



CONTEMPORARY RESEARCH TRENDS ON INDIAN KNOWLEDGE SYSTEM IN TEACHER EDUCATION: A REVIEW BASED ANALYSIS

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Abstract

In India, the National Education Policy (NEP) 2020 has emphasised on the Indian Knowledge System (IKS), advocating a holistic, culturally grounded, and contextually relevant approach to education. This review-based paper analyses research trends on IKS in education during the period 2020-2025, with a focus on identifying emerging themes, contemporary developments, and existing research gaps. The analysis reveals a growing body of literature addressing areas such as curriculum integration, pedagogical innovations, sustainable development, indigenous knowledge practices, and value-based education. However, a majority of the studies are conceptual, theoretical, or policy-oriented in nature, with limited empirical evidence on classroom implementation and educational outcomes. The review further highlights several challenges, including inadequate teacher preparedness, scarcity of appropriate teaching-learning resources, and the absence of structured assessment frameworks for evaluating IKS-based learning. The study concludes that while IKS possesses considerable potential to enrich educational practices by fostering holistic development, cultural relevance, and national identity, there is an urgent need for practice-oriented, evidence-based, and longitudinal research to support its effective integration into mainstream educational systems.

Keywords: *Indian Knowledge System, NEP 2020, Education, Curriculum Integration, Indigenous Knowledge, Holistic Development, Teacher Preparedness, Evidence-Based Research.*

Introduction

The contemporary education system places significant emphasis on the holistic development of learners by equipping them with advanced technologies and digital competencies. However, despite these advancements, education systems across the world continue to face challenges in fostering social responsibility, ethical consciousness, and collective well-being in the context of increasing social, cultural, and environmental crises (Kioupi & Voulvoulis, 2022). Such challenges pose significant barriers to achieving the Sustainable Development Goals (SDGs) by 2030. In an increasingly interconnected yet fragmented world, the weakening of cultural and social bonds has encouraged an individualistic outlook, highlighting the need for educational practices that promote both personal growth and cultural rootedness (Saxena, Nigam, & Banwet, 2024). Recognizing this need, the National Education Policy (NEP) 2020 advocates an education system that nurtures ethical reasoning, constitutional values, cultural awareness, and holistic development among learners (Government of India, 2020). Recent studies suggest that the integration of Indian Knowledge Systems (IKS) can strengthen value-based education, cultural responsiveness, and interdisciplinary learning while fostering learners' sense of identity, social responsibility, and national consciousness (Abbasi, 2024).

Furthermore, the sustainability challenges confronting the present generation demand a holistic approach to education that not only develops technological competencies but also nurtures learners' cognitive, emotional, social, and ethical capacities for sustainable living (Kioupi & Voulvoulis, 2022). In this context, the Indian Knowledge System (IKS) offers a valuable framework for integrating traditional wisdom with contemporary educational practices. NEP 2020 envisions the incorporation of indigenous knowledge traditions such as Yoga, Ayurveda, environmental ethics, mathematics, arts, and philosophy into educational curricula to promote multidisciplinary and experiential learning (Government of India, 2020). Recent literature highlights that IKS contributes to ecological consciousness, sustainable development, ethical citizenship, and culturally relevant pedagogy while enriching curriculum and teacher education practices (Pawar, 2024; Jadon, 2025). By emphasizing life skills, ethical values, ecological awareness, cultural heritage, and responsible citizenship, IKS can contribute meaningfully to the development of well-rounded individuals and a sustainable society.

It has been increasingly recognized that the Indian Knowledge System (IKS) is not merely a repository of historical traditions but a dynamic and practical source of knowledge with significant relevance to contemporary education (Singh & Agarwal, 2025). Recent studies indicate that the integration of IKS into teaching-learning processes can make education more meaningful, contextual, and learner-centered. By drawing upon indigenous wisdom, learners

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gain opportunities for experiential learning, value formation, environmental awareness, and holistic development (Khan & Pillai, 2024). Furthermore, research suggests that the incorporation of indigenous knowledge practices into modern classrooms enhances student engagement and strengthens contextual understanding, particularly in areas such as sustainability, traditional ecological knowledge, yoga, health and well-being, and ethical reasoning (Rao, 2024). Such integration not only enriches classroom experiences but also helps learners connect academic knowledge with local realities and cultural heritage, thereby fostering responsible citizenship and sustainable living. These perspectives are consistent with the vision of the National Education Policy (NEP) 2020, which advocates the incorporation of Indian knowledge traditions to promote holistic, multidisciplinary, and value-based education. After the introduction of NEP 2020, there has been a notable increase in research studies on the role and relevance of IKS at different levels of educational areas, such as in school education, higher education, and teacher education, etc. For instance, several researchers have explored how IKS can shape teaching methods, guide curriculum development, and support the overall growth of students (Kumar & Devi, 2024). Also, studies show that institutions are making efforts to introduce and integrate IKS into teaching and learning practices in order to promote value-based education (Kaur, 2023). This reflects an increasing national interest in reintroducing India's intellectual traditions and cultural heritage and aligning them with contemporary educational needs.

