

From Tradition to Transformation: The Contemporary Value of Indian Knowledge Systems

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ABSTRACT

Purpose: *The first quarter of the twenty-first century has witnessed a remarkable convergence of global crises — ecological, epistemic, psychological, and institutional — that the dominant Western paradigms of education, governance, and development have consistently failed to prevent and are now struggling to address. Climate change, endemic youth mental health crises, the disconnection of education from meaning and community, the erosion of ethical foundations in institutional life, and the accelerating destruction of biodiversity all reflect, at their root, a crisis of knowledge — a systematic impoverishment of the frameworks through which civilisations understand their relationship with the natural world, with each other, and with the inner dimensions of human experience. India's Indigenous Knowledge Systems (IKS), accumulated across five thousand years of civilisational experience and encoded in the Vedas, Upanishads, Arthashastra, mathematical treatises, medical texts, artistic traditions, and ecological practices of the Indian subcontinent, constitute precisely the kind of comprehensive, multidimensional, and practically tested knowledge framework that the present moment requires.*

Methodology: *In this paper, the exploratory qualitative research method is used. The relevant information is collected using keyword-based search in Google search engine, Google Scholar search engine, and AI-driven GPTs. This information is analysed and interpreted as per the objectives of the paper.*

Analysis/ Results: *This paper undertakes a rigorous, multi-dimensional examination of why the Indian Knowledge System matters more than ever in 2026, tracing its foundational frameworks in philosophy, mathematics, medicine, ecology, education, and ethics, and systematically demonstrating their relevance to the most pressing challenges of contemporary life. The paper analyses the institutional context provided by India's National Education Policy 2020 and its mandate for IKS integration; documents the landmark global validation represented by the WHO's ICD-11 inclusion of Ayurveda, Siddha, and Unani conditions; examines the distinctive learning needs of Generation Z and the alignment between IKS pedagogical principles and those needs; analyses the IKS contributions to sustainability and the United Nations Sustainable Development Goals; and addresses the implementation challenges — standardisation, teacher training, resource accessibility, and resistance from established paradigms — that must be overcome for the IKS integration mandate to be fulfilled. The paper concludes with a forward-looking assessment of the opportunities created by the convergence of AI and IKS, youth engagement strategies, and international research collaborations.*

Originality/ Values: *The central argument is that IKS is not a nostalgic supplement to modern education but an urgent intellectual and practical resource for a civilisation in crisis — one that offers, in the concepts of Vasudhaiva Kutumbakam, Lokasamgraha, Dharma, and integrated knowing, the philosophical foundations that the twenty-first century most desperately needs.*

Type of Paper: *Exploratory Research*

Keywords: Indian Knowledge Systems, NEP 2020, IKS Integration, Vasudhaiva Kutumbakam, Ayurveda, Gurukula, Sustainability, SDGs, WHO Traditional Medicine, Generation Z Education, Gyan Bharatam Mission, AI and IKS

1. INTRODUCTION :

Many modern global education systems are ironically contradictory. The turn of the 21st century saw a significant increase in how much data was collected, processed, and made available compared to all centuries of human history. Unfortunately, the world does not know what to do with all of the collected data. There is a lack of understanding of the information that is necessary to think and act sustainably. There are also gaps in the knowledge needed to run a society with healthy and just governance, psychologically maintain a society during complex and uncertain times, and to think and act ethically in the face of the challenges that humanity is dealing with (Puri (2025). [1]). Graduates of elite universities are unable to cope with professional challenges. The economy is on the rise while the ecosystem is simultaneously collapsing. Technology is progressing while the ethics of using that technology are not. Ironically, during the information age, the world has become epistemically poor (Mehta & Singh (2024). [2]).

The Indian Knowledge System is a new way of acquiring knowledge that has been deliberately designed to avoid the problems listed previously. IKS has been developed over the last 5000 years and integrated into a massive number of Indian texts, traditions, and practices. It combines what the modern world has begun to separate: knowledge and character, intellect and emotion, the health of the economy and the health of the ecosystem, personal success and the welfare of society, development of humans and development of the ecosystem. Its main idea of Jnan-Vigyan-Jeevan Darshan -- integrating knowledge, science, and the philosophy of life -- provides, in a nutshell, what modern education systems strive to achieve (Pandit (2025). [3]; Kumari & Niyogi (2025). [4]).

Recognizing Indigenous Knowledge Systems (IKS) and integrating them into institutional frameworks will be more pronounced in 2026, as the convergence of policy, technology, and international recognition reaches a critical mass unseen in previous years. The first five years of the National Education Policy 2020 show clear outcomes from establishing 32 IKS research centers and digitizing 150,000 traditional texts. These 32 centres, operating under the IKS Division of the Ministry of Education since the cell's formal recognition by the All India Council for Technical Education (AICTE) in October 2020, have catalysed original research across ancient disciplines such as metallurgy, town planning, water resource management, and Rasayanshastra, supported by 75 high-end interdisciplinary research facilities. More than 8,000 Higher Educational Institutions have begun integrating IKS into their curricula, complemented by roughly 5,200 student internships and 50 faculty development programmes and conferences. The Division's outreach, through platforms such as the Dhara Conference, has reportedly reached more than six crore citizens, reflecting an ambition that extends well beyond the university system into broader civilisational awareness.

Traditional medicine modules included in the ICD-11 by the World Health Organization mark a significant milestone in the global recognition of Indian health systems. The Ministry of AYUSH, working in tandem with WHO, secured the release of the Traditional Medicine Module 2 (TM2) on the ICD-11 Blue Browser, comprising 529 categories covering the diagnostic vocabularies of Ayurveda, Siddha, and Unani systems — following a year of testing, dual-coding trials, and peer review that began with the original TM chapter's 2019 debut and Module 1 in 2022. This inclusion enables, for the first time, standardised international data collection, cross-border research comparison, and integration of traditional diagnostic categories alongside biomedical ones, a step many member states are reportedly seeking to replicate in their own health information systems. It is worth noting that WHO has been explicit that this inclusion is a classification and data-standardisation tool, not a clinical endorsement of the efficacy or safety of any traditional medicine practice [5-8].

