



SYNERGIZING ANCIENT INDIAN WISDOM AND MODERN EDUCATIONAL TOOLS: PERSPECTIVES IN THE LIGHT OF THE NATIONAL EDUCATION POLICY (NEP) 2020

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Abstract

This paper attempts to elucidate the Indian Knowledge System (IKS) and how it can be preserved, spread, and utilized with the help of modern technologies effectively and efficiently. ‘Indian Knowledge System’ or the ‘Bhartiya Gyan Parampara’ is the knowledge system that our ancestors have accumulated over the years, which includes our heritage and the Indian way of doing things. The Indian Knowledge System consists of literature, philosophy, mathematics, astronomy, medicine, yoga, etc. IKS consists of Gyan, Vigyan, and Jivan Darshan, which have evolved over the generations out of experience, observations, experimentation, and analysis. It is profound and vast, much of which has been inherited orally, but some of it is recorded to form a collection of literary sources that preserve the wisdom of centuries. Oral tradition proofs are present in our folklore, which has been transmitted through the generations in various art forms. The National Education Policy (NEP) 2020 also recognizes the Indian Knowledge System (IKS), where it is mandatory to have IKS as one of the subjects of study in higher education institutions, schools and colleges and to integrate the Indian Knowledge System into the curriculum across the spectrum of education. These technologies also known as Information and Communication Technologies can be used to create easily available traditional knowledge education systems and will also promote cost-effective dissemination of traditional knowledge.

IndexTerms: Indian Knowledge System, Modern Technologies, and ICT (Information and Communication Technology)

Introduction

Indian Knowledge System or the ‘Bhāratīya Jñāna Paramparā’ (*Indian Knowledge Systems*, 2024) is the indigenous system of knowledge of India. Indian Knowledge System is the bonding between one’s own country and the conscious awareness of one’s role and responsibilities in changing the world. IKS which dates back to the

ancient times which consists of rich knowledge base covering each and every aspect of life. In this education system the knowledge needs to be connected to the real-life skills. It consists of 14 'Vidya' and 64 'Kalayein'. 'Kalayein' refers to the life skills which include painting, scent making, garland making, pottery, etc. The 14 'Vidya' includes Veda, Vedanga, Itihas, Darshan, Nyaya, etc. NEP (National Education Policy) 2020, is thrusting to explore the potential of IKS. NEP has come as a time renaissance for IKS. In this system there were 'Gurukuls' which provided holistic development, community life, spirituality and ethics. It is necessary to conserve and disseminate IKS because of the rich cultural heritage, scientific and practical knowledge, educational values, economic and social benefit, etc.

IKS can be preserved and disseminated with the help of modern technologies. These modern technologies include technologies related to Communication and Navigation, Internet and Web Technologies (High-speed internet, cloud computing, and web services.), Mobile Technology (Smartphones, tablets, and mobile applications.), Artificial Intelligence (Machine learning, natural language processing), Robotics and Automation (Automated production lines and intelligent robots), Educational technology (LMS, Online Learning Platforms, Collaborative tools), etc.

Conservation and Dissemination of the Indian Knowledge System (IKS)

The conservation and dissemination of the Indian Knowledge System (IKS) through technology can be approached through several strategic initiatives, as highlighted in recent discussions and policy frameworks which is listed as follows:

1) Integration into Education

Curriculum Development - The National Education Policy (NEP) 2020 emphasizes incorporating IKS into school and higher education curricula. This includes developing specific courses that cover a wide range of subjects, such as mathematics, astronomy, philosophy, and traditional practices like Ayurveda and organic farming. The introduction of IKS electives and mandatory credit components in various disciplines aims to instil traditional knowledge in students across fields.

