualitative dimensions with accreditation requirements presents a significant

challenge. Without innovative assessment reforms, IKS integration risks being reduced to theoretical discourse rather than lived pedagogical practice.

9.8 Linguistic Barriers and Accessibility

Much of classical Indian knowledge is preserved in Sanskrit, Pali, Prakrit, Tamil, and other regional languages. Linguistic inaccessibility creates barriers for teacher educators and student teachers unfamiliar with these languages. Translation gaps and interpretive complexities further complicate curricular adaptation. Effective integration therefore requires interdisciplinary linguistic scholarship and contextual translation.

9.9 Institutional Resistance to Change

Institutional inertia often impedes curriculum reform. Universities may prioritize global rankings, employability metrics, and international accreditation standards, perceiving indigenous integration as peripheral. Change management processes in higher education are typically slow, requiring consensus-building across multiple stakeholders. Such resistance can delay or dilute reform initiatives.

10. Strategic Interventions for Effective Integration

10.1 Development of a Coherent Conceptual Framework

A structured, research-informed framework is essential for systematic integration. Institutions should identify core domains of IKS relevant to teacher education—philosophy of education, ecological knowledge, ethics, arts, linguistics, and indigenous sciences—and map them onto existing professional standards. Curriculum design should follow backward planning principles, aligning learning outcomes, pedagogical methods, and assessments. The National Curriculum Framework 2023 can serve as a guiding document for contextual adaptation.

10.2 Faculty Capacity Building and Interdisciplinary Training

Comprehensive professional development programs must equip teacher educators with conceptual clarity and pedagogical skills related to IKS. Workshops, certificate courses, collaborative research seminars, and immersion programs with traditional scholars can foster intellectual engagement. Interdisciplinary collaboration between departments of philosophy, history, environmental studies, and education can enrich curriculum development. Battiste (2002) emphasizes that indigenous integration requires intellectual humility and openness to multiple epistemologies.

10.3 Curriculum Restructuring and Credit Rationalization

Rather than adding isolated modules, institutions should restructure existing courses to incorporate IKS perspectives organically. For instance, philosophy of education courses may include classical Indian philosophical debates; environmental education modules can integrate indigenous ecological practices. Regulatory flexibility from bodies like the National Council for Teacher Education is crucial for credit reallocation and pilot innovation programs.

10.4 Research, Documentation, and Scholarly Publication

Promoting empirical and theoretical research on IKS in teacher education strengthens academic credibility. Universities should encourage doctoral research, funded projects, and journal publications examining indigenous pedagogies and classroom implementation models. Agrawal (1995) suggests that bridging indigenous and scientific knowledge requires dialogic research rather than hierarchical comparison. Establishing peer-reviewed journals or special issues dedicated to IKS can expand scholarly discourse.

10.5 Community-Based Learning and Experiential Pedagogy

Integrating community engagement within teacher preparation programs ensures authenticity. Field immersion with artisans, farmers, traditional healers, and local knowledge practitioners enables experiential understanding. Such approaches resonate with Dewey's (1938) experiential learning theory and Vygotsky's (1978) sociocultural constructivism, emphasizing learning through social interaction and lived experience.

10.6 Inclusive and Critical Pedagogical Approach

Integration must be inclusive, pluralistic, and critically reflective. Teacher educators should facilitate dialogue examining historical contexts, socio-political dynamics, and ethical implications of knowledge traditions. Freire's (1970) critical pedagogy underscores the importance of reflective consciousness in transformative education. By encouraging critical inquiry, institutions can avoid dogmatism and ideological bias.

10.7 Innovative Assessment Models

Alternative assessment strategies such as reflective portfolios, ethnographic reports, action research projects, and community-based evaluations can capture holistic learning outcomes. Transformative assessment aligns with holistic education principles (Miller, 2007) and ensures that IKS integration moves beyond rote memorization.

10.8 Digital Archiving and Open Educational Resources

Digital platforms can democratize access to IKS resources. Developing multilingual repositories, recorded lectures, and open-access teaching modules enhances accessibility. Technology-enabled dissemination also supports blended and online teacher education programs.

10.9 Policy Alignment and Institutional Incentives

Sustained reform requires policy support, funding mechanisms, and institutional incentives. Government grants, curriculum innovation awards, and accreditation recognition can motivate institutions. Aligning teacher eligibility criteria and professional standards with IKS competencies ensures long-term sustainability.

11. Conclusion

The integration of Indian Knowledge Systems into teacher education curriculum represents a transformative shift toward epistemic plurality, cultural rootedness, and holistic pedagogy. While the National Education Policy 2020 provides a strong policy mandate, meaningful implementation demands structural reform, scholarly rigor, and institutional commitment. Challenges such as epistemological resistance, faculty preparedness, resource constraints, and assessment dilemmas are significant but not insurmountable. Strategic interventions capacity building, curriculum restructuring, interdisciplinary research, community engagement, innovative assessment, and digital resource development can collectively create an enabling ecosystem. Crucially, integration must remain critical, inclusive, and academically grounded, avoiding both marginalization and romanticization. By harmonizing indigenous wisdom with contemporary pedagogical innovation, teacher education institutions can cultivate educators who are culturally responsive, ethically grounded, and globally competent. Such transformation not only revitalizes India's intellectual heritage but also contributes to global conversations on decolonizing and contextualizing education.