The Gyan Bharatam Mission will digitize 10 million manuscripts. Announced in the Union Budget 2025–26 and formally launched at the three-day International Conference on Gyan Bharatam in New Delhi in September 2025, the mission revives and substantially expands the earlier National Mission for Manuscripts (2003), with its budget increased to ₹60 crore annually and a total outlay of ₹482.85 crore projected through 2031. It proceeds through a structured protocol — survey, condition reporting, pre-conservation, high-resolution digitisation, metadata creation, and secure storage — while deploying

multispectral imaging for palimpsests, AI-driven script recognition for scripts such as Grantha, Sharada, and Modi, and blockchain-based provenance tracking. A nationwide network of trained volunteers, the "Pandulipi Mitras," alongside dedicated Manuscript Resource and Conservation Centres, is expected to anchor the effort at the grassroots level, with state-level bodies such as the Telangana State Archives and Research Institute already reporting substantial early progress (Mishra & Aithal (2023). [9]; Mahesh et al. (2023). [10]).

The University Grants Commission continues to expand IKS integration into India's higher education system, building on its March 2023 mandate requiring a minimum 5% IKS credit allocation in undergraduate and postgraduate curricula, delivered through Human Resource Development Centres and the Pandit Madan Mohan Malaviya National Mission on Teachers Training. Reported phases of this initiative have targeted faculty training cohorts in the thousands, drawn from universities and colleges nationwide, with the explicit aim of extending IKS instruction into virtually every corner of India's higher education landscape — from engineering and management institutes to the humanities and sciences alike.

AI will converge with the preservation and distribution of IKS through Ancient Script AI-OCR, AI to recommend and personalize Ayurvedic treatment, and AI to enhance traditional ecological knowledge-based farming, creating IKS innovations never before possible. The Gyan Bharatam Mission alone has already solicited AI-driven proposals for script deciphering, semantic cataloguing, and multilingual knowledge dissemination, while parallel efforts in computational Sanskrit linguistics (e.g., Project SHAKTI) and Indic-language datasets for AI training point toward a broader ecosystem in which India's manuscript and knowledge heritage becomes not merely preserved but computationally generative — feeding translation tools, diagnostic support systems, and agricultural decision models alike (Srinivasan & Aithal (2026). [11]).

Although AI's role within this context may appear to be a cutting-edge innovation, its true value lies in the potential restructuring it enables within the entire IKS ecosystem. While the speed at which AI-OCR transcribes images of manuscripts in the Devanagari, Tamil, Grantha, Sharda, and Brahmi scripts, eclipses the speed of human transcription by several lifetimes, AI-OCR's true value lies in its ability to make searchable and cross-referenced formerly closed collections (Srinivasan & Aithal (2026). [12]). The corpus of manuscripts that, in the past, were only available to a small subset of scholars who were fluent in regional scripts and dialects, can now be searched and compared across multiple languages and scripts. It is now, for example, possible to quickly perform comparative textual analysis of Malayalam Ayurvedic manuscripts and their equivalent in Telugu or even Bengali. The restructuring of IKS systems is also possible with the application of Machine Learning to the field of Ayurvedic diagnostics. Machine Learning can analyze large sets of patient data of different Prakriti and treatment outcomes. This has the potential to discover new therapeutic techniques that would be impossible to discover within the confines of one practitioner's clinical experience (Aithal & Ramanathan (2024). [13]; Aithal & Ramanathan (2025). [14]).

AI-enabled precision agri-tech that incorporates traditional knowledge systems, such as relational companion planting, soil-specific crop rotation, and climate-pattern-guided planting calendars, preserves, modernizes, and contextualizes traditional knowledge in real-time and at scale. Traditionally, this knowledge has been passed down through oral tradition in a village or region. These AI systems provide new opportunities to even the most isolated and disadvantaged farming systems across regions, countries, and continents, regardless of whether or not the local farming community retains the traditional knowledge.

In each of these examples, the logic behind these systems is the same: artificial intelligence extends the local indigenous knowledge systems beyond their previous limits. Traditionally, local and indigenous knowledge systems have been confined to memory, literacy, and the ability to orally transmit knowledge; with the use of AI, this knowledge becomes a resource that is shareable, scalable, and continuously refined for the whole nation. These systems embody the ancient spirit of the open and free access to knowledge of the Vedic sages, which has now become an achievable reality, with technologies the sages could not have imagined (Shabaraya & Aithal (2025). [15]).

Following sections will address IKS' foundational constructs and its six philosophical schools, its role in mathematics, medicine and ecology, and ethics, the relationship between IKS and Generation Z's learning needs, the NEP 2020 policy context, obstacles to implementation, the global acknowledgment

goals 2025-2026, and new avenues IKS may explore with the aid of technology and international collaboration.

2. REVIEW OF LITERATURE :

(1) Indian Knowledge System and NEP: A brief analysis: The article's abstract explicitly frames NEP 2020 as a transformative policy 'using holistic development of the learners' and identifies IKS as 'one of the significant aspects of the NEP curriculum,' explicitly listing the domains covered: science and technology, literature, philosophy, culture, medicine (Ayurveda), and yoga (Chandel & Prashar (2024). [16]).

(2) Integrating Indian Knowledge Systems into modern education: An analysis of the National Education Policy (NEP) 2020: The article's central contribution is its systematic mapping of the historical and conceptual relationship between India's traditional knowledge heritage and the NEP 2020 policy framework. Gaur traces the colonial-era marginalisation of Indian intellectual traditions within the formal education system, documents NEP 2020's explicit reversal of this marginalisation through its IKS integration mandate and analyses the specific domains — ancient sciences (mathematics, astronomy, medicine), classical and regional languages, the visual and performing arts, and the six philosophical Darshanas — that NEP 2020 identifies as constituting the IKS corpus to be integrated (Gaur (2024). [17]).

(3) Indian Knowledge Systems and sustainable development: The paper's note that 'early development theories largely marginalized indigenous knowledge' situates its contribution within the broader postcolonial critique of development discourse, connecting the research topic to international debates about the role of indigenous and traditional knowledge systems in the UN SDG framework — debates documented, for instance, in the UN Department of Economic and Social Affairs' own programme on 'Integrating Indigenous Knowledge Systems in 2030 UN Sustainable Development Goals,' which provides independent international corroboration of the paper's central premise (Shah (2026). [18]).