However, even though research on IKS has been increasing in recent years, much of the existing work is still limited to conceptual discussions, policy reviews, and a few small-scale empirical studies. There have been only limited efforts to bring these studies together to understand the overall trends in the field. While interest in integrating IKS into education is clearly growing, detailed and comprehensive analyses especially those focusing on the period after NEP 2020 are still lacking (Sharma & Nair, 2024). This situation points to the need for a more systematic effort to examine the nature, focus, and direction of research being carried out in this area

This paper aims to analyse recent research trends in the Indian Knowledge System in education, identify major thematic areas, and examine research gaps in the existing literature on IKS in education.

Method and Procedure

This paper adopts a review-based approach, analysing a range of literature, including research articles and conceptual papers. The selection of studies is primarily confined to the period from 2020 to 2025, in order to highlight recent developments after NEP 2020. The reviewed

literature is examined to identify emerging trends, thematic areas, and research gaps in the domain of the IKS in education and teacher education.

Conceptual Understanding of Indian Knowledge System (IKS)

Indian Knowledge System (IKS) is the collective intellectual, philosophical, scientific, and cultural traditions that developed naturally in the Indian subcontinent over a very long period (Kapoor & Singh, 2005). It includes a holistic, integrative, and practice-oriented framework of knowledge that covers a wide variety of areas such as philosophy, mathematics, astronomy, medicine, wellness science, ecology, arts, linguistics, and education (Gautam & Sharma, 2024). The Indian Knowledge system, derived from ancient texts such as the Vedas, Upanishads, Puranas, classical scientific treatises, and regional wisdom traditions, promotes the interconnectedness of knowledge, life, nature, and society.

The IKS focuses on holistic development of every individual, where learning should develop every part of a child, including mind, emotions, body, values, and inner spirit, etc. IKS encourages integration of concepts from different disciplines, bridging the disciplinary barriers, thus connecting the core values of a healthy lifestyle to each branch of knowledge (Rao, 2024). For example, ancient Indian mathematics, Ayurveda, yoga, and astronomy show how traditional knowledge is based on observation with logical reasoning. It facilitates critical thinking, self-awareness, and a sense of responsibility among individuals.

The practices of IKS refers to learning through real-life experiences, as practiced during the Gurukula period of education, where students experience through direct observation, problem-solving, reflective dialogue, and skill-based practice (Khan & Pillai, 2024). During this system of education, the Guru-Shishya Parampara was one of the central features, in which knowledge acquisition was not the sole goal; instead, the teacher and student used to live together, they learn together by observing, analysing, discussing, and drawing conclusions, fostering a lifelong mentorship that brings all round development of an individual. IKS includes a strong foundation in ethical, ecological, and sustainable living practices, reflected in traditional approaches to agriculture, water management, forestry, and traditional health, promoting harmony with nature and supporting environmental consciousness and sustainable development goals (Rao, 2024). Since the NEP 2020 focused on the importance of the IKS, it has created a rising interest in discovering India's cultural heritage and its contribution to shaping frameworks for reform in contemporary educational practices. Studies show that IKS has a strong scope to enrich curricula, strengthen cultural identity, and provide region-based solutions for learning and teaching (Kumar & Devi, 2024). IKS also offers epistemological

diversity, encouraging students to appreciate multiple ways of knowing, interpreting, and engaging with the world (Singh & Agarwal, 2025).

Overall, the IKS represents a multidimensional, interdisciplinary, and value-based knowledge tradition with the potential to significantly transform India's education system. Integrating IKS into modern school education can help develop learners who are intellectually skilled, culturally rooted, ethically aware, and environmentally responsible

Research Landscape of IKS and NEP 2020

The NEP 2020 aims to shift the Indian education system by directly promoting IKS based teaching and learning practices in 21st-century classrooms. The policy highlighted that IKS is not only about traditional practices but also a living, evolving way of understanding the world around us (Gautam & Sharma, 2024). As a result, researchers from various disciplines started analysing IKS from multiple perspectives.

