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Role of Technology for Promotion of Indian Knowledge System in Teacher Education

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ABSTRACT

The Indian Knowledge System (IKS) represents a comprehensive body of traditional wisdom developed over centuries in India, encompassing diverse fields such as philosophy, science, medicine, mathematics, literature, arts, and education. In the contemporary digital era, technology has emerged as a powerful medium for preserving, disseminating, and revitalizing this vast intellectual heritage. This research paper examines the role of modern technological tools and digital platforms in promoting Indian Knowledge Systems within teacher education programs. It highlights how digital libraries, online learning management systems, mobile applications, artificial intelligence, and virtual reality contribute to enhancing access, engagement, and understanding of IKS among teacher trainees. The study also analyzes the integration of IKS into curriculum design through blended learning approaches and digital pedagogy. Furthermore, it discusses challenges such as infrastructural limitations, digital divide, lack of trained personnel, and issues of content authenticity. Based on these observations, the paper proposes strategic recommendations for effective implementation, including policy support, capacity building, and development of localized digital resources. The study concludes that the meaningful integration of technology with traditional knowledge can strengthen teacher education and contribute to the holistic development of future educators.

Keywords: *Indian Knowledge System, Educational Technology, Teacher Education, Digital Learning, Cultural Heritage*

The Indian Knowledge System (IKS) represents a rich and diverse tradition of intellectual thought that has evolved over thousands of years. It includes knowledge related to education, governance, medicine, astronomy, mathematics, environmental studies, ethics, and spirituality. Classical texts such as the Vedas, Upanishads, Arthashastra, Yoga Sutras, and Ayurvedic treatises demonstrate the scientific and philosophical depth of ancient Indian civilization. In recent years, there has been renewed interest in integrating Indian Knowledge Systems into mainstream education, particularly after the introduction of the National Education Policy (NEP) 2020. Teacher education plays a central role in this initiative because teachers serve as key agents in transmitting knowledge, values, and cultural heritage to learners. To achieve this objective effectively, modern technology offers innovative methods to preserve and promote traditional wisdom.

The rapid growth of digital technologies has transformed teaching-learning processes worldwide. Online platforms, digital content repositories, artificial intelligence, and virtual

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learning environments have enhanced accessibility and flexibility in education. In this context, the integration of IKS with technology can ensure its relevance and sustainability in the modern education system. This paper explores how technology can support the promotion of Indian Knowledge Systems in teacher education.

LITERATURE REVIEW

Several scholars and policy documents have emphasized the importance of integrating Indian Knowledge Systems (IKS) into modern education through technology. The National Education Policy (2020) highlights the need to promote India's traditional knowledge using digital platforms and innovative pedagogy. Similarly, the Ministry of Education (2022) provided guidelines for embedding IKS into higher education curricula with technological support. These policies stress the role of teacher education in transmitting cultural and intellectual heritage through digital means.

Mishra and Koehler (2006) proposed the Technological Pedagogical Content Knowledge (TPACK) framework, which explains how teachers should integrate technology with subject knowledge and pedagogy. This framework is relevant for incorporating IKS into teacher education through digital tools. Singh and Verma (2022) also observed that educational technology enhances professional competencies and helps teachers adapt traditional knowledge to modern classrooms. Their studies indicate that technology improves accessibility and instructional quality.

Rao (2020) emphasized the importance of indigenous knowledge in developing culturally responsive pedagogy. According to the study, teacher education programs should include local traditions and wisdom systems supported by digital resources. Sharma (2021) further explained that IKS strengthens ethical values, environmental awareness, and holistic development. These scholars argue that technological integration makes traditional knowledge more relevant for present-day learners.

Kumar and Sharma (2023) discussed the impact of digital pedagogy on teacher professional development. They found that online training, webinars, and e-learning platforms help teachers acquire new competencies and cultural understanding. Radhakrishnan (2019) and Kautilya's Arthashastra emphasize moral leadership, discipline, and social responsibility, which can be effectively taught using digital media. These classical texts, when supported by technology, enhance value-based education.

Reports by IAMAI (2024) and Data Reportal (2025) show rapid growth in internet usage and digital learning in India. These reports suggest that increased digital connectivity provides opportunities for promoting IKS through online platforms, mobile applications, and virtual classrooms. UNESCO (2019) also highlighted the role of digital technologies in preserving cultural heritage and improving educational outreach.

Objectives of the Study

- To examine the role of modern technology in promoting Indian Knowledge Systems within teacher education programs.
- To analyze the effectiveness of digital tools and platforms in integrating traditional knowledge with contemporary teaching practices.

RESEARCH METHODOLOGY

The present study adopts a **descriptive and analytical research design**. It focuses on understanding the role of technology in promoting Indian Knowledge Systems in teacher education. The study is based mainly on **secondary data** collected from Government policy documents (NEP 2020, Ministry Guidelines), Research journals, Books, Online reports, Institutional websites, Digital education reports etc.