(4) Indian Knowledge Systems into modern education: This paper provides the empirical-quantitative anchor that complements the more philosophical and policy-oriented papers elsewhere in the Review Table (Gaur (2024). [17]; Shah (2026). [18]). Its use of an official government data source (NITI Aayog) also strengthens the research paper's credibility when presenting IKS-SDG alignment claims to audiences — including policymakers and NEP 2020 implementation bodies — who require evidence grounded in recognised national metrics rather than purely qualitative or normative argument (Sharma et al. [19]).

Table 1: Keyword: Convergence of AI and IKS

S. No.	Title / Area	Focus / Outcome	Reference
1	Artificial intelligence and epistemic justice: a decolonial turn through indigenous knowledge systems	Indigenous Knowledge Systems (IKS) offer valuable ecological, cultural, and ethical insights that are often overlooked in mainstream technological development. As Artificial Intelligence (AI) becomes increasingly influential in society, integrating IKS through a decolonial and participatory approach can make AI more inclusive, context-sensitive, ethical, and sustainable, ensuring that technological innovation reflects diverse knowledge systems and promotes social justice.	Sethy, M. (2026). [20]
2	Incorporating indigenous knowledge systems into AI governance:	This paper highlights the need to incorporate Indigenous Knowledge Systems (IKS) into AI governance by drawing on Māori Kaitiakitanga and Navajo Hózhó principles. It argues that integrating Indigenous values into AI policy, data	Ray, S., & Ray, R. L. (2026). [21]

	Enhancing ethical frameworks with Maori and Navajo perspectives	governance, and decision-making can promote fairness, sustainability, data sovereignty, and community participation, leading to more inclusive, ethical, and culturally responsive AI systems.	
3	Integration of Artificial Intelligence (AI) with Indian Knowledge System (IKS) for sustainability.	The integration of Artificial Intelligence (AI) with the Indian Knowledge System (IKS) offers a promising pathway for sustainable development by combining advanced technology with traditional wisdom. AI can enhance the application of IKS in areas such as Ayurveda and sustainable agriculture while promoting cultural preservation, community participation, and environmentally responsible development, thereby supporting India's vision of inclusive and sustainable growth.	Majhi, R. (2025). [22]
4	Indian Knowledge System and Artificial Intelligence: Towards Ethical, Sustainable, and Human-Centric Innovation	The integration of Artificial Intelligence (AI) with the Indian Knowledge System (IKS) combines modern technology with traditional wisdom to promote sustainable development. By enhancing areas such as Ayurveda, precision agriculture, and community-based development, AI makes IKS more accessible and scalable while preserving cultural values and supporting environmentally sustainable and inclusive growth.	Singh, P. (2026). [23]
5	Integrating Indian knowledge systems with artificial intelligence: A pathway to culturally rooted innovation.	The integration of Indian Knowledge Systems (IKS) and Artificial Intelligence (AI) offers a powerful opportunity to combine traditional wisdom with modern technology. By leveraging the strengths of both, this synergy can foster innovation in education, healthcare, governance, and sustainable development while promoting holistic, ethical, and inclusive solutions to contemporary challenges.	Banerjee, P., & Banerjee, S. (2025). [24].
6	Indigenous Knowledge Systems and Artificial Intelligence: towards Epistemic Justic and Inclusive Innovation	Indigenous Knowledge Systems (IKS) provide valuable ecological, cultural, and ethical wisdom that can strengthen Artificial Intelligence (AI). Integrating IKS with AI through inclusive, participatory, and ethical approaches can make AI more context-aware, equitable, sustainable, and responsive to the needs of diverse communities.	Sethy, M. (2025). [25]
7	Indigenous Knowledge Meets Artificial Intelligence: Bridging Ancient Wisdom and Modern Technology for Ecological Sustainability	The integration of Indigenous Knowledge Systems (IKS) and Artificial Intelligence (AI) offers innovative, culturally sensitive solutions for ecological sustainability. By combining traditional ecological knowledge with AI-driven analysis and prediction, this approach enhances biodiversity conservation, climate resilience, and natural resource management while promoting ethical governance, Indigenous participation, and sustainable environmental stewardship.	Kumar, S., & Singh, S. P. (2025). [26].

8	Convergence of Indigenous Knowledge Systems and Artificial Intelligence: Forging Pathways Between Indigenous Wisdom and Technological Innovation	The integration of Indigenous Knowledge Systems (IKS) and Artificial Intelligence (AI) can play a vital role in preserving and revitalizing indigenous knowledge through digitization, language preservation, and improved accessibility. By adopting ethical, inclusive, and collaborative approaches, AI can support the long-term sustainability of IKS while respecting cultural values and community rights.	Kuranga, C., & Masenya, T. M. (2026). [27]
9	Reimagining Indigenous Knowledge Systems in the Age of AI: From Ancestral Wisdom to Algorithmic Futures	Indigenous Knowledge Systems (IKS) provide valuable ecological wisdom and cultural heritage that can strengthen Artificial Intelligence (AI). This study shows that ethically governed and culturally aligned AI, developed in partnership with Indigenous communities, can preserve and revitalize traditional knowledge while promoting trust, cultural identity, and responsible AI adoption.	Haldar, P., & Mandal, D. K. (2027). [28]
10	A Review of Africa's Paths for Inclusive Innovation in Indigenous Knowledge Systems and Artificial Intelligence	The integration of Artificial Intelligence (AI) and Indigenous Knowledge Systems (IKS) offers a promising approach to inclusive and sustainable development in Africa. By combining AI with local knowledge, communities can improve agriculture, healthcare, education, and governance while ensuring cultural relevance, ethical AI practices, community participation, and equitable access to technological innovation.	Iyanda, O. J., Adelaiye, I., Afolabi, A., & Adelaiye, V. (2025). [29]
11	Indian Knowledge Systems (IKS) and Artificial Intelligence with Machine Learning: A Synergistic Approach	The Indian Knowledge System (IKS) encompasses centuries of traditional wisdom in fields such as medicine, agriculture, linguistics, astronomy, and philosophy. Integrating Artificial Intelligence (AI) and Machine Learning (ML) with IKS can enhance the preservation, interpretation, and application of this knowledge while promoting innovative, culturally sensitive, and sustainable technological solutions.	Kushwah, R., Neema, K., & Maheshwari, S. (2025). [30].
12	AI, Technology and the Future of Legal Studies: Insights from IKS	The integration of Artificial Intelligence (AI) is transforming legal studies through applications such as legal research, contract analysis, and judicial decision-making. However, ethical concerns demand a balanced approach. Indian Knowledge Systems (IKS), through principles like Dharma , Nyaya , and Arthashastra , provide a strong ethical foundation for AI governance by promoting justice, fairness, transparency, and accountability. Integrating IKS with AI in legal education and practice can help build a future-ready legal system rooted in constitutional and ethical values.	Kashyap, A., & Kashyap, S. B. (2025). [31]