One of the most emerging trends is a rapid increase in conceptually based research addressing IKS within the context of NEP 2020. Many scholars have focused on interpreting the policy's vision for reintroducing IKS and on examining the approaches that establish its pedagogical relevance in contemporary educational practices. (Kumar & Devi, 2024). These studies show IKS as an important addition for the current generation. They addressed how traditional practices can contribute to students' moral development, environmental awareness, and help them understand the relevance of their culture.

Some studies have discussed about the curriculum reformation by integrating various components of IKS. It talks about re-evaluation of syllabi at different levels of the education system, from schools to universities, to include IKS-related content. For example, research on secondary education frameworks includes regional knowledge practices and traditional science concepts within formal subjects (Khan & Pillai, 2024). Similarly, higher education institutions are taking initiatives on establishment of IKS centers, the introduction of value-added courses based on classical Indian disciplines, and interdisciplinary collaborations across different departments (Kaur, 2023).

Among the different themes, teacher education has been one of the most widely discussed areas in IKS-based research. Several studies show that although NEP 2020 emphasises the need to prepare teachers to integrate IKS into classroom practices, there is still a strong need to train teachers with the necessary skills to do so effectively. Survey-based research suggests that Teachers still have a limited understanding of what IKS means and how to use it in the classroom (Singh & Agarwal, 2025). Thus, while there are many discussions on policy, more priority is given to implementation, and very little attention is given to teacher development.

Another aspect of the research is that the importance is given on exploration of holistic and sustainable living connected with IKS. It is found from various studies related to this area that IKS offers pedagogical approaches for sustainable living practices, ecological consciousness, and community-based learning, which aim to achieve global education goals on climate awareness and social responsibility (Rao, 2024). These works bring attention to traditional indigenous ecological knowledge, traditional agricultural practices, and Indian value systems focusing on harmony with nature, showing the relevance of IKS as cultural heritage and also in addressing issues related to current concerns on society and environment.

Although IKS are currently important matter of discussion, there remains a noticeable imbalance in research based on IKS. Most studies are based on conceptual work and policy reviews, while only a limited number of studies are found on quantitative, empirical, and practical classroom-based research. Many researchers are focusing on theoretical frameworks and interpretive analysis rather than experimental or longitudinal investigations.

From 2020 to 2025 it has been seen that there is a growing scholarly interest in IKS, after introduction of NEP 2020. However, the literature shows that research is still in its early stage by offering broader scope for empirical research, teacher preparation and evaluation. Understanding this process is important for guiding future research that can strengthen the role of IKS in shaping a culturally responsive and pedagogically enriching teaching-learning environment.

Research on Indian Knowledge System (IKS) in Teacher Education (2020-2025)

After the introduction of NEP 2020, it has been seen that there is a noticeable increase in academic research on the Indian Knowledge System (Borah, Mudoj & Tiwari, 2026). This shows clear patterns in research areas, institutional involvement, and policy focus. An analysis of studies published between 2020 and 2025 indicates that IKS research has become a more organised area, but most of the work is done based on conceptual and policy.

A significant increase in publications related to IKS has been consistently observed in open-access databases, particularly after introduction of NEP 2020. Bibliographic and narrative review studies indicate that these publications frequently feature key terms such as “IKS,” “NEP 2020,” “holistic education,” and “indigenous knowledge.” (Borah, Mudoj & Tiwari, 2026). Additionally, the number of conferences, seminars, orientation programs, and special issue journals organized by various universities and educational institutions has also risen (Agarwal, 2024). This trend has contributed to a notable growth in academic research output, promoting deeper exploration and documentation of India’s rich traditional heritage, encompassing both endangered and existing knowledge systems (Kumar & Devi, 2024).

Areas Identified for Research in IKS and Teacher Education

Focus on Conceptual and Policy-Based Research

One of the most prominent trends in IKS research is the predominance of conceptual and policy-oriented studies. Following the introduction of the NEP 2020, a substantial body of literature has emerged examining the philosophical foundations, educational relevance, and curricular implications of IKS in contemporary education (Government of India, 2020;). These studies primarily interpret policy provisions related to indigenous knowledge, value-based education, multilingualism, holistic development, and experiential learning. Researchers have argued that IKS aligns closely with constructivist pedagogy, interdisciplinary approaches, sustainable development, and culturally responsive education (Mahadevan, 2023).

