



# A STUDY ON INDIAN KNOWLEDGE SYSTEMS IN TECHNOLOGY-DRIVEN HIGHER EDUCATION

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## ABSTRACT:

The rapid integration of technology in all facets of modern lives has brought a dramatic paradigm shift to the higher education sector. Although technology-related higher education is an enabling factor from an accessibility, efficiency, and innovation perspective, there is a lack of focus on ethicalization, culturalization, and overall development in a technology-related higher education setting. Indian Knowledge Systems or IKS, which have their roots in the Indian civilizational philosophy, have developed an all-encompassing paradigm for education in values, experiential learning, and integrated human development. The proposed research work carries out a systematic literature review to critically analyze the relevance and integration of IKS in the context of technology-driven higher education. The research work will depend solely on secondary sources for its data and will critically analyze the journal articles and other publication sources related to digital education and IKS. A thematic approach to content analysis has been adopted in this paper to highlight crucial points of intersection between modern digital learning concepts and the principles of IKS in education, such as the ideas of learner focus, ethical awareness, and comprehensive education. The outcome of this research study revealed the fact that digital technology, when incorporated with the Indian Knowledge Systems, can provide an effective means of preservation, dissemination, and revival of indigenous knowledge, besides encouraging ethically sound and culturally relevant higher education.

**Keywords:** *Indian Knowledge Systems (IKS); Technology-Driven Higher Education; Digital Transformation; Holistic Education; Ethical Pedagogy.*

## INTRODUCTION :

Higher education globally is undergoing a paradigm shift driven by digital technologies such as artificial intelligence, learning management systems, MOOCs, and virtual classrooms. While these innovations enhance accessibility and scalability, they often remain anchored in Western epistemological frameworks. In the Indian context, this creates a tension between technological modernity and civilizational knowledge traditions.

Indian Knowledge Systems (IKS) encompass philosophical, scientific, artistic, linguistic,

ecological, and ethical knowledge traditions developed over millennia. Texts such as the Bhagavad Gita, Arthashastra, Charaka Samhita, and pedagogical traditions like Gurukul emphasize holistic learning, ethical conduct, experiential wisdom, and social responsibility.

The National Education Policy (NEP) 2020 marks a significant shift by mandating the incorporation of IKS into curricula to revitalize India's cultural heritage and address global challenges through a blend of traditional and modern knowledge. With rapid advancements in technology transforming

higher education—such as through platforms like SWAYAM and DIKSHA—there is a growing need to explore how IKS can be digitized and integrated to promote equitable, experiential learning. This review synthesizes existing literature to assess the state of IKS in technology-driven higher education, identifying gaps and future directions. The NEP 2020 explicitly calls for the integration of IKS into curricula, pedagogy, and research, while simultaneously advocating for extensive use of educational technology.

This dual mandate raises critical questions: How can technology meaningfully transmit IKS without reducing it to content alone?

Can digital platforms support experiential, value-based learning intrinsic to IKS?

This literature review addresses these questions by synthesizing contemporary scholarship at the intersection of IKS and technology-driven higher education.

## REVIEW OF LITERATURE :

### Value Education, Moral Development, and Human Values in Education

Early literature emphasizes the role of value education in shaping disciplined, ethically grounded individuals.

**Shobha and Kala (2015)** demonstrated that exposure to value-education workshops significantly enhances students' discipline, moral integrity, teamwork, confidence, concentration, and interpersonal skills, contributing to their development as sensitive and socially responsible individuals.

**Tripathi (2022)** further argued that a strong foundation in moral values equips students to act ethically, contribute positively to society, and lead meaningful professional and personal lives. The study highlights the interrelationship between moral principles and professional ethics, positioning values as a guiding framework that shapes competence, integrity, and character in aspiring professionals.

### Indian Knowledge Systems as Moral and Civilizational Frameworks

Indian Knowledge Systems are widely recognized as repositories of ethical, spiritual, and sustainable wisdom.

**Ranjan et al. (2020)** revealed that IKS and their moral frameworks continue to provide valuable guidance for addressing contemporary global challenges and promoting a holistic and sustainable way of life.

**Kumari et al. (2025)** concluded that integrating IKS into modern education bridges the gap between ancient and contemporary knowledge systems, offering learners a more inclusive, value-oriented, and holistic learning experience.

### Policy Perspective on IKS and Educational Transformation

A significant body of literature aligns IKS integration with national education reforms.