3. OBJECTIVES OF THE STUDY :

This research paper is guided by the following specific objectives:

- (1) To explain the foundations, scope, and philosophy of IKS, focusing on the six Darshanas, four Purusharthas, and Pratyaksha–Anumana as its rational-empirical basis.
- (2) To analyse IKS contributions to mathematics, astronomy, medicine, ecology, architecture, and the arts, highlighting their civilisational depth and contemporary relevance.
- (3) To examine how IKS pedagogy—Gurukula, oral tradition, experiential learning, and character formation—aligns with Generation Z learning needs and values.
- (4) To analyse NEP 2020's IKS mandate, implementation progress, institutional infrastructure, and links to India's Visvaguru vision.
- (5) To examine global validation of IKS through WHO ICD-11, the WHO Traditional Medicine Strategy 2025–2034, and Kerala's International Research Institute of Ayurveda.
- (6) To map IKS principles and practices to the UN SDGs, showing their value for ecological wisdom, ethics, governance, and the 2030 Agenda.
- (7) To identify key IKS integration challenges—curriculum, assessment, teacher training, language, resistance, and funding—and review responses.
- (8) To assess opportunities from AI–IKS convergence, including manuscript digitisation, Ayurvedic precision medicine, indigenous ecological knowledge, global collaboration, and youth engagement.

4. METHODOLOGY :

This paper uses qualitative research. The research was primarily conducted by using critical key word searches to collect data from the Google Search Engine, Google Scholar and AI-based GPTs. The inferred data was analyzed and interpreted as per the objectives of the paper [32-42].

5. FOUNDATIONS AND PHILOSOPHICAL FRAMEWORKS OF IKS :

5.1 The Historical Architecture of Indian Knowledge:

India's traditional knowledge systems are among the most ancient and continuously living intellectual traditions on earth. Their documented history stretches back to the Vedic period (c. 1500–500 BCE), though the oral transmission of the core Vedic corpus preceded written documentation by an indeterminate period that many scholars estimate extends the tradition's origins to at least 3000 BCE. The Indus Valley Civilisation (c. 3300–1300 BCE) provides archaeological evidence of sophisticated urban planning, sanitation, measurement, and material culture that implies an advanced knowledge tradition even before the Vedic period as conventionally dated.

The Indian civilisation's role as a transmitter of knowledge to the ancient world is documented across multiple historical traditions. Trade routes established by 3000 BCE connected India to Persia, Arabia, Mesopotamia, and Egypt, carrying not only commodities but knowledge of their properties and applications. Buddhist missionaries transmitted Indian philosophical, medical, and mathematical knowledge across Southeast Asia, Central Asia, and China from the third century BCE onward. Arab scholars absorbed Indian mathematics — including the decimal system, zero, and trigonometry — in the eighth century CE and transmitted it to Europe, where it became the foundation of the mathematical revolution that enabled the Scientific Revolution. India's historical centrality in global knowledge transmission is not a matter of cultural pride but of documented intellectual history [43-46].

The Indian Knowledge System is formally defined in the context of NEP 2020 as encompassing all forms of Jnan (knowledge), Vignan (science), and Jeevan Darshan (life philosophy) that evolved through experience, observation, experimentation, and rigorous analysis across Indian civilisation. This definition is significant for two reasons: it explicitly includes scientific and empirical knowledge alongside philosophical and experiential knowledge, rejecting the false dichotomy between 'modern science' and 'traditional knowledge'; and it encompasses the full range of human endeavour — mathematics, astronomy, medicine, philosophy, yoga, architecture, agriculture, engineering, linguistics, literature, sports, governance, and conservation — rather than restricting IKS to religious or spiritual domains.

5.2 The Six Darshanas: India's Philosophical Architecture:

The six orthodox philosophical schools of Indian philosophy — known collectively as the Darshanas (perspectives or visions) — constitute the philosophical backbone of IKS. They are not competing ideologies but complementary perspectives on the nature of reality, knowledge, and the good life,

traditionally paired into three complementary dyads: Nyaya-Vaisheshika, Samkhya-Yoga, and Mimamsa-Vedanta.

Nyaya, founded on the Nyaya Sutras of Gautama (c. 2nd century BCE), is the school of logic and epistemology. Its primary contribution is the *pramana* framework — the systematic account of valid knowledge sources — and its anti-sceptical, realist philosophy of knowledge. Vaisheshika, its paired school, provides the ontological complement: a sophisticated analysis of material reality in terms of categories (*padarthas*) including atoms (*paramanu*), qualities, actions, universals, and relations. The Nyaya-Vaisheshika dyad together constitutes India's most rigorous tradition of empirical and logical inquiry, and its atomistic natural philosophy anticipates several features of modern physics.

Samkhya, the oldest of the classical schools, provides a systematic enumeration and analysis of the constituents of manifest reality through its framework of *Prakriti* (matter) and *Purusha* (consciousness). Yoga, its practical complement, provides the methodological framework for the direct experience and integration of the truths that Samkhya analyzes theoretically.

