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Reviving the Gurukul Spirit in Modern Classrooms: Integrating Indian Knowledge Systems in Schools Under NEP 2020

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Abstract:
India's National Education Policy (NEP) 2020 marks a significant turning point in the country's approach to school education by directing the formal integration of Indian Knowledge Systems (IKS) across all levels of the curriculum. The ways in which the Gurukul tradition's foundational philosophy of holistic development, experiential learning, and deep mentorship can be meaningfully revived within modern, digitally mediated schooling are explored. This study identifies core areas of IKS that carry high contemporary relevance: ancient mathematical and astronomy (Ganita and Jyotisha), traditional sciences, medicine and environmental knowledge (Vijnana), classical literature and philosophy (Sahitya and Darshana), and holistic wellness practices including Yoga and Ayurveda. It is argued that these are not merely historical curiosities but living intellectual frameworks with direct pedagogical value. This approach moves away from treating IKS as a standalone historical subject and instead embeds it as an active, cross-curricular competency. This study further explores how emerging technologies, including Virtual Reality, hybrid learning platforms, and AI-driven language tools, can amplify rather than undermine the relational and experiential values at the heart of the Gurukul philosophy. Significant implementation challenges are also addressed, including the risk of superficial tokenism, the need for rethinking the school education, teacher training programmes, and the imperative to maintain academic objectivity and cultural inclusivity across India's diverse regional and tribal traditions. The study concludes with implementation guidelines to the various stakeholders, state and central bodies like NCERT, State Education Boards, and Teacher Education Institutions. It is argued that the integration of IKS represents not a retreat into the past, but a strategically grounded path toward a more balanced, rooted, and future-ready education system.

Keywords: Indian Knowledge Systems (IKS), NEP 2020, Gurukul Philosophy, Curriculum Integration, Digital Education, Holistic Learning, Teacher Training, Experiential Learning, Decolonisation of Education.

INTRODUCTION

The word 'Gurukul' often evokes imagery of a serene forest setting, where students sit at the feet of a wise teacher, memorizing ancient texts. While that image captures something true, it misses the deeper meaning. A Gurukul was not just a place. It was a way of teaching, one that focused on the complete

development of a student, building not just knowledge, but character, health, and a deep connection with nature and community (Shanwal, V. 2024). India's National Education Policy (NEP) 2020 similarly calls for integrating Indian Knowledge Systems (IKS) to create holistic, culturally rooted, and decolonized education, especially in higher education (Adhikari, T. 2025). NEP 2020 has recognised this by directing schools and universities to integrate Indian Knowledge Systems into their curricula (Chapter 4.27). The policy frames this as an important move toward a more balanced and culturally rooted education, one that moves away from purely Western academic frameworks inherited from the colonial era.

However, this raises an important and honest question: how can an educational philosophy built on face-to-face mentorship, hands-on experience, and closeness to nature actually work in today's schools, which are increasingly shaped by screens, algorithms, and standardized examination? This study explores that question seriously, offering both a vision and a practical roadmap.

THE CORE AREAS OF INDIAN KNOWLEDGE SYSTEMS

Before discussing how IKS can be taught in schools, it is important to clearly define what IKS actually includes. It is far more than mythology or history. The following are the key branches that have the most practical value in modern education:

Ancient Mathematics and Astronomy (Ganita and Jyotisha):

Ancient Indian scholars made remarkable contributions to Mathematics. Contributions include zero, decimal place value, algebra, trigonometry, calculus-like methods, planetary models, eclipse prediction and precise calendars, often rooted in texts like Aryabhatiya and Surya Siddhanta (Khan et al., 2024). The concept of zero changed the entire history of human thought and made modern computing possible. Vedic mathematics offers a collection of mental calculation techniques that can dramatically speed up arithmetic. Meanwhile, ancient astronomical texts show that Indian scholars had sophisticated systems for tracking planetary movements long before modern telescopes. Perhaps most fascinatingly, the Sanskrit scholar Pingala, in his work on poetry metre (Chhandasastra), developed a binary number system centuries before European mathematicians, the very same binary logic that underlies all modern computers. Jyotisha (astronomy) developed models of planetary motion, eclipses, calendars, solstices, and equinoxes, as in texts like Surya Siddhanta and Aryabhatiya (Mandavkar, P. 2023).

