
Integrating Heritage with Innovation: A Comprehensive Review of the Indian Knowledge System (IKS)

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Abstract

A large and intricate fabric of educational methods, ecological wisdom, and intellectual traditions that have developed over millennia is represented by the Indian Knowledge System (IKS). IKS is distinguished by an integrative and holistic perspective that encompasses fields like mathematics, astronomy, medicine, and governance. The National Education Policy (NEP) 2020's support for the integration of IKS into formal education and industry is seen as a critical step toward "epistemic justice" and sustainable development in the modern world. This essay examines reforms in several important fields, such as science, health, economics, and agriculture, emphasizing how traditional knowledge can provide special answers to contemporary world problems.

Keywords: Indian Knowledge System (IKS), Ayurveda, Holistic Healthcare, NEP 2020, Inclusive Innovation, Sustainable Development, and Traditional Knowledge Digital Library (TKDL).

Introduction

The Indian Knowledge System includes a wide range of scientific discoveries, philosophical schools, and teaching methods based on empirical research and spiritual cosmologies[1]. IKS sees knowledge as inextricably tied to the ethical, intellectual, and ecological facets of existence, in contrast to contemporary separated fields [1]. Indian contemporary education for many years was based on Western models, frequently ignoring local epistemologies [1,2]. Nonetheless, there is a growing understanding that encouraging critical thinking, moral principles, and a sense of national identity in young people requires re-engaging with IKS [2,3].

2. Objectives

The following are the main goals of this review:

- To chart IKS's historical development from prehistoric customs to post-independence eras [1].

- To examine the philosophical underpinnings of traditional pedagogies, including Pramana [1].
- To determine how recent policy changes have affected the integration of IKS in technical, medicinal, and agricultural domains [1,4].
- To investigate the difficulties associated with academic validation, biopiracy, and standardization in the contemporary world [1,4]

3. Reforms in the Medical Sector

A holistic approach to health is the foundation of Indian traditional medical systems, including Ayurveda, Yoga, Unani, and Siddha [5, 6].

- Institutionalization: Research and teaching in traditional systems have received targeted emphasis since the Ministry of AYUSH was established [4,5,7].
- Standardization: To guarantee the safety and international acceptance of Ayurvedic medications, efforts are being made to implement pharmacopoeia standards and quality control [4,5].
- Biopiracy prevention: India was able to successfully invalidate unethical patents on turmeric and neem [5,6]. In order to stop the international patenting of traditional treatments, the Traditional Knowledge Digital Library (TKDL), a vast database encompassing over 230,000 formulas, was established [5,6].
- Integrative Healthcare: In order to treat refractory diseases and lifestyle disorders, modern reforms support medical pluralism, where traditional methods coexist alongside modern treatment [5].

4. Reforms in the Economic Sector

Leveraging IKS for inclusive innovation and sustainable growth is the main goal of reforms [8].

- Inclusive Innovation: By utilizing R&D for the "bottom of the pyramid," strategies seek to provide the impoverished with chances to earn a living through rural technologies and traditional crafts [8].
- Intellectual Property: In order to make up for their shared legacy, indigenous tribes are proposing a "cheaper" IPR framework for traditional knowledge [8].
- Knowledge Hub: India has declared itself to be a "global knowledge hub" of the future, investing in human capital to produce more than half a million engineers and scientists per year [9].
- Rural Empowerment: By integrating rural farmers into global supply chains, programs such as e-Choupal have given them access to market data and improved prices [8].

5. Reforms in Agriculture

Vrikshayurveda and other traditional agricultural knowledge places a strong emphasis on organic farming methods and biodiversity [1,2].

- Sustainable Practices: To improve soil fertility and lessen reliance on chemical fertilizers, contemporary reforms promote mixed crops and zero-budget natural farming [1, 2, 4].

- **ICT Integration:** By giving farmers access to real-time weather and market data, the application of information and communication technology (ICT) has transformed agricultural extension [10,11].

- **Water Management:** In order to improve conservation, there is a renewed emphasis on reviving traditional water harvesting techniques such as stepwells (baolis) and tanks, which are frequently combined with contemporary GIS technology [4,12].

6. Reforms in Science and Technology

The foundation of India's current S&T aspirations is its scientific legacy, which includes the Iron Pillar of Delhi and the idea of zero and advanced metallurgy [6].

- **Policy Resolutions:** India's society has been more innovative since the Scientific Policy Resolution of 1958 and the STI Policy of 2013 [13].

- **Mission Agencies:** On "shoestring" budgets, specialized departments for biotechnology, atomic energy, and space have attained world-class stature [3].

- **Curricular Integration:** In order to combine the ancient scientific temper with contemporary critical thinking, the UGC and AICTE now require IKS to be taught in engineering and higher education [2].

- **Research & Development:** Organizations such as IITs are promoting knowledge transfer to industry by moving away from just academic research and toward entrepreneurial methods [14]

7. Conclusions

The Indian Knowledge System is a dynamic framework that is constantly changing rather than a static artifact from the past [1]. A potential movement toward reclaiming indigenous narratives is indicated by the renewed interest in IKS, but its effectiveness hinges on scientific validity and academic rigor rather than naive romanticization [1,2]. A route to a more sustainable, humane, and pluralistic global order can be found by incorporating these systems into contemporary society [1,4].

8. Future Scope

- **Documentation:** The systematic translation and documentation of unpublished regional and vernacular works is desperately needed [1].

- **Interdisciplinary Research:** Future research should close the gap between contemporary fields like quantum physics and computational linguistics and older notions like Nyaya [1,2].

- **Digital Platforms:** For international participation and the preservation of endangered indigenous languages, it will be essential to grow open-access repositories and AI-powered tools [1].

- **Teacher Training:** To give teachers the tools they need to successfully teach IKS at the degree level, extensive programs are necessary [1,2].

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