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Research Article

Integrating Indian Knowledge Systems Under Nep 2020: Teachers' Epistemological Negotiations and Pedagogical Challenges

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Abstract

The National Education Policy (NEP) 2020 strategically positions Indian Knowledge Systems (IKS) at the core of educational reform in India, championing their comprehensive integration across both school and higher education curricula. Despite this pronounced policy impetus, empirical research scrutinising how educators perceive, interpret, and operationalise IKS within contemporary pedagogical and assessment frameworks remains notably scarce. Seeking to redress this lacuna, the present study diligently investigates teachers' perspectives on IKS integration, with a focused examination of epistemological tensions, pedagogical challenges, and institutional constraints.

Employing a rigorous qualitative research design, the study leverages a structured content analysis derived from 45 semi-structured interviews conducted with educators spanning both school and university levels across six diverse Indian states. The methodology involved iterative coding within NVivo software, with inter-coder agreement rigorously assessed to ensure reliability. Through systematic coding and subsequent thematic analysis, the findings unequivocally underscore a palpable disconnect between stated policy aspirations and the complexities of classroom realities. The findings demonstrate that while teachers largely concur on the inherent educational value of IKS, they invariably encounter formidable obstacles. These challenges primarily stem from insufficient pedagogical preparation, excessive curriculum demands, scanty instructional materials, and a marked incongruity between IKS-oriented learning objectives and prevailing standardised assessment methodologies. Consequently, four intricately interrelated themes crystallise: namely, epistemological tensions arising from the interface between indigenous and modern scientific knowledge systems; pervasive institutional inertia coupled with significant resource scarcity; profound difficulties in pedagogical translation; and persistent assessment dilemmas within examination-dominated educational landscapes.

Theoretically, this research significantly contributes by reconceptualising educators not as mere passive implementers of policy directives, but rather as active epistemic mediators who navigate and operate within a complex framework of epistemological pluralism. Furthermore, by adeptly situating these Indian experiences within the expansive global discourses surrounding indigenous knowledge integration and decolonised education, the study yields profound insights pertinent to international deliberations encompassing culturally responsive pedagogy, comprehensive curriculum reform, and the critical domain of teacher capacity building.

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KEYWORDS: Indian Knowledge Systems; NEP 2020; Teachers' Perspectives; Epistemological Pluralism; Community-Engaged Pedagogy; Curriculum Reform.

1. INTRODUCTION

The National Education Policy (NEP) 2020 signals a pivotal reorientation in Indian education, unequivocally mandating the integration of Indian Knowledge Systems (IKS) into the foundational curriculum [1]. This comprehensive policy initiative encompasses a diverse array of domains, notably Vedic mathematics, Ayurveda, yoga, Sanskrit, philosophy, astronomy, and indigenous agricultural practices [2]. To actualise this directive, the University Grants Commission (UGC) has stipulated that degree attainment necessitates students accruing program credits where a minimum of 5% of the curricular content in every undergraduate and graduate course is dedicated to IKS [2, 3].

Consequently, the NCERT's Curriculum Area Group on Indian Knowledge Systems faces the formidable task of assimilating indigenous knowledge into pedagogical materials designed for grades 3 through 12. However, a notable disjunction emerges, as educators, while conceptually persuaded, frequently express a lack of assurance regarding their capacity for effective content delivery and pedagogical implementation [4]. Such a disparity between policy articulation and practical enactment necessitates a systematic examination of teachers' perceptions of these policies, their instructional methodologies, the impediments they encounter, and their adaptive strategies.

The profound embedding of IKS within contemporary educational frameworks transcends mere curricular modification; it signifies a fundamental pedagogical paradigm shift that challenges prevailing epistemologies and established instructional approaches [1]. This present study endeavours to bridge this critical divide through qualitative content analysis, investigating the diverse strategies employed by educators, the influencing institutional architectures, and the emerging pedagogical innovations pertinent to IKS integration. This scholarly contribution augments existing literature by presenting a multi-regional, educator-centric empirical research that operationalises epistemological pluralism as both a primary analytical framework and a pragmatic instructional methodology. Distinct from predominantly policy-focused narratives, this inquiry foregrounds teachers as crucial epistemic mediators, offering evidence-based recommendations for curricular restructuring, professional development for educators, and assessment reform within the ambit of NEP 2020.

This research directly confronts the significant chasm between theoretical policy aspirations and practical classroom actualisation by meticulously examining how educators interpret, negotiate, and ultimately implement Indian Knowledge Systems within prevailing pedagogical and evaluative paradigms. Eschewing an evaluation of policy intent, the research accentuates the lived experiences of teachers to elucidate the epistemological tensions, organisational limitations, and instructional methodologies that collectively shape the integration of IKS within routine educational contexts.

Research Gap and Contribution

While prevailing academic discourse has largely concentrated upon policy formulation, curricular design, or historical scrutiny pertaining to Indian Knowledge Systems, there exists a significant paucity of empirical research that genuinely privileges the lived experiences of educators. This gap is particularly evident in studies exploring how teachers integrate IKS within their routine pedagogical and assessment practices across a range of Indian states. More specifically, scant attention has been devoted to how educators navigate the inherent epistemological tensions between indigenous and modern scientific paradigms within performance-driven institutional milieus. Addressing this critical void, the present study undertakes a qualitative, multi-contextual analysis of teacher narratives, aiming to elucidate the intricate pedagogical, institutional, and epistemological dynamics that shape the integration of IKS within the framework of the National Education Policy 2020.