Digital Learning Platforms - Existing IKS courses are being concurred with the digital learning platforms like SWAYAM and NPTEL. This allows for broader access to IKS education, making it available to learners from various geographies and backgrounds. 32 IKS centres have been established across India to speed up original research, education and dissemination of IKS. Over 5,200 internships on IKS have been offered to students (*Indian Knowledge System - Course*, n.d.). IGNCA (Indira Gandhi National Centre for the Arts) offers postgraduate diploma courses and research programs on arts, culture and traditional knowledge systems.

2) Research and Development

Interdisciplinary Research - The establishment of IKS centres aims to foster original research and interdisciplinary studies that integrate IKS with contemporary knowledge systems. This approach is designed to address current societal challenges while promoting the rich heritage of Indian knowledge. Institutions like the Centre for Indian Knowledge Systems at IIT Guwahati focus on interdisciplinary research that documents and builds upon traditional knowledge.

Textbook Development - Recent initiatives have led to the creation of textbooks focused on IKS, which serve as academic resources for engineering and science students. These materials bridge traditional knowledge with modern educational practices, encouraging a holistic understanding of various subjects.

There are about 75 high-end interdisciplinary research projects which are in their developmental stage which focusses on areas like ancient metallurgy, management of the water, town planning, ancient chemistry which is also known as 'rasayanshastra' (Indian Knowledge Systems (IKS) Division, 2025).

3) Community Engagement and Collaboration

Local Knowledge Documentation - States and Union Territories are invigorated to document their native cultures, arts, and traditions to create tailored IKS courses. This localized approach ensures that the unique aspects of each region are preserved and taught.

International Collaborations - The globalized history of India presents opportunities for international collaborations in designing multidisciplinary courses that include IKS. This can attract both Indian and foreign students, enhancing the internationalization of education in India.

Public Engagement - Initiatives like "Janbhagidari" aim to involve the community in the development and propagation of IKS (IGNCA, n.d.; The Telegraph India, 2022), ensuring that the knowledge system is not only preserved but also actively used and appreciated by society. IGNCA (Indira Gandhi National Centre for the Arts) offers postgraduate diploma courses and research programs on arts, culture and traditional knowledge systems. Public engagement through workshops, conferences and digital platforms is a key strategy, ensuring wide accessibility and relevance of IKS in contemporary society (IGNCA, n.d.; Mandavkar, 2023).

4) Teacher Training and Recruitment

Specialized Training Programs - To enhance the quality of IKS education, specialized teacher training centres are being established. These centres will focus on training educators in IKS topics, ensuring they are well-equipped to teach and inspire students.

Recruitment of IKS Faculty - The introduction of IKS as a subject in entrance exams for teacher recruitment aims to create a specialized cadre of faculty who can effectively deliver IKS education. Around 50 faculty development programs, workshops, and national/international conferences have been conducted to build academic capacity in IKS.

5) Digitization and Manuscript preservation

The National Mission for Manuscripts (NMM) has catalogued over 1 million manuscripts, many of which are being digitized to preserve India's manuscript heritage. The Vedic Heritage Portal, launched in March 2023, offers access to over 550 hours of audio-visual content and more than 18000 Vedic mantras, along with transcriptions of ancient texts. The traditional Knowledge Digital Library (TKDL) documents traditional medicinal knowledge (Ayurveda, Unani, Siddha, Yoga) in multiple languages and is accessible to international patent offices, helping prevent misappropriation (Jaiswal & Singh, 2022).

6) Research and Documentation in Traditional Medicine

The Central Council for Research in Ayurvedic Sciences (CCRAS) runs the tribal Health Care Research Programme (THCRP), documenting folk medicines and traditional practices across 16 peripheral institutes in India. The National Medicinal Plants Board (NMPB) has developed a database with information on over 7000 medicinal plant species, accessible to public. The North Eastern Institute of Folk Medicine (NEIFM) was established to survey, document, and validate folk medicine practices in the North Eastern Region (Srikanth et al., 2017).