12. References

1. Agrawal, A. (1995). Dismantling the divide between indigenous and scientific knowledge. *Development and Change*, 26(3), 413–439. https://doi.org/10.1111/j.1467-7660.1995.tb00560.x

2. Aikenhead, G. S., & Ogawa, M. (2007). Indigenous knowledge and science revisited. *Cultural Studies of Science Education,* 2(3), 539–620. https://doi.org/10.1007/s11422-007-9067-8)

3. Altbach, P. G. (2009). The giants awake: The present and future of higher education systems in China and India. *Economic and Political Weekly*, 44(23), 39–51.

4. Apple, M. W. (2013). Can education change society? *Routledge.*

5. Banks, J. A. (2015). Cultural diversity and education: Foundations, curriculum, and teaching (6th ed.). *Routledge.*

6. Battiste, M. (2002). Indigenous knowledge and pedagogy in First Nations education: A literature review with recommendations. *Canadian Journal of Native Education*, 25(2), 1–13.
7. Bhushan, N., & Garfield, J. L. (Eds.). (2011). Indian philosophy in English: From Renaissance to independence. *Oxford University Press.*
8. Brayboy, B. M. J., & Maughan, E. (2009). Indigenous knowledges and the story of the bean. *Harvard Educational Review*, 79(1), 1–21. https://doi.org/10.17763/haer.79.1.k6436472531r16w1
9. Chakrabarty, D. (2000). Provincializing Europe: Postcolonial thought and historical difference. *Princeton University Press.*
10. Dei, G. J. S. (2000). Rethinking the role of indigenous knowledges in the academy. *International Journal of Inclusive Education*, 4(2), 111–132. https://doi.org/10.1080/136031100284849
11. Dewey, J. (1938). Experience and education. *Macmillan.*
12. Freire, P. (1970). Pedagogy of the oppressed. *Continuum.*
13. Gadgil, M., Berkes, F., & Folke, C. (1993). Indigenous knowledge for biodiversity conservation. *Ambio*, 22(2/3), 151–156.
14. Giroux, H. A. (1988). Teachers as intellectuals: Toward a critical pedagogy of learning. *Bergin & Garvey.*
15. Government of India. (2020). National Education Policy 2020. *Ministry of Education.*
16. Hoppers, C. A. O. (2002). Indigenous knowledge and the integration of knowledge systems: Towards a philosophy of articulation. *Claremont Graduate University Press.*
17. Kimmerer, R. W. (2002). Weaving traditional ecological knowledge into biological education: *A call to action. BioScience*, 52(5), 432–438. https://doi.org/10.1641/0006-3568(2002)052[0432:WTEKIB]2.0.CO;2
18. Kovach, M. (2009). Indigenous methodologies: Characteristics, conversations, and contexts. *University of Toronto Press.*
19. Kumar, K. (2005). Political agenda of education: A study of colonialist and nationalist ideas. *Sage Publications.*
20. Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal*, 32(3), 465–491. https://doi.org/10.3102/00028312032003465
21. Mignolo, W. D. (2011). The darker side of Western modernity: Global futures, decolonial options. *Duke University Press*.
22. Miller, J. P. (2007). The holistic curriculum (2nd ed.). *University of Toronto Press*.
23. Mohanty, C. T. (2003). Feminism without borders: Decolonizing theory, practicing solidarity. *Duke University Press.*
24. Ngũgĩ wa Thiong'o. (1986). Decolonising the mind: The politics of language in African literature. *Heinemann.*
25. Owuor, J. A. (2007). Integrating African indigenous knowledge in Kenya's formal education system: The potential for sustainable development. *Journal of Contemporary Issues in Education*, 2(2), 21–37.
26. Pillay, T. (2014). Indigenous knowledge systems and education in South Africa. *Africa Education Review*, 11(3), 357–374. https://doi.org/10.1080/18146627.2014.934990
27. Sefa Dei, G. J. (2011). Indigenous philosophies and critical education. *Peter Lang.*
28. Semali, L. M., & Kincheloe, J. L. (1999). What is indigenous knowledge? Voices from the academy. *Falmer Press.*
29. Sharma, R., & Bhattacharya, S. (2019). Indian knowledge systems and higher education: A critical reflection. *University News*, 57(12), 15–20.
30. Shiva, V. (1993). Monocultures of the mind: Perspectives on biodiversity and biotechnology. *Zed Books.*
31. Singh, M. (2015). Global perspectives on indigenous knowledge and curriculum reform. Compare: *A Journal of Comparative and International Education*, 45(5), 746–768. https://doi.org/10.1080/03057925.2014.930004
32. Smith, L. T. (1999). Decolonizing methodologies: Research and indigenous peoples. *Zed Books.*
33. Tikly, L., & Barrett, A. M. (2011). Social justice, capabilities and the quality of education in low-income countries. *International Journal of Educational Development*, 31(1), 3–14. https://doi.org/10.1016/j.ijedudev.2010.06.001
34. Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. *Harvard University Press*.