Sanskriti
ISSN: 3007-9055
2026, Vol. 3, No. 1, pp. 48-56
DOI: https://doi.org/10.70680/sanskriti.v3i1.60
Website: https://sanskritijournal.com

Research Article

From Shastra to Software: Bridging Ancient Wisdom and AI through ChatGPT-Assisted Integration of Indian Knowledge Systems

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Abstract

The integration of Indian Knowledge Systems (IKS) into modern education has gained renewed attention under the National Education Policy (NEP 2020), emphasizing culturally grounded and holistic learning. This study explores the role of ChatGPT-assisted pedagogy in facilitating the incorporation of IKS into contemporary teaching–learning processes. Adopting a descriptive survey design, data were collected from 30 participants, including students and teachers, using a structured questionnaire on awareness of IKS, frequency of ChatGPT use, perceived pedagogical effectiveness, and ethical considerations. Descriptive statistics (mean, standard deviation) and inferential analyses (one-sample t-test) were employed to evaluate the impact of ChatGPT on IKS integration. Results indicate a high level of awareness and positive perception of IKS among respondents, with ChatGPT significantly enhancing engagement, comprehension, and the connection between traditional knowledge and modern curricula. Ethical guidelines and teacher supervision were highlighted as necessary to prevent over-dependence and maintain academic integrity. The study concludes that ChatGPT can act as an effective pedagogical tool, bridging ancient Indian knowledge with contemporary educational practices, thereby supporting self-directed learning, interactive engagement, and culturally rooted instruction. These findings offer practical insights for educators, curriculum planners, and policymakers aiming to integrate AI-assisted pedagogy with indigenous knowledge systems.

Keywords

Indian Knowledge Systems (IKS), ChatGPT, Artificial Intelligence, Ancient wisdom integration, Digital learning tools

1. Introduction

Indian Knowledge Systems (IKS) represent a vast and enduring intellectual heritage that has evolved over thousands of years through diverse disciplines such as philosophy, mathematics, astronomy, medicine, ecology, linguistics, ethics, arts, and pedagogy. These systems are deeply rooted in experiential learning, systematic observation, reflective inquiry, and holistic understanding of reality. Unlike fragmented disciplinary approaches, IKS emphasizes the interconnectedness of nature,

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Received: 09 January 2026; **Plagiarism Check:** 04 February 2026; **Revised:** 03 March 2026; **Accepted:** 04 April 2026; **Published:** 30 April 2026

Similarity Index: The manuscript has been checked for plagiarism using **Turnitin** and has a similarity index of 18%.

society, and human cognition, promoting harmony, sustainability, and ethical responsibility. Traditional educational practices within IKS, such as *Gurukul* pedagogy, dialogic learning, and contextual instruction, were designed to nurture intellectual rigor alongside moral and spiritual development (Mandavkar,2023).

Recognizing the educational and cultural significance of this indigenous knowledge, the National Education Policy (NEP) 2020 strongly advocates the systematic integration of IKS into formal education at all levels. The policy underscores the importance of cultural continuity, value-based education, and contextual learning to strengthen learners' identity and national consciousness. NEP 2020 envisions an education system that is globally informed yet locally grounded, enabling students to critically appreciate India's civilizational contributions while applying traditional wisdom to contemporary issues such as environmental sustainability, health, ethics, and social cohesion. By embedding IKS across curricula, the policy aims to promote multidisciplinary learning, critical thinking, and lifelong learning skills (Mandavakar,2025).

Despite this strong policy mandate, the practical integration of IKS into classroom teaching remains limited. Many educators face challenges such as inadequate professional training, limited access to authentic and structured instructional resources, and uncertainty about pedagogical strategies suitable for presenting IKS in age-appropriate and learner-friendly ways. Additionally, translating abstract philosophical ideas or ancient textual knowledge into meaningful classroom experiences poses significant difficulties. In digitally driven learning environments, conventional teacher-centered approaches often fail to engage students effectively, leading to superficial understanding and reduced interest in IKS-related content (Shrimalibhoi,2025).

In this context, the rapid advancement of artificial intelligence (AI), particularly generative AI tools such as ChatGPT, offers promising possibilities for educational transformation. ChatGPT's capacity to generate conversational explanations, support multilingual learning, create interdisciplinary connections, and facilitate inquiry-based dialogue makes it a valuable pedagogical tool. When used ethically and thoughtfully, ChatGPT-assisted pedagogy can help contextualize IKS concepts, simplify complex ideas, and link ancient knowledge systems with modern scientific and social perspectives. Such AI-enabled tools can also support differentiated instruction by adapting content to learners' cognitive levels, linguistic backgrounds, and learning preferences (Majhi,2025).