Together they constitute India's most developed account of the relationship between mind and matter and the practical path to inner freedom. Mimamsa addresses the hermeneutics of sacred texts and the philosophical foundations of ethical and ritual obligation. Vedanta, the culminating school, addresses the ultimate nature of reality through the lens of the Upanishadic teaching that Brahman — pure consciousness — is the single ultimate reality of which all apparent multiplicity is a modification.

The four *Purusharthas* — Dharma (ethical duty), Artha (prosperity), Kama (legitimate pleasure and desire), and Moksha (liberation) — provide the normative framework within which IKS orients human life. Their genius lies in their integrative character: rather than positing a hierarchy in which spiritual goals supersede material ones, the *Purusharthas* affirm all four as genuine and necessary dimensions of a fully human life, requiring integration rather than competition. The person who pursues Artha at the expense of Dharma has misunderstood prosperity; the person who pursues Moksha at the expense of engagement with Artha and Kama has misunderstood liberation (Iyer (2010). [47]).

5.3 IKS as an Integrated Knowledge System: Jnan, Vigyan, Jeevan Darshan:

The distinctiveness of IKS as an approach to knowledge — as opposed to a collection of specific disciplines — lies in its insistence on the integration of three dimensions that Western knowledge systems have systematically separated. *Jnan* (knowledge) refers to the understanding of fundamental principles — philosophical, logical, ethical, and cosmological — that provide the framework within which specific disciplines find their meaning and their limits. *Vigyan* (science) refers to the systematic empirical and rational investigation of specific domains of reality, from mathematics and astronomy to medicine and agriculture. *Jeevan Darshan* (life philosophy or philosophy of living) refers to the practical wisdom of how to live well — how to navigate the challenges of material existence, relationships, and ethical decision-making in ways that are both individually fulfilling and collectively beneficial (Shrivastava & Dewangan (2024). [48]).

What makes IKS distinctive is its insistence that these three dimensions are not separable. Science without philosophical foundation loses its ability to address questions of meaning and value. Philosophy without practical embodiment in life becomes sterile speculation. And the philosophy of living without the grounding provided by both empirical science and philosophical inquiry becomes mere convention or superstition. The integration of all three in the concept of IKS captures something that the Cartesian separation of knowledge into discrete disciplines — the foundational move of modern Western academic organisation — systematically misses.

6. IKS CONTRIBUTIONS TO SCIENCE, MATHEMATICS, MEDICINE, AND ECOLOGY :

6.1 Mathematics and Astronomy: India's Global Gift:

The most universally consequential contribution of Indian civilisation to global intellectual history may be the development of the decimal positional number system, including the concept and symbol of zero. Brahmagupta (598–668 CE), in his *Brahmasphutasiddhanta* (628 CE), was the first mathematician to define zero as a number — not merely as a placeholder indicating the absence of a quantity, but as an independent mathematical entity with its own arithmetic rules — and to develop systematic rules for arithmetic operations involving zero and negative numbers [49-50].

Brahmagupta was a pioneering Indian mathematician-astronomer who formalised zero, established rules for operations with negative numbers, and offered early solutions to quadratic equations. The

transformative global significance of this achievement is difficult to overstate without zero and the decimal system, the entire edifice of modern mathematics, science, engineering, and computing would be impossible in its current form [51-52].

Aryabhata (476–550 CE), working in Kusumapura (present-day Patna), calculated the value of pi to four decimal places, provided the first known explicit statement that the Earth rotates on its axis and orbits the Sun, calculated the exact length of the solar year to seven decimal places, and developed the foundations of modern trigonometry including the sine function. His computation that the year consists of 365 days, 6 hours, 12 minutes and 30 seconds was more accurate than the Julian calendar in use in contemporary Europe. Brahmagupta's description of gravity as an attractive force — articulated over a millennium before Newton's Principia — demonstrates that Indian astronomical science was developing theoretical physics as well as computational astronomy. The Guardian's landmark 2024 investigation into the under-acknowledged history of Indian contributions to Western mathematics and astronomy confirms that these achievements entered the European tradition through Arabic intermediaries, typically without attribution.

The Traditional Knowledge Digital Library (TKDL), established by the Council of Scientific and Industrial Research, contains documentation of approximately four lakh (400,000) traditional formulations drawn from classical medical texts [53-54]. This repository serves not only as a record of India's pharmacological heritage but as a legal defence against biopiracy — the patenting of traditional knowledge by international corporations without acknowledgement of its indigenous origins. The TKDL has successfully challenged over 200 international patent applications that drew on traditional Indian knowledge, demonstrating both the contemporary economic value of IKS and the institutional threat it faces from knowledge appropriation.

6.2 The AYUSH Medical Heritage: From Sushruta to WHO ICD-11:

India's medical heritage — encompassing Ayurveda, Siddha, Unani, Yoga, and Naturopathy under the contemporary AYUSH framework — represents one of the most sustained and practically significant contributions of IKS to human welfare. The Sushruta Samhita (c. 6th century BCE), describing rhinoplasty, cataract surgery, 121 surgical instruments, and systematic cadaver dissection, constitutes the world's earliest comprehensive surgical text. The Charaka Samhita's pharmacopoeia of over 600 medicinal plants, its systematic clinical examination methodology, and its Rasayana (rejuvenation) therapy tradition anticipate several dimensions of contemporary pharmacological and preventive medicine. The Ashtanga Hridayam's synthesis of both texts became the foundational text of Tibetan Sowa Rigpa medicine, demonstrating IKS's regional impact across the Himalayan world. Tibetan Sowa Rigpa, the “Science of Healing,” is a Himalayan medical tradition integrating Buddhist philosophy with diagnostic methods like pulse and urine analysis. It explains illness through imbalances in the three energies — rLung, Tripa, and Beken — and treats them through diet, lifestyle, herbal formulations, and therapies such as moxibustion and massage [55-56].

The landmark inclusion of Ayurveda, Siddha, and Unani conditions in the World Health Organisation's International Classification of Diseases (ICD-11) in the 2025 update represents the most consequential global institutional validation of Indian traditional medicine in history. The ICD-11 module allows healthcare providers to use dual coding for traditional and conventional medicine diagnoses, enables systematic global data collection on traditional medicine practices and outcomes, and formally integrates Indian traditional medicine into the international health policy infrastructure. WHO officials described this inclusion as forming a bridge between traditional medicine and global standards — a bridge whose construction has been the central objective of India's AYUSH programme for decades [57-58].