7) Agricultural Knowledge Documentation

By leveraging technology and integrating IKS into educational frameworks, India can conserve its rich heritage while making it accessible and relevant to contemporary society. This multifaceted approach not only preserves traditional knowledge but also empowers future generations to utilize it in innovative ways. There is a project in Tamil Nadu which has documented 505 indigenous traditional agricultural practices from 16 districts, including 383 scientifically validated practices in crop protection, farm tools, seed storage and ethno-veterinary methods (Das et al., 2003).

Digital Platforms for Disseminating of Indian Knowledge Systems

Several digital platforms are effectively promoting and disseminating Indian Knowledge Systems (IKS). Here are some of the best options:

1. **SWAYAM:** This is a government initiative offering Massive Open Online Courses (MOOCs) that include a range of subjects related to IKS. For instance, courses like "Indian Knowledge System - Online Courses" provide comprehensive insights into various aspects of IKS, aiming to educate teachers and students about India's rich heritage and its scientific approaches. The platform is aligned with the National Education Policy (NEP) 2020, which emphasizes the integration of IKS into modern educational practices.
2. **UTIKS Portal:** Launched by the Indian Council for Cultural Relations (ICCR), this platform focuses on short courses related to Traditional Indian Knowledge. It aims to provide accessible and authentic information about Indian culture, covering various subjects such as architecture, cuisine, and classical texts. The UTIKS portal is designed for both domestic and international audiences, making it a valuable resource for anyone interested in deepening their apprehension of Indian culture (*About Utiks | Official Website of Indian Council for Cultural Relations, Government of India*, n.d.).
3. **IKS India:** This platform serves as a hub for interdisciplinary research and the preservation of IKS. It promotes various aspects of Indian knowledge across fields like arts, literature, agriculture, and technology. The initiative is backed by the Ministry of Education and aims to engage scholars and the public in exploring and disseminating IKS.
4. **National Digital Library of India (NDLI):** While not exclusively focused on IKS, NDLI grants access to a large collection of resources, including texts on Indian philosophy, science, and traditional practices. This digital library can be a valuable tool for researchers and students looking to explore IKS in depth.

5. **YouTube and Social Media Platforms:** Various educational channels and organizations utilize platforms like YouTube to share lectures, documentaries, and discussions on IKS. These platforms allow for a broader reach and engagement with diverse audiences, making IKS accessible to a global community. By leveraging these platforms, the Indian Knowledge System can be effectively conserved and spread, ensuring that its rich heritage continues to inspire and educate future generations.

Benefits of Integrating IKS into the Educational Curriculum

Integrating Indian Knowledge Systems (IKS) into the current educational curriculum offers numerous benefits that can enhance the overall learning experience and contribute to personal and societal development. Here are some key advantages:

1. Holistic Education

- **Comprehensive Understanding:** IKS promotes a holistic view of knowledge, encouraging students to appreciate the interconnectedness of various disciplines. This integration fosters critical thinking and creativity, enabling learners to approach problems from multiple perspectives and develop well-rounded solutions.
- **Value-Based Learning:** IKS is rooted in values such as compassion, respect for nature, and the pursuit of truth. Incorporating these values into education nurtures ethical leadership and social responsibility among students, contributing to the development of a more compassionate society.

2. Cultural Pride and Identity

- **Connection to Heritage:** Integrating IKS helps students connect with their cultural heritage, instilling pride and appreciation for their roots. Learning about ancient texts, traditions, and practices fosters a sense of belonging and identity, empowering students to become stewards of their cultural legacy.
- **Diversity Appreciation:** Getting to know IKS allows learners in orders to investigate the rich diversity of India's cultural practices and philosophies, promoting respect and understanding among different communities and promoting a spirit of inclusivity.

3. Addressing Modern Challenges

- **Sustainable Solutions:** IKS offers valuable apprehensions in the sustainable practices, particularly in areas like agriculture, healthcare, and environmental conservation. By integrating conventional knowledge with contemporary science, students can contribute to innovative solutions for pressing global challenges such as climate change and public health.
- **Cognitive Benefits:** Engaging with IKS practices, such as yoga and meditation, has been shown to enhance cognitive function, emotional well-being, and resilience among learners. These practices can improve focus and reduce stress, thereby enhancing the overall learning experience.