**Gaur (2024)** examined the integration of IKS into education as envisaged by the National Education Policy 2020, highlighting its potential for individual and national development through interdisciplinarity, critical thinking, and problem-solving.

**Swamy (2025)** emphasized that NEP 2020 recognizes indigenous knowledge as central to culturally relevant and inclusive education, bridging traditional wisdom with modern knowledge systems to create academically competent and culturally rooted learners.

**Puri (2025)** further argued that embedding IKS in undergraduate curricula reframes knowledge as contextual, experiential, and inherently value-oriented rather than merely technical or instrumental.

### Institutionalization of IKS in Higher Education and Curriculum Design

Recent studies focus on the institutional adoption of IKS in universities.

**Mandavkar (2023)** assessed how IKS integrates ancient heritage technologies to support global tourism, youth employment, and cultural pride,

aligning with NEP 2020 objectives. Universities promote IKS through electives and credit-based courses across disciplines, fostering Bharatiya Drishti (Indian worldview).

**Banerjee and Pandey (2025)** examined the current incorporation of IKS in higher education, identifying barriers to inclusion while highlighting benefits such as enhanced academic rigor, interdisciplinary learning, and cultural diversity.

#### **IKS, Interdisciplinarity, and Contemporary Problem-Solving**

Several scholars highlight the interdisciplinary relevance of IKS in addressing modern challenges.

**Khan and Sharma (2024)** emphasized that integrating ancient wisdom with contemporary issues supports research in health, psychology, environment, and sustainable development.

**Ahmed (2025)** analyzed the relevance of IKS within Commerce and Management education, emphasizing rootedness, ethical decision-making, and cultural confidence as core educational outcomes.

#### **Challenges in Technology-Driven IKS Integration**

Several scholars have identified key barriers, particularly in the context of digital platforms, online learning, and NEP 2020 implementation.

**Husain (2025)** highlighted challenges such as lack of standardization and documentation of IKS (often transmitted orally), resistance to change, inadequate infrastructure (especially in rural areas), and difficulties in global competitiveness, which complicate digitization and integration into technology-enabled curricula.

**Lal et al. (2024)** discussed the dominance of Western paradigms, lack of structured frameworks, insufficient trained faculty, and absence of appropriate pedagogical tools, noting that resource scarcity and infrastructure gaps hinder effective technology-driven promotion of IKS, while passive digital methods limit experiential learning.

#### **NEP 2020 as the Core Policy Framework for IKS Integration**

Several scholars and policy analyses position the **National Education Policy (NEP) 2020** as the foundational and transformative framework for systematically integrating **Indian Knowledge Systems (IKS)** into higher education.

**Gaur (2024)** examined the integration of IKS as envisaged by NEP 2020, highlighting its potential to drive individual and national development through interdisciplinarity, critical thinking, problem-solving, and the blending of traditional wisdom with contemporary education.

**Swamy (2025)** emphasized that NEP 2020 recognizes indigenous knowledge as central to culturally relevant and inclusive education, bridging traditional wisdom with modern systems to cultivate academically competent and culturally grounded learners.

**Puri (2025)** argued that embedding IKS in undergraduate curricula under NEP 2020 reframes knowledge as contextual, experiential, and value-oriented rather than merely technical, promoting holistic development and countering colonial legacies.

#### **Technology as a Bridge for Disseminating and Modernizing IKS**

Several scholars emphasize the transformative role of technology in serving as a bridge for disseminating, preserving, and modernizing Indian Knowledge Systems (IKS).

**Yadav et al. (2025)** explore the role of technology in promoting IKS, noting that digital platforms, mobile apps, virtual archives, and social media significantly expand dissemination, foster cultural visibility, and bridge traditional wisdom with modern education through enhanced accessibility and intergenerational transfer.

**Kaur (2025)** examines the integration of digital technologies to preserve and teach IKS, highlighting how AI-driven tools, virtual reality (VR), augmented reality (AR), and digital repositories (e.g., National Digital Library of India)

serve as bridges for disseminating traditional knowledge like Ayurveda and Vedic sciences, fostering global accessibility, immersive experiential learning, and modernization through innovative applications that safeguard cultural heritage for contemporary audiences.

#### RESEARCH GAP :

The synthesis reveals several underexplored areas:

- Limited empirical studies capturing stakeholder perspectives on IKS integration.
- Absence of structured frameworks and longitudinal evaluations of NEP 2020 implementation.
- Resource and infrastructure barriers in rural contexts with few scalable solutions.
- Need for pedagogical adaptation to decolonize curricula and digitize orally transmitted knowledge.
- Lack of governance frameworks addressing ethical concerns in Artificial Intelligence /Virtual Reality/Augmented Reality integration.
- Insufficient comparative studies on global competitiveness of IKS.
- Scarcity of institutional case analyses on successful IKS adoption.