Recent policy discussions and institutional initiatives have further emphasized integrating IKS across disciplines and educational levels, highlighting its role in making education more holistic, contextually relevant, and rooted in Indian traditions. Educational institutions and regulatory bodies have increasingly advocated the incorporation of indigenous perspectives into curriculum design, teacher education, and research frameworks.

Despite this growing theoretical and policy discourse, empirical evidence regarding the actual implementation of IKS in classrooms remains inadequate and it has a scope to improve. Most studies rely on document analysis, policy interpretation, philosophical reflection, or conceptual argumentation rather than field-based investigations. Consequently, there is insufficient understanding of how teachers integrate IKS into classroom practices, how students engage with indigenous knowledge, and what impact such integration has on learning outcomes. This indicates a significant research gap and underscores the need for rigorous empirical studies focusing on classroom transactions, pedagogical innovations, curriculum implementation, teacher preparedness, and learner experiences in diverse educational contexts .

Studies on IKS Integrated Pedagogical Practices

There is a clear shift in teacher education from a largely conventional approach towards more culturally grounded and context-sensitive practices are found from review of studies. Earlier research mainly pointed out the gaps in the system, particularly the limited representation of diverse cultures in the curriculum and the lack of adequate preparation among teachers to deal with changing social realities (Ronoh , 2017; Rashmi & Raj, 2019). Although some interactive methods like discussion and brainstorming were used, they often remained disconnected from students' lived experiences and indigenous knowledge systems (Khandagale, 2016; Jackson et al., 2016).

Gradually, there has been increasing recognition of the need to integrate indigenous knowledge into different aspects of teacher education. Recent studies show that different areas such as curriculum design, teaching-learning processes and assessment should reflect regional knowledge and cultural contexts to make education more meaningful and effective (Amuthenu, 2023). At the same time, the idea of culturally relevant pedagogy has gained attention by giving emphasis on inclusive classrooms, teacher beliefs, community participation, and curriculum restructuring (Hunter, 2015). This reflects a shift towards making education more connected with roots through learners' social and cultural backgrounds, which also contributes to student engagement and understanding (Handayani et al., 2018).

This shift has become more visible in classroom practices in the recent years. There is a rising focus on experiential and contextual learning activities such as storytelling, dialogue, and the use of regional knowledge. These approaches make learning more engaging and help in developing critical thinking and real-life understanding among students.

However, despite these positive developments, some challenges still arise. Many teachers do not yet have proper awareness or clarity to effectively use indigenous pedagogies in their classrooms (Kumar & Makwana, 2023). While teachers generally show a positive attitude towards implementation of indigenous pedagogical approaches, the gap between theory and practice continues to be addressed (Jackson et al., 2019).

Overall, the trend suggests that teacher education is gradually becoming a more holistic, inclusive, and culturally rooted model. To make it successful, there is a strong need for better teacher training, curriculum reforms, and continuous support systems to help teachers effectively integrate Indian knowledge into their classroom teaching practice.

Studies related to IKS for Sustainable Development

Studies are found on relationship between Indigenous Knowledge and sustainable development, traditional ecological practices related to agriculture, water management, and biodiversity conservation which highlights valuable ideas for sustainable resource management (Borah, Mudoï, Mudoï& Tiwari, 2026)

Recent research further shows that IKS covers a holistic worldview, where humans and nature are interconnected with each other. It talks about living in harmony with the environment and maintaining balance between human needs and ecological systems (Swain, 2025). Such thoughts are also reflected in traditional Indian values such as collective responsibility and the sustainable use of resources.

Another emerging trend shows the recognition of modern scientific knowledge alone may not be sufficient to address issues related to sustainable living. Several studies argue that the

limitations of scientific approaches can be addressed by integrating traditional and local knowledge systems (Mekonnen et al., 2021; Thakuria, 2014). In this regard, IKS is increasingly known as complementary to modern development shifts.

Further, there is a strong connection between IKS practices and the Sustainable Development Goals (SDGs). Traditional regional systems in agriculture, healthcare, water conservation, and education reflect sustainability through environmental protection, health, and inclusive development (Sheikh, 2025). In addition, several studies emphasized on the role of IKS in sustainable resource management. Traditional indigenous practices such as rainwater harvesting, forest conservation, and community-based governance systems promote ecological balance and responsible resource use (Dudve & Tripathi, 2025). Similarly, traditional management of land, water, and forests shows how earlier societies ensured conservation for upcoming generations (Kharat et al., 2026).