4. Interdisciplinary Learning

- **Bridging Traditional and Modern Knowledge:** The integration of IKS encourages a multidisciplinary approach to education, blurring the boundaries between traditional and modern knowledge systems. This synergy enriches the educational landscape, allowing students to draw on ancient wisdom while engaging with contemporary issues.
- **Innovative Pedagogy:** The pedagogical methods associated with IKS emphasize experiential learning, critical thinking, and practical skills. This approach contrasts with rote memorization and encourages active engagement, making learning more relevant and enjoyable for students.

5. Global Perspective

- **Universal Values:** The principles embedded in IKS, such as "Vasudhaiva Kutumbakam" (the world is one family), promote a sense of global citizenship and interconnectedness. This perspective is crucial in today's world, where collaboration and understanding across cultures are essential for addressing global challenges.
- **Contribution to Global Knowledge:** By integrating IKS into education, India can position itself as a knowledge hub, sharing its rich heritage and insights with the world. This contribution can enhance India's role in global discussions on sustainability, ethics, and cultural diversity.

The assimilation of Indian Knowledge Systems into the educational curriculum offers a multitude of benefits, from fostering holistic and value-based education to addressing contemporary challenges through sustainable practices. This approach not only enriches the learning experience but also empowers students to become responsible global citizens who appreciate their cultural heritage while contributing to a better

Role of AI in Conservation and Preservation of IKS

Artificial Intelligence (AI) integrated with the Indian Knowledge System (IKS) can significantly enhance the preservation, dissemination, and application of traditional knowledge. Here are some vital roles that AI can play in this context:

1. Knowledge Preservation and Documentation

Digitization of Texts: AI technologies can facilitate the digitization and preservation of ancient texts, manuscripts, and oral traditions that constitute IKS. Natural language processing (NLP) can be used to transcribe and translate these documents, making them comprehensible to a broader audience.

Semantic Analysis: AI can analyse the content of traditional texts to extract meaningful patterns and insights, helping researchers understand the underlying principles of IKS. This can aid in the preservation of knowledge that might otherwise be lost.

2. Enhancing Research and Interdisciplinary Studies

Interdisciplinary Research: AI can support interdisciplinary research initiatives by identifying connections between IKS and modern scientific fields. For instance, AI algorithms can analyse data from various disciplines,

such as agriculture, medicine, and environmental science, to find innovative solutions rooted in traditional practices.

Data Analysis and Modelling: Machine learning algorithms can be used to model traditional practices and their outcomes, enabling researchers to validate and enhance ancient knowledge with contemporary scientific methods. This can lead to new insights and applications in fields like sustainable agriculture and holistic health.

3. Educational Technology and Learning

Personalized Learning: AI can create personalized learning experiences for students studying IKS by adapting content to discrete learning styles and momentum. This can enhance engagement and retention of traditional knowledge among learners.

Interactive Learning Tools: AI-driven educational tools, such as chatbots and virtual assistants, can provide students with instant access to information about IKS, facilitating a deeper understanding of concepts and practices.

4. Promoting Cultural Awareness

Cultural Heritage Applications: AI can be utilized in applications that promote awareness of India's cultural heritage, such as virtual reality experiences that allow users to explore historical sites and traditional practices. This can foster a greater cognizance for IKS among younger generations and global audiences.

Language Processing: AI can help preserve and promote regional languages and dialects associated with IKS. By developing language models that support these languages, AI can facilitate the documentation and teaching of traditional knowledge in its native context.

5. Addressing Contemporary Challenges

Sustainable Practices: AI can analyse traditional agricultural practices and their sustainability, providing insights that can help modern farmers adopt eco-friendly techniques. This integration can lead to improved agricultural productivity while preserving biodiversity.