#### RESEARCH METHODOLOGY :

##### Planning

The present study adopts a Systematic Literature Review (SLR) approach to examine scholarly discourse on Indian Knowledge Systems (IKS) in technology-driven higher education. The scope of the review was carefully defined to ensure conceptual clarity, relevance, and methodological rigor.

The timeframe of 2015–2025 was selected to capture contemporary academic and policy developments following the introduction of the National Education Policy 2020, which formally institutionalized Indian Knowledge Systems within higher education and emphasized the use of educational technology.

The thematic focus of the review encompasses:

- Value Education, Moral Development, and Human Values in Education
- Indian Knowledge Systems as Moral and Civilizational Frameworks
- Policy Perspective on IKS and Educational Transformation
- Institutionalization of IKS in Higher Education and Curriculum Design
- IKS, Interdisciplinarity, and Contemporary Problem-Solving
- Challenges in Technology-Driven IKS Integration
- NEP 2020 as the Core Policy Framework for IKS Integration
- Technology as a Bridge for Disseminating and Modernizing IKS

Priority was given to India-centric studies, while select global literature was included only when it provided conceptual or comparative relevance to the Indian context. The planning stage involved defining research objectives, identifying key constructs, developing search strategies, and establishing inclusion and exclusion criteria to ensure transparency and replicability.

#### RESEARCH QUESTIONS :

##### RQ1:

What are the core philosophical and pedagogical principles of Indian Knowledge Systems as reflected in contemporary academic literature?

##### RQ2:

How has technology-driven higher education evolved in India, and what pedagogical shifts has it introduced?

##### RQ3:

What role does the **National Education Policy 2020** play in facilitating the integration of IKS into technology-enabled higher education?

##### RQ4:

How are Indian Knowledge Systems conceptualized, integrated, and transformed within technology-driven higher education in India?

## Information Search

A comprehensive search strategy was employed across major academic databases, including Scopus, Web of Science, JSTOR, and Google Scholar, to identify relevant scholarly literature. The database search was further supplemented with policy documents and institutional reports published by the Ministry of Education (MoE), University Grants Commission (UGC), and the Indian Knowledge Systems (IKS) Division, ensuring the inclusion of both academic and policy *perspectives*. *The search strings were constructed using combinations of keywords such as “Indian Knowledge Systems,” “IKS in higher education,” “technology-driven higher education,” “digital pedagogy,” “educational technology,” “NEP 2020,” and “indigenous knowledge integration.”* This structured search approach ensured comprehensive coverage of India-centric and globally relevant literature related to the integration of Indian Knowledge Systems within technology-enabled higher education, facilitating a systematic synthesis of trends, challenges, and research gaps.

These databases were selected due to their wide coverage of peer-reviewed journals, interdisciplinary research, and policy-oriented scholarship relevant to Indian Knowledge Systems, higher education, and educational technology. Together, they ensure comprehensive access to high-impact academic literature and recent scholarly contributions.

## Inclusion and Exclusion Criteria

### Inclusion Criteria:

The literature review included peer-reviewed journal articles to ensure academic rigor and methodological reliability. In addition, policy documents and high-quality institutional reports issued by recognized government bodies and academic institutions were considered to capture policy intent and implementation perspectives. Only English-language publications were included to maintain consistency and accuracy in

analysis. Studies were selected if they explicitly addressed Indian Knowledge Systems, higher education, educational pedagogy, curriculum integration, or technology-enabled learning, with particular relevance to the Indian context.

### Exclusion criteria:

The review excluded non-academic opinion pieces, editorials, and popular media sources due to the absence of scholarly validation. Studies unrelated to higher education, such as those focused solely on school-level education or non-educational domains, were also excluded. Additionally, purely technical or scientific papers that discussed technology without examining its pedagogical, epistemological, or educational implications were omitted to retain thematic focus.

### Quality Evaluation

Each selected study was evaluated using a **quality assessment checklist adapted from the Center for Reviews and Dissemination (CRD)**. The evaluation focused on four key dimensions: **methodological clarity** (clearly stated objectives, research design, and analytical approach), **internal validity** (conceptual rigor, coherence of arguments, and robustness of evidence), **external validity** (relevance and applicability of findings to the Indian higher education context), and **thematic relevance** (alignment with Indian Knowledge Systems, educational pedagogy, technology-enabled learning, and policy frameworks). Only studies that met acceptable quality standards across these criteria were retained for final thematic synthesis.