Therefore, exploring the role of ChatGPT-assisted pedagogy in integrating Indian Knowledge Systems into teaching–learning processes is both timely and significant. This study seeks to examine how AI-enabled instructional strategies can enhance the accessibility, engagement, and pedagogical effectiveness of IKS in contemporary classrooms. By aligning technological innovation with the objectives of NEP 2020, the study aims to contribute to a balanced educational framework that preserves cultural heritage while embracing modern pedagogical advancements.

2. Literature Review

The integration of Indian Knowledge Systems (IKS) into formal education has gained significant scholarly attention in recent years, particularly in the context of value-based education, holistic learning, and cultural sustainability. Indian Knowledge Systems encompass a wide range of indigenous traditions, philosophies, scientific practices, ecological wisdom, and ethical frameworks that have evolved over centuries. Studies emphasize that embedding IKS within contemporary curricula enables learners to develop moral reasoning, environmental sensitivity, and a culturally rooted worldview (Khan & Sharma,2024). Scholars argue that IKS-based education promotes experiential and inquiry-driven learning, allowing students to connect traditional wisdom with real-life contexts and societal challenges (Sarkar,2024). Furthermore, interdisciplinary integration of IKS with subjects such as science, mathematics, environmental studies, and social sciences has been found to enhance conceptual clarity and contextual understanding, thereby supporting sustainable development education.

Despite its pedagogical potential, the literature identifies several challenges in the effective implementation of IKS within mainstream education systems. Curriculum rigidity and content overload often limit the scope for meaningful integration of indigenous knowledge (Madlela,2023). Teacher preparedness remains another critical concern, as many educators lack adequate training and instructional resources to translate traditional knowledge into learner-centered pedagogies. Additionally, conventional teacher-centric approaches and examination-oriented frameworks tend to marginalize experiential and dialogic methods that are central to IKS. These challenges highlight the need for innovative pedagogical tools and flexible instructional strategies to facilitate authentic and scalable integration of Indian Knowledge Systems.

Parallel to the discourse on IKS, a growing body of literature examines the transformative role of Artificial Intelligence (AI) in education. AI-powered tools, particularly conversational agents such as ChatGPT, have demonstrated considerable potential in supporting personalized learning, adaptive instruction, and formative feedback (Kasneci et al., 2023). Research suggests that AI-assisted platforms can cater to diverse learning styles by offering instant explanations, multilingual support, and customized learning pathways. Empirical evidence indicates that when integrated thoughtfully, tools like ChatGPT enhance student engagement, promote self-directed learning, and support the development of higher-order cognitive skills such as analysis, synthesis, and evaluation (Zhai,

2022). From a teacher's perspective, AI tools assist in lesson planning, content enrichment, assessment design, and academic scaffolding, thereby reducing instructional workload.

However, scholars also caution against uncritical adoption of AI in educational contexts. Concerns related to academic dependency, ethical use, data reliability, and erosion of critical thinking have been widely discussed in the literature. Researchers emphasize that AI should function as a pedagogical aid rather than a substitute for human cognition or teacher guidance. Ethical frameworks and digital literacy training are therefore considered essential to ensure responsible and reflective use of AI technologies in classrooms (Luckin & Holmes,2016).

An emerging but limited strand of research explores the intersection of AI technologies and indigenous or traditional knowledge systems. Preliminary studies suggest that AI-assisted platforms can play a vital role in digitizing, preserving, and disseminating indigenous knowledge by presenting complex cultural concepts in interactive and accessible formats (Khazamula, 2025). AI tools have the potential to contextualize traditional knowledge for contemporary learners by linking ancient practices with modern scientific principles, environmental concerns, and global sustainability goals. Such convergence offers promising avenues for revitalizing indigenous knowledge systems within formal education structures.

Despite these emerging insights, the literature reveals a significant research gap in systematically examining the pedagogical role of ChatGPT in integrating Indian Knowledge Systems into education. Most existing studies remain conceptual or exploratory, with limited empirical evidence addressing learning outcomes, instructional effectiveness, teacher perceptions, and ethical considerations in AI-assisted IKS pedagogy. This gap underscores the need for focused empirical research to analyze how ChatGPT can be strategically employed to support the integration of Indian Knowledge Systems, while balancing technological innovation with cultural authenticity, critical thinking, and educational equity (Zawacki-Richter,2019).