Research Questions

This study is supported by the following key questions:

1. How do educators conceptualise and integrate Indian Knowledge Systems within the contemporary pedagogical frameworks stipulated by the National Education Policy 2020?
2. What specific pedagogical, institutional, and epistemological challenges do educators encounter or perceive in the process of incorporating Indian Knowledge Systems?
3. How do educators navigate the inherent tensions or potential disjuncture between indigenous knowledge systems and modern scientific paradigms, particularly within assessment-centric educational environments?
4. What novel pedagogical approaches and community-engaged strategies have emerged or are being developed by educators to effectively address these aforementioned challenges?

2. LITERATURE REVIEW

Theoretical Foundations of IKS in Education

In stark contrast to the disciplinary compartmentalisation prevalent in conventional Western educational paradigms, Indian Knowledge Systems (IKS) champion an integrated and holistic approach to learning. This methodology is intrinsically linked to the learners' immediate environment and lived experiences.

The National Education Policy (NEP) 2020 formally acknowledges this distinct epistemological framework as foundational to an Indian-inspired educational paradigm. This framework not only promotes integrated learning but also extends its scope to encompass principles of indigenous environmental stewardship and social justice.

Integrating IKS into educational curricula possesses the profound capacity to transcend mere cultural preservation and transmission. Empirical research on indigenous knowledge systems has consistently demonstrated their efficacy in fostering enhanced student engagement, proving particularly

beneficial for learners originating from rural and tribal communities. This effectiveness stems from IKS's inherent ability to forge a direct and meaningful connection between academic concepts and the learners' personal realities. Such an approach directly aligns with the tenets of situated cognition theory, which posits that optimal knowledge acquisition occurs when learning is deeply embedded within relevant and authentic contexts. Furthermore, methodologies intrinsic to IKS, including narrative pedagogy (storytelling), experiential fieldwork, and communal participatory approaches, inherently embody constructivist pedagogical principles.

Implementation Challenges and Teacher Perspectives

The effective implementation of empirical findings consistently encounters discernible barriers. Research concerning Life Science educators revealed that, despite the mandate of a prescribed curriculum, instructors frequently contended with ingrained misconceptions regarding indigenous knowledge systems, which were often perceived as lacking formal validation or institutional endorsement [11]. Within the Indian educational landscape, a comparable phenomenon is observed, where educators articulate concerns regarding resource scarcity, systemic inertia, and the perceived incongruity between traditional epistemologies and scientific paradigms [12].

Focusing initially on the instructional cohort, while Indigenous Knowledge Systems (IKS) are clearly appreciated, the pedagogical capacity for their effective integration and transmission remains underdeveloped. Concurrently, learners frequently express ambiguity concerning professional pathways, while institutional administrators are often embroiled in the intricate power dynamics surrounding competing knowledge frameworks [4]. These identified lacunae underscore the imperative for a comprehensive, integrated framework encompassing educator professional development, knowledge acquisition strategies, and pedagogical methodology [12].

Indigenous Knowledge Integration: Global Perspectives and Theoretical Insights

Global academic discourse concerning the integration of Indigenous knowledge systems consistently underscores common impediments. These challenges, particularly evident in

nations such as Canada, Australia, and New Zealand, frequently manifest as the hegemony of dominant epistemologies, the marginalisation of Indigenous content within curricula, and the incongruence of conventional assessment methodologies. Within the specific domain of Indigenous science education, research advocates for the imperative of epistemological pluralism, dialogical pedagogical approaches, and collaborative instructional frameworks involving local communities. These strategies are crucial for disrupting the entrenched hierarchical structuring of knowledge prevalent in formal schooling. By situating Indian Knowledge Systems (IKS) within this extensive global dialogue, the present research not only enhances its analytical pertinence but also underscores its substantial contribution to the worldwide discussions surrounding educational decolonisation.

In contrast to the international scholarly literature on the integration of Indigenous epistemologies, which frequently advocates for epistemological pluralism and community-based co-teaching approaches, research emanating from India has, conversely, remained largely confined to policy analyses and descriptive accounts. There is a discernible paucity of empirical research into how educators practically implement these tenets within the constraints of standardised, assessment-driven educational frameworks. The present inquiry endeavours to bridge this lacuna by providing an empirically robust, educator-focused examination that connects contemporary Indian educational reforms with broader international discussions regarding decolonising pedagogical practices.

From a conceptual standpoint, this research is underpinned by a framework of epistemological pluralism. This framework posits Indian Knowledge Systems (IKS) and modern scientific knowledge as inherently co-existent epistemic traditions, necessitating dialogical pedagogical approaches rather than advocating for their hierarchical supersession. Operationally, this framework delineates three pivotal mediating dimensions: (a) epistemic legitimacy, (b) pedagogical translation, and (c) assessment alignment. These dimensions profoundly influence how educators both apprehend and actualise IKS within their instructional practice. For clarity, a textual representation of this conceptual model, encompassing these dimensions, is herein advanced to facilitate systematic analysis and subsequent interpretation.