Health and Medicine: AI can assist in researching traditional medicinal practices, analysing their efficacy, and integrating them with modern healthcare solutions. This can lead to a more holistic approach to health that respects both traditional and contemporary medical knowledge. The IKS Division is collaborating with CSIR-Traditional Knowledge Digital Library (CSIR-TKDL) to promote research and dissemination of IKS. CSIR-TKDL is a repository of India's traditional knowledge, especially in the field of medicine (Sattigeri, 2024).

Challenges in Integrating IKS with modern Educational Technology

1. Curriculum Development and Standardization

Lack of Standardized Curriculum - While the New Education Policy (NEP) 2020 promotes the inclusion of IKS in education, there is a need for a standardized curriculum that effectively integrates IKS with modern subjects. The development of textbooks and course materials that bridge traditional and contemporary knowledge is still in progress, which can lead to inconsistencies in how IKS is taught across institutions.

Interdisciplinary Approach - IKS encompasses diverse fields such as philosophy, science, and arts. Creating interdisciplinary courses that effectively combine these areas with modern educational practices poses a significant challenge. Institutions need to collaborate to develop a cohesive framework that addresses this complexity.

2. Teacher Training and Expertise

Need for Specialized Faculty - There is a shortage of educators who are well-versed in IKS and can effectively teach it alongside modern subjects. Training programs for teachers need to be established to equip them with the necessary knowledge and skills to deliver IKS content effectively.

Recruitment Challenges - The introduction of IKS as a subject in teacher recruitment exams, like UGC-NET, aims to create a specialized cadre of faculty. However, the implementation of such measures may take time, leading to a lag in qualified educators available to teach IKS.

3. Technological Infrastructure

Access and Digital Divide - While educational technology can facilitate the dissemination of IKS, disparities in access to technology can hinder its effectiveness. Students in rural or underprivileged areas may lack the necessary resources to engage with digital platforms, limiting their exposure to IKS.

Integration with Existing Systems - Integrating IKS into existing educational technology platforms requires significant investment in infrastructure and training. Ensuring that these systems can accommodate new content related to IKS while maintaining quality and accessibility is a complex task.

4. Cultural and Institutional Resistance

Resistance to Change - There may be institutional resistance to incorporating IKS into the mainstream educational framework, particularly in institutions that have historically followed Western educational models. Overcoming this resistance requires a cultural shift within educational institutions to value and prioritize traditional knowledge.

Perception of Relevance - Some educators and students may perceive IKS as less relevant compared to modern scientific approaches. Addressing this perception and demonstrating the practical applications of IKS in contemporary contexts is crucial for its acceptance.

5. Research and Documentation

Need for Comprehensive Research - There is a need for more interdisciplinary research that documents and analyses IKS to establish its relevance in modern contexts. This research is essential for developing informed curricula and teaching methodologies that integrate IKS effectively.

Documentation of Traditional Knowledge - Ensuring that traditional knowledge is accurately documented and preserved is vital. This involves not only academic research but also community engagement to capture local knowledge systems that may not be formally recognized.

Conclusion

The integration of Indian Knowledge Systems with modern educational technology faces several challenges, including curriculum development, teacher training, technological access, cultural resistance, and the need for comprehensive research. Addressing these challenges requires a collaborative effort among educational institutions, policymakers, and communities to create a framework that values and effectively incorporates IKS into contemporary education.

The role of technology in the Indian Knowledge System is multifaceted, encompassing preservation, research, education, cultural promotion, and addressing modern challenges. By leveraging AI technologies, it is possible to enhance the relevance and application of IKS in contemporary society, ensuring that this rich heritage continues to inform and inspire future generations. IKS with technology is the bridge to the past, our guide to the present and the beacon for the future.