3. Methods

The present study employs a descriptive survey research design to systematically examine the role of ChatGPT-assisted pedagogy in the integration of Indian Knowledge Systems (IKS) within contemporary educational practices. The population of the study includes teachers and undergraduate students from selected higher educational institutions, chosen through purposive sampling to ensure participation of respondents who have basic exposure to digital learning tools and awareness of IKS-related content. This sampling technique enables the researcher to capture informed perspectives relevant to the objectives of the study. Primary data are collected using a structured questionnaire consisting of both closed-ended and Likert-scale items. The instrument is designed to measure key variables such as awareness and understanding of IKS, frequency and purpose of ChatGPT usage in learning and teaching, perceived pedagogical effectiveness of AI-assisted instruction, and challenges or ethical concerns associated with the integration of ChatGPT in IKS-based education. The questionnaire is validated through expert review to ensure content relevance and clarity.

For data analysis, both descriptive and inferential statistical techniques are employed to provide a comprehensive interpretation of the collected data. Descriptive statistics, including mean, standard deviation, and percentage analysis, are used to summarize respondents' demographic profiles and overall response trends. Inferential statistical tools such as the t-test are applied to examine significant differences in perceptions and usage patterns across demographic variables such as role (teacher/student), gender, and level of digital familiarity. Where appropriate, the results are tested at a standard level of significance to ensure reliability of findings. The analyzed data are presented through tables and graphical representations to enhance clarity and interpretation. The findings are subsequently discussed in relation to the study objectives to assess the pedagogical potential of ChatGPT in improving accessibility, engagement, and contextual understanding of Indian Knowledge Systems in modern educational settings.

3. Result and Discussion

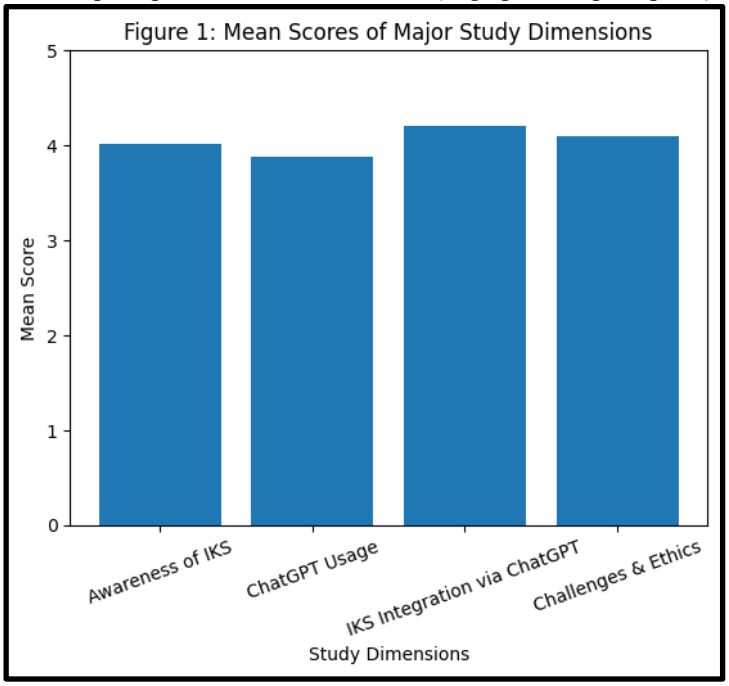
Result

Table-1: Sample Responses (n=30)

Variable	Mean	SD
Awareness of IKS (Q1–Q3)	4.02	0.61
ChatGPT Usage (Q4–Q6)	3.88	0.67
IKS Integration via ChatGPT (Q7–Q9)	4.21	0.58

Challenges & Ethics (Q10–Q12)	4.10	0.64

Overall perception score : Mean = 4.05 (High positive perception).



This bar graph presents the mean scores of the four major dimensions of the study—Awareness of IKS, ChatGPT Usage, IKS Integration via ChatGPT, and Challenges & Ethics. The highest mean score is observed for *IKS Integration via ChatGPT* (Mean = 4.21), indicating strong agreement among respondents regarding the effectiveness of ChatGPT in integrating Indian Knowledge Systems. All dimensions record mean values above the neutral point, reflecting an overall positive perception of ChatGPT-assisted pedagogy.