The WHO Traditional Medicine Strategy 2025–2034, with its four strategic objectives of strengthening the evidence base, supporting provision through regulatory frameworks, integrating traditional medicine into health systems, and optimising cross-sector value, provides the global policy framework within which IKS health knowledge will be developed and applied over the next decade. India's position within this framework is uniquely advantageous: with 1.5 million practitioners using traditional medicinal systems, over 7,800 manufacturing units producing natural health products, and the world's most extensive AYUSH institutional infrastructure, India is positioned to become the global hub of evidence-based traditional medicine development in the way that Silicon Valley became the hub of digital technology.

6.3 Ecological Wisdom: IKS and the SDGs:

India's traditional ecological knowledge constitutes one of its most urgently relevant contributions to contemporary global challenges. The traditional water management systems developed across the Indian subcontinent — johads (earthen check dams) in Rajasthan, stepwells (vav and baoli) in Gujarat and Rajasthan, the eris (irrigation tanks) of Tamil Nadu, the ahar-pyne systems of Bihar, and the kul systems of Himachal Pradesh — represent sophisticated, community-managed water conservation infrastructure whose principles align precisely with the requirements of SDG 6 (Clean Water and Sanitation) and with the imperatives of adaptation to climate-change-induced water stress (Sharma et al. (2025). [59]).

Indigenous agricultural practices — including crop rotation, mixed cropping (intercropping), the use of panchagavya (five cow-derived preparations) as organic fertiliser, the preservation of native seed varieties through community seed banks, and natural pest management through companion planting — embody accumulated ecological wisdom that addresses the sustainability challenges identified in SDG 2 (Zero Hunger) and SDG 12 (Responsible Consumption and Production) through methods that are climate-resilient, biodiversity-preserving, and economically accessible to small farmers. The sacred groves (sarna, van, dev vans, kovilkadu) maintained by tribal and village communities across the subcontinent as spaces of communal worship and ecological protection have functioned as critical biodiversity corridors for centuries, preserving forest fragments in agricultural landscapes and supporting the ecosystem services — watershed regulation, soil conservation, pollination, and microclimate moderation — that SDG 15 (Life on Land) seeks to protect [60-63].

The philosophical foundations of IKS's ecological orientation are as significant as its practical knowledge systems. The concept of Lokasamgraha (well-being of all) extends moral consideration beyond the human community to all living beings and to the natural systems that sustain them. The practice of worshipping specific tree species — Neem, Tulsi, Peepal — encodes ecological knowledge in religious form, ensuring that communities maintain their relationship with ecologically important species through cultural motivation when purely rational economic considerations might not suffice. And the Bhagavad Gita's teaching on non-attached action — performing one's duty without excessive identification with outcomes — provides a psychological framework for engaged ecological citizenship that avoids both the anxiety of outcome-attachment and the passivity of fatalism.

7. IKS AND GENERATION Z: THE ALIGNMENT OF ANCIENT WISDOM AND CONTEMPORARY LEARNING :

7.1 Institutional Infrastructure and Measurable Progress:

By 2026, NEP 2020's IKS integration mandate has produced a substantial and growing institutional infrastructure. The IKS Division under the Ministry of Education functions as the nodal point for curriculum development, teacher training, research facilitation, and international collaboration.

The Gyan Bharatam Mission, with its target of digitising one crore (ten million) manuscripts, represents the most ambitious manuscript preservation initiative in world history. Its nationwide surveys to locate ancient literature in academic institutions, museums, libraries, and private collections, combined with AI-OCR technology capable of recognising Devanagari, Tamil, Grantha, and Brahmi scripts, are creating a comprehensive digital archive of India's manuscript heritage that will be accessible to scholars and students globally. The Vedic Heritage Portal already offers access to over 550 hours of audio-visual content including more than 18,000 Vedic mantras with full textual transcriptions.

The Digital Manuscripts Library is a significant initiative by the National Mission for Manuscripts (NMM) aimed at preserving and making accessible India's rich manuscript heritage. The library will feature a searchable collection of valuable manuscripts, predominantly in Indian languages, and will serve as an aggregator of knowledge and digital contents from other digital library initiatives in India. It is expected to provide a gateway to Indian Digital Manuscripts Libraries across various disciplines, fostering creativity and easy access to human knowledge.

The National Mission for Manuscripts' Digital Manuscripts Library represents the first systematic effort to make India's manuscript heritage available through a Trusted Digital Repository compliant with international digital preservation standards. Its development of software accommodating the extraordinary diversity of Indian scripts, materials, and subjects reflects the technical sophistication required for the preservation of a heritage as diverse as India's. The TKDL's documentation of four lakh

traditional formulations provides both scholarly resource and legal protection, having successfully defended India's pharmacological heritage against international biopiracy in multiple patent challenges.

7.2 Challenges of Implementation:

The challenges facing NEP 2020's IKS integration mandate are substantial and must be addressed with the same seriousness as the mandate itself. The most fundamental challenge is the absence of formalized, standardised curricula for IKS subjects at all levels. Western pedagogical models have dominated Indian educational institutions for 150 years, creating institutional structures, assessment systems, and faculty development frameworks that have no ready-made place for IKS content. Developing appropriate assessment frameworks — moving from standardised tests toward project-based assessments, field work, oral examinations, and portfolio evaluations — requires not only pedagogical innovation but institutional courage, since it challenges assessment systems that all stakeholders (students, parents, employers) have come to rely on for quality signalling.

Teacher training represents both the most critical and the most challenging dimension of implementation. Research confirms that most faculty members, even those sympathetic to IKS principles, possess only surface-level knowledge of IKS content — insufficient for effective teaching. Developing the cadre of IKS scholars with both deep content knowledge and contemporary pedagogical skills to train this generation of teachers is itself a multi-year institutional project.