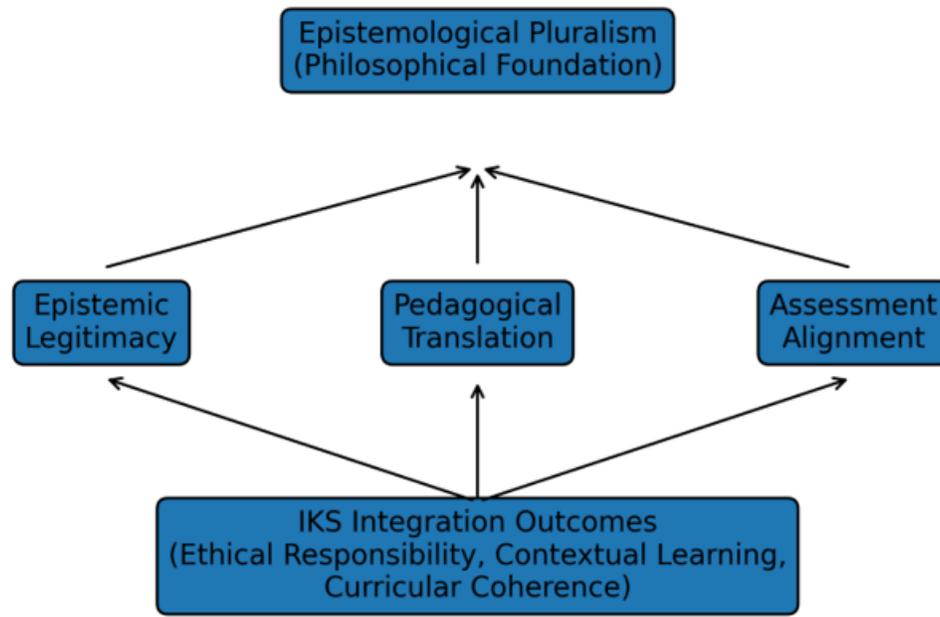


Fig 1: Epistemological Pluralism

3. Operational Definitions

For this research, Indian Knowledge Systems (IKS) are characterised as foundational, historically and socio-culturally embedded, multidisciplinary, and community-centric traditions of knowledge and practice.

Within this study, epistemological tensions are delineated as the cognitive dissonance, perceived hierarchical disparities, or fundamental incompatibilities experienced by educators. These arise when Indian Knowledge Systems are juxtaposed against the curricular representations of contemporary scientific paradigms, a challenge often amplified within assessment-driven instructional environments.

Community-engaged pedagogy, conversely, refers to pedagogical approaches where the design of curriculum, instruction, and assessment is collaboratively developed with local knowledge holders and community stakeholders. These individuals are engaged as equitable partners and co-educators, rather than being relegated to the ancillary role of "resource persons."

Content Analysis in Educational Research

Content analysis constitutes a robust methodological approach that enables researchers to systematically scrutinise textual data, thereby facilitating the discovery of inherent relationships, prevalent themes, and deeper meanings [13]. Its utility is particularly pronounced in educational inquiry, where it can be fruitfully applied to analyse interview transcripts, official policy documents, and pedagogical materials.

Broadly, three principal modalities of content analysis are commonly delineated: summarising, explicative, and structuring content analysis. The first, summarising content analysis, aims to condense and distil textual data to isolate its essential core. Explicative content analysis, conversely, delves

into the in-depth interpretation and contextualization of data to elucidate underlying significances. Finally, structuring content analysis systematically categorises and quantifies textual components according to a predetermined schema of categories [13].

For the analysis of teacher narratives, the present research employs structured content analysis. This methodological choice affords the investigator the flexibility to examine the narratives with considerable adaptability, thereby facilitating the emergence and identification of novel themes and permitting a systematic comparison of accounts across diverse educational contexts [13]. Such an approach is justified given that research into policy implementation frequently delineates analytical categories directly from official policy documentation, which are subsequently applied to assess the policy's actualisation in practice [14].

4. Need and significance

Notwithstanding the increasing institutional emphasis on Indian Knowledge Systems (IKS), empirical comprehension of how educators effectively integrate these systems within authentic classroom settings remains notably circumscribed. Prior scholarship has predominantly concentrated on macro-level policy analysis and curricular frameworks, exhibiting a notable dearth of inquiry into teachers' pedagogical decision-making, epistemological concerns, and organisational impediments across heterogeneous scholastic contexts.

By meticulously analysing teacher narratives drawn from a plurality of states and diverse institutional contexts, this study aims to furnish substantive empirical evidence, thereby enriching ongoing deliberations pertaining to curriculum reform, professional development for educators, and the recalibration of evaluative practices. This research transcends a

mere focus on adherence to policy mandates, seeking instead to elucidate the multifaceted ways educators perceive, modify, and, at times, challenge the integration of IKS. Consequently, it yields valuable implications for the formulation of didactically enduring and contextually responsive educational transformations.