Concept of Indian Knowledge System

The Indian Knowledge System refers to the collective intellectual traditions developed in India through oral and written sources. It is rooted in philosophical inquiry, scientific observation, ethical values, and social responsibility. IKS is not limited to religious or spiritual knowledge but extends to practical fields such as agriculture, architecture, metallurgy, medicine, and environmental management.

Ancient Indian education emphasized holistic development through physical, mental, moral, and spiritual training. The Gurukul system promoted experiential learning, discipline, self-reliance, and character building. Texts like the Bhagavad Gita emphasize selfless action, duty, and leadership, while Kautilya's Arthashastra presents advanced concepts of governance and economics. In teacher education, understanding IKS helps educators develop culturally responsive pedagogy and value-based teaching practices. It encourages respect for indigenous knowledge and promotes sustainable development. Integrating IKS enables teachers to connect traditional wisdom with contemporary learning objectives.

ROLE OF TECHNOLOGY IN EDUCATION

Educational technology has revolutionized traditional teaching methods by introducing digital tools and innovative pedagogical approaches. Learning Management Systems (LMS), Massive Open Online Courses (MOOCs), smart classrooms, and cloud-based platforms have enhanced accessibility and learner engagement. Multimedia resources such as videos, animations, simulations, and interactive modules support diverse learning styles. Artificial intelligence enables personalized learning experiences, adaptive assessments, and intelligent tutoring systems. Virtual and augmented reality provide immersive environments for experiential learning. In teacher education, technology facilitates continuous professional development through webinars, online certifications, and collaborative platforms. It enables trainee teachers to access global resources, participate in virtual communities, and enhance their digital competencies. Thus, technology acts as a catalyst for improving educational quality and effectiveness.

TECHNOLOGY FOR PROMOTION OF IKS

Technology plays a crucial role in preserving and promoting Indian Knowledge Systems through digitization and digital dissemination. Thousands of ancient manuscripts and rare texts are being digitized and stored in online repositories such as the National Digital Library of India and the Digital Library of India. E-portals and mobile applications provide access to classical literature, yoga practices, Sanskrit learning tools, and Ayurvedic knowledge. MOOCs and online certificate courses on Indian philosophy, ethics, and culture enhance public awareness and academic engagement. Virtual museums, augmented reality exhibitions, and 3D modeling enable learners to explore historical monuments, traditional crafts, and scientific inventions. Social media platforms and educational blogs further contribute to popularizing

IKS among youth. These technological interventions make traditional knowledge accessible, interactive, and relevant.

Integration of IKS in Teacher Education

Teacher education institutions can integrate IKS through blended learning models that combine classroom instruction with online resources. Digital storytelling, project-based learning, and collaborative platforms encourage reflective and experiential learning. Curriculum design can include modules on Indian philosophy, ethics, environmental wisdom, and pedagogical traditions supported by digital content. Learning Management Systems facilitate structured courses, discussion forums, and assessment tools.

Online workshops, webinars, and expert lectures provide opportunities for professional interaction with scholars and practitioners of IKS. Simulation tools and virtual classrooms help trainee teachers practice culturally responsive teaching methods. Technology thus supports systematic integration of traditional knowledge into teacher preparation programs.

Challenges in Using Technology for IKS

Despite its potential, the integration of technology for promoting IKS faces several challenges. Inadequate digital infrastructure in rural and remote areas limits accessibility. The digital divide creates inequalities among learners.

Many teachers lack sufficient technical skills and training to effectively use digital tools. Limited availability of authentic, peer-reviewed, and localized digital content poses quality concerns. Issues of intellectual property rights and content commercialization also affect dissemination. Resistance to change, lack of institutional support, and insufficient funding hinder implementation. Addressing these challenges requires coordinated efforts from policymakers, educators, and technology providers.

RECOMMENDATIONS

To promote Indian Knowledge Systems through technology, governments and institutions should invest in robust digital infrastructure. Regular training programs should be organized to enhance teachers' digital competencies.

Development of multilingual and culturally contextualized digital content is essential. Open Educational Resources (OER) should be encouraged to ensure free access. Collaboration with research institutions, cultural organizations, and IT companies can strengthen implementation.

Policy support, quality assurance mechanisms, and periodic evaluation should be ensured. Research and innovation in digital pedagogy must be promoted to sustain long-term impact.

CONCLUSION

Technology serves as a powerful instrument for revitalizing and promoting Indian Knowledge Systems in teacher education. By integrating traditional wisdom with modern digital tools, educators can create meaningful, inclusive, and future-oriented learning environments. Effective implementation requires strategic planning, capacity building, and policy support. When harmonized with ethical values and cultural sensitivity, technology can strengthen national identity and educational excellence. The sustainable development of teacher education depends on balancing heritage and innovation.

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Conflict of Interest

The author declared no conflict of interest.

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