Linguistic barriers represent a structural challenge that curriculum and training reforms cannot fully address. The classical knowledge of IKS is encoded primarily in Sanskrit, Tamil, Pali, Prakrit, and regional classical languages whose mastery is declining in a higher education system dominated by English and Hindi. Translation alone is insufficient, since the subtle conceptual vocabulary of classical texts — including terms like Dharma, Rta, Brahman, Prakriti, Purusha, and hundreds of technical terms in Ayurveda, grammar, and philosophy — cannot always be rendered adequately in translation without losing essential meaning. Building the linguistic competence required for direct engagement with primary sources requires sustained investment in classical language education over decades.

8. GLOBAL RECOGNITION AND THE IKS RENAISSANCE OF 2025–2026 :

8.1 WHO ICD-11 and the Global Validation of AYUSH:

The inclusion of traditional medicine conditions in WHO's ICD-11 in the 2025 update stands as the most consequential international validation of Indian Knowledge Systems in recent history. By assigning specific diagnostic codes to Ayurvedic, Siddha, and Unani conditions, the WHO has formally integrated these systems into the global health policy infrastructure in a way that enables systematic evidence generation, facilitates insurance coverage and reimbursement, and creates accountability frameworks for traditional medicine practice. The data standardisation that ICD-11 inclusion enables will accelerate the evidence base for traditional Indian medicine in ways that were not previously possible, since clinical outcomes can now be tracked using internationally comparable coding.

The establishment of the International Research Institute of Ayurveda (IRIA) in Kerala in February 2026 signals a new phase of globally oriented Ayurvedic research. Its mandate to promote evidence-based research and attract international academic collaboration — with a Japanese university already committed to partnership — reflects the growing global interest in Ayurvedic medicine as a sophisticated medical tradition with important contributions to the prevention and management of non-communicable diseases. The convergence of this research infrastructure with the WHO TM Strategy 2025–2034's evidence base strengthening objective creates an institutional framework for Ayurvedic clinical research of the quality and scale required for global health policy influence.

8.2 Vasudhaiva Kutumbakam and India's Global Knowledge Leadership:

The concept of Vasudhaiva Kutumbakam — 'the world is one family', articulated in the Maha Upanishad and later in the Panchatantra — provided the philosophical theme for India's G20 Presidency in 2023 and its associated theme of 'One Earth, One Family, One Future'. This deliberate deployment of an IKS concept at the highest level of global diplomatic and economic discourse signals India's intention to exercise intellectual leadership in global affairs — not merely economic or military leadership — by bringing the resources of its civilisational heritage to bear on the challenges that all humanity shares.

This aspiration resonates with a growing international recognition that the globalisation paradigm built on assumptions of unlimited growth, consumption, and competition has reached its ecological limits, and that alternative frameworks for global cooperation — frameworks grounded in interconnectedness, mutual responsibility, and the intrinsic value of all life — are urgently required. IKS provides exactly such frameworks, not as abstract ideals but as practically tested principles that have sustained diverse communities across millennia. The challenge for Indian scholarship and policy is to make these frameworks accessible and credible to global audiences through rigorous research, effective communication, and demonstrated practical application.

9. SYNOPTIC OVERVIEW: IKS DOMAINS, HERITAGE, AND 2026 APPLICATIONS :

The following table summarises the principal IKS domains, their heritage contributions, and their specific applications and relevance in 2026 (Sharma et al. (2025). [59]):

Table 2: Summarises the principal IKS domains, their heritage contributions, and their specific applications and relevance in 2026

IKS Domain	Key Contributions & Heritage	2026 Applications & Relevance
Philosophy (Six Darshanas)	Nyaya (logic), Vaisheshika (atomism), Samkhya, Yoga, Mimamsa, Vedanta — comprehensive inquiry frameworks	Critical thinking pedagogy; AI ethics; interdisciplinary research methodologies
Mathematics & Astronomy	Zero (Brahmagupta, 628 CE); decimal system; trigonometry; Aryabhata's heliocentric model; gravity concept	Foundational to global computing; STEM curricula; space science heritage
Medicine (AYUSH)	Ayurveda, Siddha, Unani; Sushruta rhinoplasty (6th c. BCE); Charaka Samhita pharmacopoeia	WHO ICD-11 inclusion (2025); WHO TM Strategy 2025–2034; integrative oncology
Yoga & Pranayama	Patanjali's Ashtanga Yoga; Pranayama for cardiac regulation; Yoga Nidra	WHO-recognised; mental health crisis response; Gen Z well-being; global ₹60,000 cr wellness industry
Ecology & Sustainability	Johads, stepwells, sacred groves; panchagavya organic farming; Lokasamgraha ethics	SDG 2, 6, 11, 12, 13, 15 alignment; climate resilience; traditional water management revival
Ethics & Philosophy	Dharma, Karma, Ahimsa, Vasudhaiva Kutumbakam, Satya	UN SDG 16 & 17 alignment; G20 'One Earth, One Family' theme; global citizenship education
Education (Gurukula)	Holistic character + knowledge integration; mentorship; oral tradition; NEP 2020 inspiration	IKS Division, UGC training 15 lakh teachers; 32 IKS research centres; Academic Bank of Credits
Arts & Architecture	Natya Shastra (dance, music, theatre); Vastu Shastra; Rasa philosophy	UNESCO heritage recognition; cultural diplomacy; wellness architecture; creative economy
Digital Preservation	TKDL (4 lakh formulations); Gyan Bharatam Mission (1 crore manuscripts); Vedic Heritage Portal	AI-OCR for Devanagari/Tamil/Brahmi; NMM Digital Library; IP protection against biopiracy

10. FUTURE PROSPECTS: AI, YOUTH ENGAGEMENT, AND INTERNATIONAL COLLABORATION :

10.1 AI and IKS: Convergence of Ancient Wisdom and Emerging Technology:

The convergence of Artificial Intelligence technologies with Indian Knowledge Systems represents perhaps the most exciting and practically consequential development at the IKS frontier in 2026. AI is simultaneously a tool for IKS preservation (through OCR, natural language processing, and machine translation of classical texts), a vehicle for IKS dissemination (through personalised learning platforms, voice-enabled interfaces in Indian languages, and recommendation systems for traditional health practices), and an application domain for IKS principles (through AI ethics frameworks informed by Dharma and Ahimsa, precision medicine informed by Ayurvedic Prakriti theory, and ecological AI informed by traditional land management knowledge).