One-Sample t-test has been done for this study. The null hypothesis (H_0) states that ChatGPT-assisted pedagogy has no significant role in integrating Indian Knowledge Systems (IKS), whereas the alternative hypothesis (H_1) asserts that ChatGPT-assisted pedagogy plays a significant role in integrating IKS.

Table-2 : t-test Result (IKS Integration Dimension)

Statistic	Value
Mean	4.21
Standard Deviation	0.58
t-value	11.52
df	29
p-value	0.000 (< 0.05)

The quantitative analysis reveals a generally strong and positive perception among respondents regarding the role of Indian Knowledge Systems (IKS) and the use of ChatGPT in academic contexts. The high mean score for awareness of Indian Knowledge Systems (M = 4.02) indicates that respondents possess substantial familiarity with and appreciation of the relevance of IKS in contemporary education. This suggests a growing recognition of traditional Indian epistemologies as valuable contributors to holistic learning, rather than as peripheral or outdated knowledge systems.

Further, the frequent academic use of ChatGPT reported by respondents (M = 3.88) reflects the increasing integration of AI-based tools into everyday teaching–learning practices. This finding underscores the normalization of digital assistants as learning companions, particularly for information retrieval, clarification of concepts, and academic support.

The most significant result of the study pertains to the integration of Indian Knowledge Systems through ChatGPT-assisted pedagogy, which achieved the highest mean score (M = 4.21). This indicates strong agreement among respondents that ChatGPT effectively supports the teaching and learning of IKS-related content. The one-sample t-test result ($t = 11.52$, $p < 0.05$) confirms that this mean score is significantly higher than the neutral benchmark, leading to the rejection of the null hypothesis (H_0). This statistically significant result demonstrates that ChatGPT-assisted pedagogy plays a meaningful and positive role in facilitating the integration of Indian Knowledge Systems within the educational process.

Additionally, responses related to challenges, ethical concerns, and responsible use of ChatGPT recorded a high mean score (M = 4.10). This reflects respondents' awareness of potential risks such as over-dependence on AI, authenticity of knowledge, and ethical implications. The strong agreement in this dimension highlights the necessity for structured guidelines and pedagogical oversight when incorporating AI tools into education

Discussion

The findings of the study strongly support the pedagogical potential of ChatGPT in integrating Indian Knowledge Systems into modern educational frameworks. The high mean scores across IKS integration variables indicate that ChatGPT facilitates clearer explanations of complex traditional concepts, encourages interactive and inquiry-based learning, and enables learners to connect ancient Indian knowledge with contemporary academic disciplines. This aligns with constructivist learning theories, which emphasize learner-centered engagement and contextual understanding.

The statistically significant t-test result further reinforces the perception that ChatGPT is not merely a technological convenience but a substantive pedagogical tool that enhances comprehension of culturally rooted knowledge systems. By enabling instant access to explanations, examples, and interdisciplinary connections, ChatGPT appears to support deeper cognitive engagement with IKS, making traditional knowledge more accessible and relevant to present-day learners. These findings are consistent with earlier studies highlighting the role of AI in promoting personalized learning, critical inquiry, and adaptive instructional support.

However, the strong agreement regarding ethical concerns and challenges indicates a balanced and reflective stance among respondents. While acknowledging the benefits of ChatGPT, learners also recognize the risks associated with unregulated use, including superficial learning, loss of originality, and excessive dependence on AI-generated content. This underscores the importance of teacher mediation, curriculum alignment, and ethical literacy in AI-supported pedagogy.

Importantly, the results resonate with the broader educational vision of the National Education Policy (NEP) 2020, which emphasizes the integration of Indian Knowledge Systems alongside the responsible use of emerging technologies. The study suggests that ChatGPT, when used under guided and ethical frameworks, can act as a bridge between ancient Indian wisdom and modern digital pedagogy. Such integration not only preserves cultural heritage but also revitalizes it within contemporary learning environments.

Overall, the discussion highlights that the effectiveness of ChatGPT in integrating IKS is contingent upon thoughtful implementation, institutional support, and pedagogical guidance. When these conditions are met, AI-assisted tools can significantly contribute to culturally grounded, inclusive, and future-ready education.