Science, Medicine and Environment (Vijnana):

Ancient Indian texts contain detailed knowledge about environmental conservation. The Bhumisukta, a hymn from the Atharva Veda, expresses a philosophy of living in balance with the earth. Traditional water management systems, such as stepwells (Baolis) and check dams (Johads), were sophisticated engineering solutions that many communities still rely on today. Ayurveda, India's traditional system of medicine, offers a holistic approach to health that focuses on prevention, seasonal diet, and lifestyle balance, ideas that are increasingly supported by modern medical research (Khan et al., 2024).

Classical Literature and Philosophy (Sahitya and Darshana):

IKS consistently includes philosophy, ethics, linguistics, arts and literature: Vedas, Upanishads, Vedanta, Nyaya, Paninian grammar, classical arts and logic (Nyaya) are named as core streams shaping reasoning, values, and expressive culture (Jadon et al., 2025). The Panchatantra, a collection of ancient Indian fables, has been used for centuries to teach ethics, strategy, and moral reasoning through storytelling (Das, R. K. 2024). It has influenced literary traditions around the world. The Upanishadic tradition of structured questioning and debate (known as Vada Vidhi or Prashna) is a method of developing logical thinking

through dialogue, not unlike the Socratic method used in Western philosophy classrooms (Amani, S. 2024). These traditions offer powerful tools for building critical thinking and empathy in students.

HOW IKS CAN BE INTEGRATED INTO SCHOOL SUBJECTS

The integration of IKS should not mean adding a separate subject called "Ancient Indian Knowledge". That approach tends to turn rich ideas into isolated historical facts to be memorised. Instead, it is expected that IKS content be woven directly into existing school subjects, making it an active and practical part of how students learn. The table below outlines a suggested cross-curricular integration that can be considered as an example:

School Subjects	IKS Content Integration	Learning Outcome
Mathematics & Computer Science	Vedic calculation techniques and Pingala's binary logic in Sanskrit prosody	Stronger mental arithmetic, computational thinking, and early coding logic
Environmental Science (EVS)	Traditional rainwater harvesting systems (Baolis, Johads) and Vedic conservation ethics	Ecological awareness, sustainable thinking, and respect for local engineering traditions
Languages & Humanities	Panchatantra storytelling for ethics; Upanishadic dialogue method (Prashna) for debate	Critical thinking, empathy, moral reasoning, and philosophical inquiry
Physical Education & Health	Yoga, Pranayama breathing practices, and Ayurvedic seasonal dietary guidelines (Ritucharya)	Mental health awareness, physical fitness, and preventative health habits

This integration must go beyond surface-level references (Usha et al., 2024). For example, in a Mathematics classroom, students should not just be told that India invented zero. They should be taught to use Vedic calculation methods to solve real problems, so they experience the practical power of these ideas firsthand. Similarly, in an EVS class, students should not just read about Johads. They should study how they work, why they were built, and how similar principles could address today's water crises.

CAN TECHNOLOGY STRENGTHEN THE GURUKUL SPIRIT?

At first glance, it may seem that digital technology and the Gurukul philosophy are opposites. One is fast, remote, and screen-based; the other is slow, personal, and rooted in physical experience. However, when used thoughtfully, technology can actually support and even strengthen the core values of IKS education.

Immersive Technologies: Bringing History to Life:

Virtual Reality (VR) and Augmented Reality (AR) can give students experiences that would otherwise be impossible. Imagine a student in a rural school in West Bengal being able to 'walk through' the Jantar Mantar architectural astronomical observatory in New Delhi, or virtually explore the water channels of a centuries-old Baoli. These technologies can make abstract heritage tangible and exciting (Innocente et al., 2023). Instead of reading a paragraph in a textbook about ancient Indian astronomy, students can stand

inside a digital recreation of an ancient observatory and understand how it worked. The development of such immersive educational content must be included in NCERT's digital resource planning.

Digital Learning Platforms and the Mentor-Student Bond:

One of the most important elements of the Gurukul philosophy is the deep personal relationship between teacher and student (Guru-Shishya Parampara). Critics often argue that digital learning weakens this bond (Puspitasari, E. 2024). However, hybrid learning platforms offer an opportunity to protect and even deepen it. If automated tools handle routine tasks like grading multiple-choice tests and tracking attendance, teachers are freed up to spend more time in genuine mentorship giving individual feedback, having personal conversations with students, and identifying each child's unique strengths and challenges. Technology, used correctly, can give teachers more time to be teachers.