Recent research also shows that IKS contributes to environmental sustainability and to social and economic well-being as well. It promotes values including community welfare, self-reliance, and holistic development, which are important for achieving sustainability in a broader sense (Sharma et al., 2025).

Overall, the trend across these studies clearly shows that Indian Knowledge Systems remain has a great relevance today, offering practical knowledge, frameworks for values & ethics, and sustainable practices that significantly contribute to achieving sustainable development goals.

Holistic and Sustainability Education

Many research articles highlight how IKS can contribute to many areas, such as promoting holistic development, environmental awareness, and sustainable practices. Studies discovering traditional ecological practices, traditional healing techniques, and community-based learning suggest that IKS is connected with global frameworks such as Education for Sustainable Development (Rao, 2024). This trend shows a shift towards rethinking education as a means to bring balance between humans and the environment, which had great relevance during ancient times.

Research Gaps in IKS and Teacher Education

Increasing but Limited Research on Teacher Education

Teacher education is one of the trending areas. Studies show that many teachers lack adequate exposure to IKS frameworks, making classroom implementation challenging (Singh & Agarwal, 2025). Research focuses in the need for adequate training programmes, resource books, and workshops to prepare teachers for integrating IKS pedagogy effectively (Kumar &

Devi, 2024). While teacher preparation is highly important, there is still very limited research available.

Methodological Trends: Lack of Empirical Research

Another clear trend in the literature is that there is a lack of empirical, classroom-based, and experimental research. Most studies focus on conceptual frameworks, reviews, policy interpretations, and survey-based methodologies. This methodological gap indicates that IKS research is still need to be evolved and requires stronger support for practical implementation and pedagogical frameworks (Gautam & Sharma, 2024).

Research Progress of the IKS Division

The Indian Knowledge System (IKS) Division was established in the year 2020. The main objective was to integrating India's traditional knowledge systems into modern education and research. During the initial phase (2020–22), the Division framed the foundation for research by defining its aims and identifying broad thematic areas.

The first research initiatives were introduced in 2022–23 through an advertisement on competitive research proposals programme. During this period, key thematic areas were mathematics, astronomy, economics, traditional crafts, and Indian models of society and governance.

By 2024, the thematic framework became more structured and comprehensive, with clearly defined research domains such as Indian philosophy, history, social sciences, linguistics, science and technology, health traditions, food and nutrition, and agricultural practices.

In the ongoing session (2026–27), these thematic areas have been further consolidated and expanded into a total of 16 well-defined domains. These include: Vedic Philosophical and Cognitive Sciences; Historical and Civilizational Sciences; Contemporary Social and Cultural Sciences; Mathematical, Physical and Astronomical Sciences; Speech and Linguistics; Political, Economic and Strategic Sciences; Medical and Health Sciences; Culinary, Nutritional and Pharmacological Sciences; Agricultural Sciences; Veterinary and Animal Husbandry; Performing Arts; Mechanical and Digital Design and Engineering; Civil and Architectural Sciences; Fine Arts and Sculpture; Chemical, Metallurgical and Material Sciences; Fashion and Interior Design; and Edutainment Sciences (IKS Division, 2026).

Over the years, the IKS Division has evolved from identifying thematic priorities to actively promoting research through structured calls for proposals. Each year, it receives a growing number of research proposals aligned with these thematic domains, reflecting increasing academic engagement with Indian Knowledge Systems.

Summary and Conclusion

Research on the Indian Knowledge System (IKS) between 2020 and 2025 has grown rapidly, especially after the introduction of India's National Education Policy (NEP) 2020, which highlighted the relevance of Indian knowledge system and encouraged for the inclusion of traditional knowledge system in education. However, much of this research still focuses on ideas, concepts, and policy discussions based on IKS rather than use of these ideas on real classrooms. At the same time, there is a rising interest in integrating IKS into school and higher education to make learning more meaningful, culturally connected, and relevant to students' lives. Many studies also highlighted that traditional knowledge can support holistic development and help address emerging issues and challenges like environmental sustainability. Despite this progress, very little attention has been given on the studies related to preparing teachers for this shift, and only a few studies show about the at the classroom practices. Gradually, recent research is starting to integrate IKS with other disciplines and with Indian knowledge systems around the world, which is helping to broaden its scope. Overall, while the field is clearly expanding, still there is a need for practical classroom-based research based on IKS integrated approaches.

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