### Data Collection

Data extraction was conducted using a structured coding framework to ensure consistency across studies. Each selected source was coded for IKS focus, educational context, pedagogical approach, use of educational technology, policy and institutional alignment, and learning outcomes emphasized. This approach enabled systematic comparison and

supported coherent thematic synthesis across the reviewed literature.

### Data Analysis and Synthesis

The selected literature was analyzed using thematic synthesis, a qualitative analytical technique suitable for integrating diverse conceptual, empirical, and policy-oriented studies.

The analysis proceeded in three systematic stages:

1. Initial Coding: Each selected study was carefully reviewed, and key concepts, arguments, and findings were coded based on their relevance to Indian Knowledge Systems and technology-driven higher education.
2. Theme Development: Codes were grouped into broader analytical categories to identify recurring patterns, similarities, and divergences across studies. This process enabled the emergence of core themes.
3. Thematic Integration: The final stage involved synthesizing themes to develop a coherent narrative explaining how Indian Knowledge Systems are conceptualized, implemented, and transformed within digital higher education frameworks.

The thematic synthesis focused on four key analytical dimensions:

- Epistemology: Philosophical foundations, indigenous knowledge paradigms, and value-based learning
- Pedagogy: Teaching-learning methods, experiential learning, interdisciplinary approaches, and curriculum integration
- Technology: Digital platforms, online and blended learning models, AI-enabled tools, and knowledge dissemination mechanisms
- Policy and Governance: National education policies, institutional frameworks, regulatory mechanisms, and implementation challenges

This structured analytical approach facilitated a comprehensive understanding of trends, challenges, and research gaps, forming the basis

for conceptual framework development and future research directions.

### FINDINGS & DISCUSSION :

The review of 13 studies (2015–2025) highlights four recurring dimensions: epistemology (value-based and holistic paradigms), pedagogy (experiential and interdisciplinary approaches), technology (digital tools for dissemination), and policy/governance (NEP 2020 as an enabling framework).

- RQ1: IKS is consistently portrayed as a repository of ethical, spiritual, and sustainable wisdom, emphasizing holistic development and learner-centered pedagogy. While earlier works stress spiritual intelligence, recent studies focus on practical applications for mental well-being, reflecting evolving contextualization.
- RQ2: Technology-driven higher education has expanded through platforms like SWAYAM, AI, and VR/AR, enhancing accessibility but often reinforcing Western epistemologies. Optimistic views see technology revitalizing IKS, while critiques warn of reducing holistic knowledge to digital content.
- RQ3: NEP 2020 provides a transformative framework by mandating IKS integration into curricula and promoting digital tools for scalability. However, implementation challenges—such as resistance and resource constraints—limit its effectiveness.
- RQ4: IKS is conceptualized as a civilizational framework integrated via electives, blended models, and AI tools. Benefits include enhanced rigor and cultural diversity, but barriers like lack of standardization and faculty training persist.

Overall, the synthesis underscores a paradigm shift toward ethically sound, culturally relevant education. Yet contradictions between scalability and experiential depth suggest hybrid models are needed.

### CONCLUSION:

This study demonstrates that integrating IKS with technology-driven higher education under

NEP 2020 offers a pathway to preserve indigenous wisdom while fostering innovation, ethical awareness, and holistic development. While policy intent is strong, practical adoption requires robust governance, faculty training, and infrastructure support. Future research should focus on empirical evaluations, longitudinal studies, and global comparative analyses to strengthen IKS-technology integration. Ultimately, this approach can revitalize India's educational landscape, aligning modern innovation with civilizational heritage.

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**Table1:Databases and Sources Used for Literature Review**

| Database / Source | Publisher/ Institution | Official Link                                                           |
|-------------------|------------------------|-------------------------------------------------------------------------|
| Scopus            | Elsevier               | <a href="https://www.scopus.com">https://www.scopus.com</a>             |
| Web of Science    | Clarivate Analytics    | <a href="https://www.webofscience.com">https://www.webofscience.com</a> |
| JSTOR             | ITHAKA                 | <a href="https://www.jstor.org">https://www.jstor.org</a>               |
| Google Scholar    | Google LLC             | <a href="https://scholar.google.com">https://scholar.google.com</a>     |