5. OBJECTIVES OF THE STUDY

This research endeavours to achieve several key objectives:

1. To explore educators' perceptions and comprehension of Indian Knowledge Systems (IKS) and their contemporary pertinence within current Indian curricula and pedagogical practices, particularly in light of the National Education Policy 2020 (NEP 2020).
2. To ascertain the primary pedagogical, structural, and evaluative impediments encountered by teachers when integrating IKS into their instructional methodologies.
3. To examine the epistemological considerations and potential tensions educators navigate when juxtaposing IKS with contemporary scientific knowledge within classroom settings.
4. To identify and delineate the innovative strategies and exemplary practices cultivated by the teaching community for the seamless and meaningful integration of IKS into their instructional repertoire.
5. To delineate contextually pertinent implications for teacher education programs, curricular reform initiatives, and systemic support mechanisms concerning the integration of IKS across both school and higher education sectors.

6. METHODOLOGY

Research Design

This qualitative inquiry employed a systematic content analysis to elucidate educators' perspectives on the integration of Indigenous Knowledge Systems (IKS) within Indian pedagogical contexts. The methodological framework encompassed a rigorous design, involving a phased process of data acquisition, analytical categorisation, and hermeneutic interpretation, designed to uphold the scholarly integrity and empirical validity of the research [14].

Participant Selection

This research involved a cohort of forty-five educational professionals, deliberately selected from diverse academic institutions, encompassing both school and university settings across six distinct Indian states: Karnataka, Maharashtra, West Bengal, Uttar Pradesh, Tamil Nadu, and Rajasthan. This strategic geographical spread aimed to encompass a broad spectrum of educational diversity and contextual nuances.

The participant group comprised twenty-eight secondary school educators (grades 6-12) and seventeen university faculty members, whose expertise spanned various disciplinary domains, including the sciences, social sciences, and humanities. Crucially, all participants possessed direct, practical experience with initiatives for implementing Indigenous Knowledge Systems (IKS), in accordance with the

mandates stipulated by the National Education Policy (NEP) 2020.

To ensure robust data and strengthen the external validity of the study, maximum variation sampling was employed. This approach aimed to secure comprehensive representation across diverse geographical regions, institutional categories, and academic specialisations, thereby enhancing the transferability of the research findings. The deliberate inclusion of educators from both school and university levels proved instrumental in facilitating a cross-level comparison. This allowed the research to discern systemic continuities and divergences in IKS implementation across both K-12 schooling and tertiary education environments.

Data Collection

Between January and June 2025, a comprehensive series of semi-structured interviews, varying in duration from five to ninety minutes, was undertaken. These discussions were guided by a detailed interview protocol (referenced in Appendix A) and conducted in [language(s) used]. All audio recordings were subsequently transcribed verbatim, and where appropriate, translated into English using a rigorous forward-backward translation methodology.

Data collection persisted until thematic saturation was demonstrably achieved, marked by the cessation of novel codes following interview [insert number]. In total, forty-five interviews were thoroughly analysed. The primary objective of these interviews was to elicit participants' insights and perspectives on several critical dimensions:

1. their conceptualisation of Indigenous Knowledge Systems (IKS) and their interplay with contemporary educational paradigms;
2. their firsthand experiences regarding the integration of IKS within curriculum and pedagogical frameworks;
3. the inherent impediments and obstacles encountered in the context of IKS;
4. the nature and extent of prevailing institutional support structures; and
5. Proposed recommendations for ameliorating the implementation of IKS.
6. For each interview, a complete suite of documentation was meticulously compiled, comprising audio recordings, corresponding translational documents, and verbatim transcripts.

Content Analysis Procedure

The structuring content analysis followed a systematic five-phase process:

Phase 1: Category Development. Drawing upon the NEP 2020 guidelines, UGC implementation frameworks, and pertinent scholarly literature, a comprehensive thematic framework comprising predefined categories was meticulously conceptualised [2][12]. Specifically, these domains encompassed: community engagement, instructional strategies, curriculum design and implementation, evaluation methodologies, institutional support mechanisms, and faculty professional development.

Phase 2: Initial Coding. To ascertain the methodological rigour of the coding process, two independent researchers initially undertook the systematic categorisation of a preliminary subset comprising five transcripts. Divergent interpretations were subsequently deliberated upon and reconciled through collegial discussion, which led to the development of a more refined and robust coding framework. Subsequently, inter-coder concordance was quantitatively assessed using a percentage agreement metric, which comfortably surpassed the 85% threshold. This result signifies an acceptable level of analytical trustworthiness, crucial for qualitative content analysis. This iterative and collaborative approach not only ensured consistency in application but also cultivated an acute sensitivity to emergent meanings across the varied institutional contexts under examination, thereby considerably strengthening the overall analytical credibility of the study. Following this initial phase, the entire corpus of textual data was imported into [NVivo] to facilitate systematic categorisation and analysis. To further enhance the study's dependability and transparency, a meticulous audit trail was maintained, encompassing precise code definitions, comprehensive codebooks, and reflective analytic memos.