Preserving Classical Languages with AI:

Many classical Indian languages, including Sanskrit, Pali, and Tamil, are rich in knowledge but increasingly inaccessible to young people. Artificial Intelligence tools, particularly those involving natural language processing and speech recognition, can help preserve and teach these languages in engaging ways (Wang, L. 2024). AI tutors can help students practise Sanskrit pronunciation, analyse the metre of ancient poetry, or even translate classical texts in real time. These tools do not replace the human teacher but can serve as powerful learning aids that bring ancient languages into the digital age.

CHALLENGES THAT MUST BE ADDRESSED

It would be irresponsible to propose a major curriculum change without addressing the real difficulties that come with it. The following challenges are significant and must be taken seriously.

The Risk of Tokenism:

The greatest danger in this entire process is superficiality. There is a real risk that IKS integration will end up as mere decoration, a few Sanskrit shlokas in the morning assembly, a chapter on ancient India in the history textbook, or a Yoga class on International Yoga Day. This kind of surface-level approach does not capture the analytical depth and intellectual richness of Indian knowledge traditions. It is suggested that all IKS integration be evaluated not by how much content is added, but by whether students are actually learning to think differently, to reason more deeply, and to connect knowledge across disciplines. Implementation of IKS still privileges Western knowledge and treats it as inferior or add-ons, blocking meaningful integration (Mandavkar, 2023)

Teacher Training: The Most Urgent Need:

Across countries, research on integrating IKS content into education highlights that curriculum reform fails without deliberate, well-designed teacher preparation and an inclusive, plural understanding of "indigenous knowledge"(Ram et al., 2024). Currently, there is a significant shortage of educators who are trained both in modern pedagogy and in authentic IKS content (Sharma, 2024). A teacher cannot be expected to meaningfully teach Vedic mathematics or Ayurvedic health principles without proper preparation. By restructuring the four-year integrated B.Ed. programme, training frameworks can successfully integrate specialized modules focused on Indian Knowledge Systems (IKS) and ancient practices alongside their hands-on classroom applications. Short-term refresher courses should also be made available to existing teachers through state education departments.

Inclusivity and Academic Objectivity:

India is an extraordinarily diverse country. It has hundreds of regional languages, tribal knowledge traditions, folk cultures, and philosophical schools that do not always fit neatly into a single narrative

about "Indian Knowledge"(Behera, 2024). Any curriculum that reduces IKS to one dominant tradition risks excluding the experiences and contributions of thousands of Indians, particularly those from minority communities and indigenous tribal groups (Karunamay, 2023). It must be strongly followed that IKS integration be approached as a strictly academic and scientifically validated exercise, not as an ideological or religious implication. The curriculum must actively include tribal ecological knowledge, regional mathematical traditions, and diverse philosophical schools alongside the more widely known Vedic and Sanskrit-based traditions.

CONCLUSION

The integration of Indian Knowledge Systems into school education, as directed by NEP 2020, is not about looking backwards. It is about building a smarter, more balanced, and more rooted future (Gopalkrishnan, 2023). The analytical methods, scientific traditions, and philosophical frameworks found in IKS are not relics of the past. They are living tools that, when integrated carefully into modern classrooms, can help students develop exactly the kind of thinking skills the 21st century demands- creativity, critical reasoning, ecological awareness, and personal well-being (Maheshkumar, 2023). This vision will remain on paper unless it is supported by serious institutional action. The following implementation guidelines are proposed to guide the execution workflows of the various stakeholders, including the NCERT IKS Division, State Education Boards, and Teacher Education Institutions:

NCERT should commission peer-reviewed, academically rigorous IKS-integrated textbooks for all grade levels, ensuring content is scientifically validated and free from ideological bias.

- A national open-source digital repository of IKS educational resources, including VR experiences, AI language tools, and interactive lesson plans, should be developed and made freely available to all schools.
- The teacher education curriculum should be restructured to include substantial training in IKS content and pedagogy, with specific modules on Vedic mathematics, classical languages, traditional sciences, and Yoga.
- Examination reforms should be undertaken so that assessments reward analytical thinking and cross-disciplinary application of IKS, rather than rote memorisation of names and dates.
- A national advisory committee, including scholars from diverse regional, tribal, and linguistic traditions, should oversee IKS curriculum development to ensure true inclusivity.

The Gurukul did not produce great thinkers because it taught ancient texts. It produced great thinkers because it taught students how to think, how to question, how to connect knowledge with life, and how to live in balance with the world around them. That spirit, more than any specific content, is what modern Indian education needs most. The tools have changed. The goal has not.

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