References

- Indian Knowledge Systems*. (2024, July 13). Wikipedia.
https://en.wikipedia.org/wiki/Indian_Knowledge_Systems
- Kandwal, N. P., & Negi, S. (2024). National Education Policy 2020: Paving the Path for Holistic Management Education in India. *International Journal of Engineering and Management Research*, 14(6), 38–45.
<https://doi.org/10.31033/ijemr.14.6.38-45>
- Mandavkar, P. (2023). Indian Knowledge System (IKS). *SSRN Electronic Journal*.
<https://doi.org/10.2139/ssrn.4589986>
- Naidoo, P. D., & Vithal, R. (2014). Teacher approaches to introducing Indigenous knowledge in school science classrooms. *African Journal of Research in Mathematics Science and Technology Education*, 18(3), 253–263. <https://doi.org/10.1080/10288457.2014.956407>
- Khan, S., & Sharma, M. (2024). An overview on Indian knowledge System. *Integrated Journal for Research in Arts and Humanities*, 4(4), 42–46. <https://doi.org/10.55544/ijrah.4.4.7>
- EPRA International Journal of Multidisciplinary Research (IJMR). (2019). *EPRA International Journal of Multidisciplinary Research (IJMR)*. <https://doi.org/10.36713/epra2013>
- Kumar, A. (2022). Commentary: New education policy: shifting gears toward the future of India. *Higher Education Evaluation and Development*, 16(2), 136–139. <https://doi.org/10.1108/heed-12-2022-082>
- AKHIL BHARTIYA SHIKSHA SAMAGAM 2023. (2023). In *Thematic Session 15 Indian Knowledge Systems*.
https://www.education.gov.in/sites/upload_files/mhrd/files/nep/ABSS_Report_Session_15.pdf
- Indian Knowledge System - Course*. (n.d.). https://onlinecourses.swayam2.ac.in/ntr25_ed18/preview

- Indian Knowledge Systems (IKS) Division. (2025). Competitive Research Proposals Program 2025-2026 Application and Instructions. In *Indian Knowledge Systems (IKS) Division*. <https://iksindia.org/images/2025/Research-Projects-corrected.pdf>
- Academic Unit | IGNCa. (n.d.). <https://ignca.gov.in/divisionss/academic-unit/>
- Jha, P. K., & Jha, A. (2017). Tribal Health Care Research Program: An overview of Central Council for Research in Ayurvedic Sciences. *Journal of Drug Research in Ayurvedic Sciences*, 2(2), 124–128. https://journals.lww.com/jdra/abstract/2017/02020/tribal_health_care_research_program_an_overview.6.aspx
- Srikanth, N., Singh, S., Sharma, B. S., Khanduri, S., Singh, R., & Maheswar, T. (2017). Tribal Health Care Research Program. *Journal of Drug Research in Ayurvedic Sciences*, 2(2), 118–148. <https://doi.org/10.5005/jp-journals-10059-0013>
- Das, P., Dr., Das, S. K., Mishra, A., Arya, H. P. S., Bujarbarua, K. M., Singh, R. P., Dr., INDIAN COUNCIL OF AGRICULTURAL RESEARCH, SANJAY KUSHWAHA, A. CHAKRAVARTY, C. S. VISHWANATH, D. PATI, V. K. BHARTI, & PUNIT BHASIN. (2003). *Inventory of Indigenous Technical Knowledge in agriculture Document 2 (Supplement 1)*. Directorate of Information and Publications of Agriculture (DIPA), Indian Council of Agricultural Research.
- Sattigeri, V. J. (2024). Documentation of Traditional Knowledge and the TKDL – Between the Contexts of Cause & Effects and Science & Technology. *Journal of Indian Medical Heritage*, 3(2), 58–61. https://doi.org/10.4103/jimh.jimh_33_25
- About Utiks | Official website of Indian Council for Cultural Relations, Government of India. (n.d.). <https://iccr.gov.in/utiks/about-utiks>
- Jaiswal, P., & Singh, A. P. (2022, May 25). *Conservation of Knowledge Heritage and National Mission for manuscripts in Uttar Pradesh and Kerala*. Jaiswal | Informatics Studies. <https://www.informaticsstudies.org/index.php/informatics/article/view/390>