AI4Bharat is a pioneering initiative by IIT Madras that aims to advance artificial intelligence for Indian languages through open-source contributions. The lab focuses on transliteration, natural language understanding, generation, translation, automatic speech recognition, and speech synthesis. AI4Bharat is an IIT-Madras research lab building open-source AI for Indian languages, creating datasets, translation systems, speech models, and multilingual LLMs like IndicBERT and IndicTransv2, advancing inclusive language-AI infrastructure.

The AI4Bharat initiative, developed by IIT Madras and its partners, develops AI tools specifically tailored to Indian languages and cultural contexts — including machine translation, speech recognition, and sentiment analysis for Indian languages — addressing the linguistic accessibility barrier that has historically limited IKS's reach beyond classical language specialists. Machine learning algorithms are enhancing Ayurvedic treatment recommendations by identifying patterns in large datasets of patient outcomes that individual practitioners could not access. AI-powered platforms are supporting precision farming that applies traditional ecological knowledge — crop rotation principles, companion planting relationships, seasonal cultivation wisdom — at scale and with real-time adaptation to local conditions. The National Mission for Manuscripts' AI-OCR development for Devanagari, Tamil, Grantha, and Brahmi scripts uses deep learning models and natural language processing to convert handwritten manuscript images into searchable, editable digital text — a capability that unlocks the content of millions of physically preserved but intellectually inaccessible manuscripts for scholarship. The voice-enabled interface development that allows artisans with limited literacy to access platforms, training modules, and market services in their own languages — documented in a 2026 PIB report — extends IKS benefits to communities that formal educational infrastructure has historically under-served.

10.2 Youth Engagement and the National Youth Policy 2025:

The National Youth Policy 2025 provides the institutional framework for engaging India's largest demographic cohort — over 600 million people below the age of 25 — with IKS as a living tradition of innovation and problem-solving rather than as a static cultural inheritance. Its emphasis on youth-led enterprise in emerging sectors including green industries, AI, and healthcare creates natural intersections with IKS domains: Ayurvedic health technology, traditional ecological knowledge-based climate adaptation, and sustainable agriculture represent high-growth sectors in which IKS knowledge is a competitive advantage.

The policy's integration of climate literacy and environmental education into youth engagement platforms aligns with IKS ecological wisdom in ways that can make traditional knowledge directly relevant to the concerns that most motivate Generation Z civic engagement. Young people who understand the science of climate change through the lens of IKS concepts — Lokasamgraha, the sanctity of rivers and forests, traditional water harvesting — will be better equipped to act as effective ecological citizens than those who understand climate change purely through Western scientific frameworks without the cultural and motivational resources that IKS provides.

10.3 The Viśvaguru Vision and India's Civilisational Contribution:

The vision of India as Viśvaguru — teacher to the world — is not a grandiose aspiration but a historically grounded recognition that India has been, for most of its documented history, one of the primary sources of the knowledge that has sustained and enriched global civilisation. The decimal number system that made modern mathematics possible, the medical traditions that the WHO is now formally integrating into global health policy, the philosophical frameworks for understanding

consciousness that neuroscience is beginning to validate, the ecological wisdom that sustainable development practice is rediscovering — all of these represent contributions that India has already made to the world, and whose full potential has not yet been realised in a global context that is now, more than at any previous point in modern history, open to receiving them.

Realising this potential requires sustained investment in IKS research, documentation, dissemination, and application; rigorous scholarly standards that distinguish genuine IKS knowledge from romantic or commercially motivated distortion; international partnerships that bring IKS into productive dialogue with the best of contemporary science and scholarship; and educational systems that equip new generations with both the intellectual depth to understand IKS in its full complexity and the creativity to apply it to challenges that the ancient traditions could not have imagined.

11. CONCLUSION :

This paper has built its case for the importance of the Indian Knowledge System in 2026 over nine substantive sections. The Indian Knowledge System is important beyond being simply a matter of cultural heritage in 2026. It can be an intellectual and practical resource that is extremely relevant and significant in contemporary society. The evidence collected is convincing and shows complexity.

In 2026, the Indian Knowledge System is important because contemporary education is divided and lacks character and ethics. Contemporary education also lacks a relationship to the ecological realm. Contemporary education is inconsistent and fragmented. In contrast, the Indian Knowledge System's integrated Jnan-Vigyan-Jeevan Darshan provides a framework that is philosophically coherent and can be integrated into contemporary education as a substitute. The Indian Knowledge System is also important because ancient Indian mathematicians and astronomers contributed to the world the concepts of zero, the decimal system, heliocentric astronomy, and the first systematic theory of gravity. These contributions remain undervalued historically and intellectually. The Indian Knowledge System is important also because AYUSH, the Indian medical traditions, offer real contributions to the WHO endorsed and validated Indian Classification of Diseases, of affordable, preventive, and person-centred healthcare around the world. Additionally, traditional Indian ecological knowledge of water harvesting, sacred groves, organic farming, and conserving biodiversity, can help meet the SDGs. Finally, the Indian Knowledge System can fulfil the needs of Generation Z, who seek experiential, values- and stories-based, and contemplative education. The Indian Knowledge System can offer such education, as it has for the past five millennia.

Institutional momentum is gaining and it is for good reason. Initiatives and policies at play today reflect the scope, range, and depth of NEP 2020, the establishment of 32 IKS research centres, training millions of teachers, the Gyan Bharatam Mission, the digitalisation of 10 million manuscripts, the WHO's ICD-11 validation, the AI4Bharat initiative, and the international research initiatives of IRIA. Joining this momentum is a call and challenge to current academics, practitioners, scholars, policy makers, and educators to demonstrate the same intellectual and cultural agility and grounded creativity, as well as the practical applicability and drive, that this momentum warrants and demands.

The ancient sages planted the trees of knowledge hoping that future generations would benefit from the shade. The IKS integration project of 2026 exemplifies this. It seeks to invest and provide the modern world with the great storehouse of knowledge from the past 5000 years of Indian civilization. In a world that yearns for knowledge to find its way out from the self-inflicted crises, India's knowledge systems do not hark back to the past but lay the path for the future.

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