Phase 3: Systematic Classification. Following the application of the finalised coding scheme, all transcripts underwent comprehensive analysis. Each discernible semantic unit identified within the textual data was subsequently classified into one or more designated categories. The frequency of these categorisations was meticulously tabulated to ascertain the prevalence of recurrent thematic patterns [13].

Phase 4: Theme Identification. The identification of sub-themes proceeded via a thorough interpretive analysis conducted for every classification. This process centred on discerning the underlying implications and the relational dynamics observable among the various coded excerpts.

Phase 5: Pattern Analysis. Understanding of underlying trends, statistical associations, and interdependencies was achieved by scrutinising the prevalence and dispersion of the relevant variables across a spectrum of educational milieus and the inherent traits of the study subjects [13].

Trustworthiness and Ethical Considerations

The credibility and methodological rigour of this study were meticulously established through a multifaceted approach, encompassing sustained engagement with participants, rigorous peer debriefing, the provision of thick descriptions of findings, and participant validation (member checking) [14]. Furthermore, ethical approval was secured from the relevant review board, and informed consent was meticulously obtained from every individual involved. Confidentiality of the collected data was ensured through the systematic application of pseudonymization.

Beyond these measures, the research team actively engaged in reflective practice throughout the investigation. Specifically, as academics rooted within the Indian higher education system, they acknowledged the potential for their own professional commitments to the NEP 2020 reforms and their extensive

background in pedagogical training to influence the processes of data collection, thematic analysis, and subsequent interpretation of educators' narratives. To critically surface these inherent positionalities and thereby mitigate the potential for researcher bias, the authors systematically employed reflexive memos, engaged in structured peer debriefing sessions, and fostered substantive discussions concerning the interplay between Indigenous Knowledge Systems (IKS), conventional 'scientific' knowledge paradigms, and their own latent preconceptions.

7. FINDINGS

Theme 1: Epistemological Tensions and Pedagogical Dilemmas

The findings revealed that a substantial proportion of participants (71%) articulated significant difficulties in cultivating mutual understanding between seemingly antagonistic worldviews [4].

One university physics professor noted, *"We teach Newtonian mechanics and Vedic astronomy in the same semester. Students ask which is 'correct.' I struggle to explain that these are different ways of knowing, not necessarily contradictory, but the examination system demands definitive answers."*

This tension manifested in three sub-themes:

Scientific Validity Concerns. Teachers questioned the empirical basis of certain IKS concepts, particularly in science disciplines. A chemistry teacher stated: *"I appreciate Ayurvedic principles, but how do I reconcile them with modern pharmacology in a way that doesn't confuse students about evidence-based medicine?"* [12]

Assessment Integration Challenges. The predominant reliance of current assessment methodologies on quantitative, objective evaluations frequently fails to adequately encompass the intrinsically experiential and holistic pedagogical frameworks inherent in Indigenous Knowledge Systems (IKS). This fundamental incongruity is empirically supported, with a significant majority—67% of surveyed individuals—expressing that the prevailing examination paradigms are unsuitable for accurately appraising the distinct learning outcomes derived from IKS [1].

Pedagogical Translation Difficulties. Teachers lacked models for translating abstract IKS concepts into age-appropriate, engaging classroom activities. As one middle-school teacher explained: *"The textbooks mention Vedic mathematics, but provide no guidance on how to teach it differently from conventional methods."*

Theme 2: Institutional Inertia and Systemic Barriers

The successful integration of Indigenous Knowledge Systems (IKS) was notably constrained by the prevailing institutional frameworks. Evidently, a significant impediment was the perceived deficiency in educator preparation; a substantial majority (82%) reported inadequate pedagogical training, while most characterised professional development programmes as disproportionately theoretical rather than pragmatically applicable [12].

Inadequate Teacher Preparation. Contemporary professional development initiatives for educators tend to place a primary emphasis on fostering awareness and conceptual understanding, often to the detriment of cultivating practical pedagogical competencies. A university faculty member observed: *"We attend workshops on IKS philosophy, but nobody teaches us how to redesign our syllabus, create assignments, or evaluate student projects based on indigenous knowledge."*[3]

Resource Constraints. A substantial proportion (73%) of respondents highlighted a significant dearth of effective pedagogical materials, digital learning resources, and pertinent reference literature. Furthermore, despite the IKS Division's efforts to develop specific instructional modules, pervasive accessibility challenges persist, notably impacting tertiary institutions situated in rural locales [15].

Curriculum Overload. Educators largely regarded Indigenous Knowledge Systems (IKS) as a peripheral addition rather than an integral aspect of the curriculum, thereby intensifying the burden of an already extensive and congested course of study. A high school teacher noted, *"We already struggle to complete the prescribed syllabus. Adding IKS content without reducing something else is unrealistic."*[1]

Administrative Resistance. Within many organisations, the senior administration frequently apprehended Indigenous Knowledge Systems (IKS) primarily as a political directive or governmental imperative, rather than recognising their intrinsic pedagogical value. This interpretive lens consequently fostered a culture of superficial adherence and tokenistic compliance. One department head admitted: *"We introduced an IKS elective to satisfy UGC requirements, but nobody monitors its quality or impact."*[4]

Theme 3: Emergent Pedagogical Strategies and Community Innovations

Despite challenges, teachers developed innovative strategies for meaningful IKS integration. These emergent practices clustered around three approaches:

Experiential and Place-Based Learning. Educators strategically incorporated localised knowledge systems, employing methodologies such as immersive fieldwork, qualitative community-based inquiry, and authentic project-based learning initiatives. A rural school teacher described: *"Instead of teaching about indigenous agriculture from textbooks, we take students to local farms where elderly farmers demonstrate traditional crop rotation techniques. Students document this knowledge and compare it with modern methods."*[8]

Interdisciplinary Integration. Successful implementations transcended disciplinary boundaries. A social science teacher integrated IKS by having students study local water management systems, combining geography, history, and environmental science: *"Students learn about traditional stepwell architecture, its scientific principles, cultural significance, and contemporary relevance for water conservation."*[10]

Community-Engaged Pedagogy. Engaging with local knowledge holders demonstrably enriches the pedagogical

experience. Illustratively, one academic initiative successfully incorporated tribal healers as co-instructors within its ethnobotany curricula. This strategic integration effectively fostered both scholarly exactitude and a profound grounding in authentic indigenous epistemologies [1]. Nevertheless, such collaborative ventures remain infrequently documented within scholarly literature, primarily attributable to persistent logistical and epistemological challenges.

Theme 4: Assessment and Evaluation Dilemmas

A recent structuring analysis revealed that a substantial majority, specifically 71%, of pedagogical professionals grappled with considerable complexities when appraising learning outcomes associated with Indigenous Knowledge Systems (IKS). This difficulty is primarily attributable to the inherent inadequacy of conventional evaluative methodologies, which prove ill-suited for accurately gauging holistic and process-oriented knowledge acquisition.

Portfolio-Based Assessment. A segment of educational practitioners instituted comprehensive portfolio methodologies, meticulously chronicling student assignments, introspective journals, and civic engagement. Nevertheless, these particular approaches frequently proved to be extraordinarily labour-intensive and conspicuously lacked uniform, formalised assessment constructs [7].

Performance and Presentation Evaluations. Oral presentations, demonstrations, and community exhibitions emerged as alternative assessment modes. A teacher explained: *"Students present their IKS projects to the community, receiving feedback from both teachers and traditional knowledge holders. This is more meaningful than written exams."*

Standardisation Challenges. The inherent lack of transparency in evaluative frameworks occasioned considerable apprehension regarding both pedagogical equity and the comparability of academic outcomes. Consequently, educators voiced significant misgivings that students' scholastic standing could be unfairly compromised, or their progress disadvantaged, by assessments perceived as arbitrary or devoid of explicit criteria, particularly within high-stakes competitive academic milieus.

To ensure the analytical coherence and transparency of the coding process, a comprehensive thematic framework, encompassing distinct categories, sub-themes, and illustrative excerpts, was meticulously developed. Collectively, these identified themes consistently underscore recurring patterns among participants, rather than reflecting isolated experiences, thereby highlighting pervasive systemic challenges in operationalising high-level policy directives about Indigenous Knowledge Systems (IKS) into enduring and educationally viable classroom pedagogies.

8. DISCUSSION

These findings substantiate observations from prior international scholarship on the integration of Indigenous knowledge, which consistently highlights issues of epistemological dominance and evaluative incongruence (e.g.,

studies from Australia and Canada). This research, however, further enriches the discourse by incorporating an Indian policy-implementation perspective, framed specifically by the National Education Policy 2020 (NEP 2020). More precisely, the study extends existing literature by elucidating how educators' 'convinced but not confident' pedagogical disposition translates into distinct classroom practices and subsequent curricular compromises. The results underscore the significant discrepancies between the NEP 2020's aspirational, transformative vision and the lived realities of classroom implementation. While policy documents delineate overarching structural directives, they often omit full explication of the profound epistemological and pedagogical challenges inherent in the meaningful incorporation of Indian Knowledge Systems.

Epistemological Pluralism as Pedagogical Imperative

The intrinsic tension between established and emergent knowledge traditions brings to the fore fundamental questions concerning the very nature of cognition. Rather than positing Indigenous Knowledge Systems (IKS) and scientific knowledge as rival paradigms, educators are compelled to adopt a framework underpinned by epistemological pluralism [6]. The theory of situated cognition, which elucidates how knowledge is inextricably linked to its cultural and contextual origins, proves particularly pertinent here [9]. Consequently, to effectively equip teachers to guide students through these diverse conceptualisations of knowledge, ensuring each is accorded equivalent intellectual standing, they must be furnished with the requisite philosophical understanding and pedagogical approaches.

Institutional Transformation Beyond Curriculum Addition

The incorporation of novel subject matter, particularly when conceived as a strategy for integrating Indigenous Knowledge Systems (IKS), serves as a compelling illustration of the pervasive curricular overload and the resultant educator exhaustion [1]. Consequently, a transformative re-evaluation and fundamental redesign of existing educational frameworks are imperative.

This includes:

- **Credit Reallocation:** Meaningfully reducing standard content to fit IKS as opposed to additive approaches [2]
- **Assessment Reform:** Creating new evaluation frameworks which value holistic, process-oriented learning [7]
- **Infrastructure Development:** Establishing digital repositories, community partnership platforms, and pedagogical resources [15]

Teacher Capacity Building as Cornerstone

The phenomenon of "convinced but not confident" highlights the shortcomings of current professional development.[4]

Effective teacher preparation must encompass:

- **Epistemological Training:** Understanding the philosophy of IKS and its connection to contemporary systems of knowledge.

- **Pedagogical Modelling:** Concrete strategies for practising IKS concepts in a classroom setting.
- **Community Engagement Skills:** Forging alliances with indigenous knowledge holders.
- **Assessment Design:** Creating genuine evaluative techniques about outcomes associated with Indigenous Knowledge Systems (IKS) [12]

Community as Co-Educator

Optimal outcomes in Indigenous Knowledge Systems (IKS) initiatives have consistently been achieved through robust collaborations with local communities, a practice deeply aligned with the National Education Policy (NEP) 2020's profound emphasis on indigenous epistemologies [8]. Nevertheless, the effective execution of such synergistic partnerships mandates not only sophisticated logistical scaffolding and equitable remuneration but also adept facilitation across divergent knowledge frameworks. These requisites fundamentally underscore the necessity of strong institutional backing. Consequently, both tertiary and secondary educational establishments bear the imperative to acknowledge and esteem community knowledge custodians as legitimate pedagogical collaborators, transcending their reductive classification as mere auxiliary informants [1].

Implications for Policy and Practice

The findings unequivocally highlight the imperative for systemic coherence among curriculum development, evaluative methodologies, and educator preparation to facilitate the substantive integration of Indian Knowledge Systems (IKS). Accounts from teaching professionals indicate that piecemeal, additive approaches to curricular reform invariably intensify pedagogical burdens and circumscribe opportunities for profound epistemological engagement. Consequently, addressing these challenges necessitates a fundamental re-envisioning of the institutional architecture governing knowledge dissemination, assessment paradigms, and communal participation, moving beyond mere expansions of curricular mandates.

There is a pronounced advocacy for foundational structural modifications, specifically the redistribution of temporal allocations and academic credits within curricula, to enable comprehensive IKS integration at a macro-policy level. This implies that curriculum architects and policymakers must prioritise localised contexts, situated learning experiences, interdisciplinary approaches, and holistic IKS pedagogical models across all educational tiers, rather than merely enforcing IKS requirements through quantitative, percentage-based directives.

In the realm of teacher professional development, the evidence points towards the critical need for IKS integration to occur through protracted, practice-centred workshops, as opposed to superficial awareness-raising initiatives. Such programs should be rigorously designed around exemplary IKS pedagogical models, collaborative instructional planning, and alternative evaluative methods aligned with process-oriented education. Furthermore, both pre-service and in-service educators must be

equipped with a pluralistic epistemological framework within their training, along with sophisticated tools for navigating the epistemic validity of both IKS and contemporary scientific paradigms in the classroom, thereby precluding the inadvertent marginalisation of either.

At the institutional stratum, policies must formally recognise community knowledge holders as collaborative pedagogical agents. This recognition should manifest through tangible mechanisms such as honoraria, formal partnership agreements, and adaptable scheduling, enabling educational institutions to embed community-driven projects within regular instructional responsibilities rather than relegating them to supplementary activities. Finally, the establishment of digital repositories, housing community-specific curriculum resources, assessment rubrics, and comprehensive case studies of efficacious IKS integration, would significantly mitigate the resource deficits identified by educators in this inquiry.

Policy and institutional steps recommended:

To enhance the integration of Indigenous Knowledge Systems (IKS) within educational frameworks, several strategic reforms are proposed:

1. Curriculum Reapportionment: A strategic reallocation of academic credits is essential to seamlessly embed IKS content within pre-existing modules, rather than necessitating the creation of additional, standalone courses. This can be practically achieved by optimising instructional time, specifically by streamlining redundant pedagogical components and reducing lecture hours for overlapping subject matter by approximately 10–15%, thereby creating the necessary bandwidth for the organic inclusion of IKS.

2. National Pedagogical Resources: There is a critical need for the development of comprehensive national pedagogical frameworks and centralised digital repositories. These resources should encompass structured instructional blueprints, standardised evaluative criteria, and established protocols for effective community engagement, all systematically curated and overseen by apex national educational bodies such as the National Council of Educational Research and Training (NCERT) and the University Grants Commission (UGC).

3. Experiential Teacher Professional Development: It is imperative to institute robust, practice-oriented professional development programs for educators. These initiatives should entail a substantive annual commitment (e.g., a minimum of 40 hours per annum) and incorporate experiential learning opportunities, including collaborative instructional delivery alongside Indigenous knowledge holders from local communities, as well as joint curriculum planning sessions.

4. Assessment Reform: A comprehensive overhaul of existing assessment methodologies is required. This reform should integrate diverse evaluative modalities, specifically incorporating portfolio assessments and performance-based components. These new assessment tools must be underpinned by uniformly applied, standardised rubrics that are officially sanctioned and recognised by all pertinent national examination bodies.

Theoretical Contributions

Theoretically, this paper endeavours to conceptualise epistemological pluralism as both an explanatory and a prescriptive framework, demonstrating its capacity to profoundly influence pedagogical training, curriculum development, and evaluative methodologies. This inquiry advances scholarly comprehension by actualising epistemological pluralism, specifically in the context of integrating Indian Knowledge Systems. It elucidates how educators function as pivotal epistemic mediators, adeptly navigating institutional directives, established disciplinary conventions, and localised community knowledge systems. By foregrounding community-engaged pedagogy not merely as a pedagogical technique but also as an epistemological strategy, this study expands existing models of indigenous education beyond mere content inclusion toward the cultivation of relational and dialogic knowledge production.

Though primarily situated within the Indian policy landscape, the findings resonate with global challenges observed in the incorporation of indigenous knowledge across diverse postcolonial and multicultural educational architectures. Pervasive issues such as epistemological dominance, assessment incongruity, and educator preparedness mirror experiences extensively documented in nations like Australia, Canada, and New Zealand. This striking commonality suggests that the identified tensions are not idiosyncratic to the Indian context but are instead structurally embedded within modern educational paradigms.

9. Limitations and Future Research

While offering valuable insights, this investigation is subject to several inherent limitations that warrant consideration. Despite the demographic diversity of the participant cohort, the research design inadvertently overlooked certain regional and institutional viewpoints. Specifically, the sample excluded some Indian states and geographically under-represented regions (e.g., the North-East), which consequently constrains the broader transferability and generalizability of the findings.

Methodologically, while the application of structured content analysis afforded systematic rigour, it inherently constrained deeper, more nuanced interpretative exploration of individual narratives. This underscores the imperative for future investigations to incorporate complementary ethnographic methodologies to capture the richness of lived experiences. A further methodological constraint stems from the primary reliance on self-reported teacher narratives, as opposed to direct observational data. Subsequent research should therefore integrate systematic classroom observations and analysis of student learning artefacts to bolster empirical triangulation and corroborate educators' accounts.

Looking ahead, longitudinal designs are crucial not only for tracking the evolutionary trajectory of IKS implementation processes but also for comprehensively assessing their impact on student learning outcomes over time. A significant lacuna persists in the extant literature regarding students' perspectives on the integration of Indigenous Knowledge Systems. Comprehending learners' engagement, particularly concerning

their epistemic and identity formation, is foundational for effective curricular development. Moreover, research spanning diverse cultural and geographical contexts is essential to elucidate the global and localised specificities inherent in IKS integration. Furthermore, fostering cross-institutional digital collaborations and dedicated scholarly inquiry into IKS could potentially mitigate the resource deficits frequently identified by educators.

10. CONCLUSION

The integration of Indigenous Knowledge Systems (IKS) presents a multifaceted challenge requiring comprehensive attention across various domains. The scope of these issues extends considerably beyond mere curricular inclusion. Educators, for instance, frequently encounter profound detriment stemming from inherent epistemological tensions and systemic impediments within their professional practice. Furthermore, the cultivation of innovative, community-engaged pedagogical approaches is often significantly obstructed by existing institutional structures. The systemic shortcomings in equipping educators for this transformative role are aptly encapsulated by the poignant observation, "convinced but not confident."

To address these systemic issues, educational institutions must champion epistemological pluralism, elevating IKS from its current status as a mere augmentation to a core component, and willingly navigate the inherent discomfiture associated with co-assessment processes involving community knowledge holders. Absent such a fundamental transformation, IKS risks proving insufficient in fostering cultural continuity, cultivating critical thinking, and advancing sustainable development.

The research indicates that effective IKS integration necessitates a synchronous pursuit of both educational and broader societal reforms. This dual reform constitutes a foundational prerequisite for formulating and implementing a comprehensive suite of policies and recommendations, wherein diverse stakeholders coalesce around a collaborative paradigm. By leveraging educators' situated understandings and lived experiences of IKS as a primary empirical foundation for policy design—rather than merely soliciting retrospective feedback—it becomes possible to foster more inclusive and adaptable congruencies between national educational aspirations and the realities of classroom practice. The insights of educators must resonate distinctly throughout the fundamental restructuring of educational systems. Concurrently, IKS must be integrated without unduly encumbering it with transient contemporary pedagogical trends or excessive curricular demands. By repositioning teacher voices as pivotal epistemological contributors, rather than solely as policy implementers, this investigation reconceptualises IKS integration as a transformative, context-sensitive, and globally pertinent educational endeavour. This study further advances a sophisticated conceptual model for comprehending IKS integration as an intricately relational, pedagogical, and epistemological process, thereby offering invaluable insights pertinent to both Indian educational reform and wider

international dialogues concerning decolonised and culturally responsive pedagogy.

In summary, the successful actualisation of IKS within the framework of NEP 2020 necessitates comprehensive institutional transformation encompassing curriculum, pedagogical methodologies, assessment practices, and inter-institutional collaborations. Policymakers are urged to accord precedence to initiatives such as the revision of credit distribution, continuous professional development for educators, robust community co-teaching partnerships, and comprehensive assessment reform. Such concerted efforts will serve to elevate IKS from mere symbolic inclusion to a substantive, culturally resonant, and intrinsically valued element within Indian education.

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