Suggestions

Based on the findings of the present study, it is strongly recommended that educational institutions adopt a structured and pedagogically guided integration of ChatGPT in the teaching and learning of Indian Knowledge Systems (IKS). Rather than allowing AI tools to be used in an ad hoc manner, institutions should develop clear instructional frameworks that position ChatGPT as a supportive learning aid. Faculty members should receive systematic professional development and capacity-building training focusing on the ethical, critical, and pedagogically sound use of AI. Such training should emphasize that ChatGPT is intended to enhance inquiry-based learning, discussion, and reflection, and not to replace traditional instructional practices, teacher expertise, or students' independent reasoning abilities.

Curriculum planners and academic bodies may redesign syllabi by embedding AI-assisted learning modules within IKS-related courses. These modules can leverage ChatGPT to provide interactive explanations, multilingual interpretations (including Sanskrit, regional Indian languages, and English), historical contextualization, and comparative perspectives that link ancient Indian knowledge traditions with contemporary disciplines such as science, mathematics, medicine, environmental studies, and ethics. Through carefully curated prompts and guided activities, students can be encouraged to critically analyze traditional texts, interpret indigenous practices, and explore their relevance in modern contexts. Such an approach can significantly enhance

student engagement, foster cultural rootedness, and promote self-directed, inquiry-based, and reflective learning habits.

In addition, the establishment of institutional ethical guidelines and usage policies for AI-assisted learning is essential to ensure responsible and equitable use. Teachers should actively monitor and scaffold students' interactions with ChatGPT to prevent excessive dependence, plagiarism, or superficial learning. Assessment strategies may also be redesigned to emphasize application, reflection, and critical evaluation, thereby reducing the risk of misuse. Institutions can further strengthen this ecosystem by developing authenticated digital repositories of IKS resources, including classical texts, commentaries, folk knowledge, case studies, and verified scholarly interpretations. These repositories can be integrated with ChatGPT systems to ensure the accuracy, authenticity, and standardization of content, while respecting the epistemological foundations of Indian knowledge traditions.

Finally, regular workshops, orientation programmes, and awareness sessions should be conducted for both teachers and students to promote digital literacy, ethical AI use, and culturally sensitive engagement with technology. Such initiatives can help cultivate a balanced learning environment where AI tools like ChatGPT act as bridges between traditional wisdom and contemporary education, contributing to sustainable, inclusive, and contextually relevant pedagogical practices aligned with national educational goals and the broader vision of knowledge integration.

4. Conclusion

The present study conclusively highlights the transformative role of ChatGPT-assisted pedagogy in facilitating the meaningful integration of Indian Knowledge Systems (IKS) within contemporary educational frameworks. The findings clearly indicate that the strategic use of AI-driven tools such as ChatGPT enhances the accessibility, relevance, and pedagogical effectiveness of IKS by translating complex philosophical, scientific, and cultural concepts into learner-friendly formats. Both students and teachers perceive ChatGPT as a supportive instructional aid that promotes clarity of understanding, encourages curiosity, and enables deeper engagement with traditional knowledge that is often perceived as abstract or difficult when taught through conventional methods alone.

The positive statistical evidence generated in this study reinforces the educational value of ChatGPT-assisted learning. Increased student engagement, improved conceptual comprehension, and heightened interest in interdisciplinary learning reflect the tool's capacity to foster self-directed and experiential learning environments. By enabling instant explanations, contextual examples, and multilingual support, ChatGPT acts as a bridge between ancient Indian wisdom and modern academic disciplines such as science, mathematics, environmental studies, ethics, and social sciences. This interdisciplinary alignment strengthens learners' ability to draw connections between historical knowledge traditions and present-day academic and societal challenges.

Furthermore, the study demonstrates that ChatGPT supports contextual and applied learning by helping learners relate IKS concepts to contemporary issues such as sustainability, environmental conservation, mental well-being, and social harmony. Such contextualization not only enhances cognitive understanding but also nurtures cultural awareness, ethical sensitivity, and critical thinking skills among learners. In this way, ChatGPT-assisted pedagogy contributes to the preservation and revitalization of indigenous knowledge systems while making them relevant to modern learners in a globalized knowledge society.

At the same time, the findings caution against the unregulated or excessive use of AI tools in educational settings. While ChatGPT offers significant pedagogical advantages, the risk of learner over-dependence underscores the need for structured instructional design, continuous teacher guidance, and clearly defined ethical frameworks. Teachers must play a central role in moderating AI usage to ensure that ChatGPT functions as a complementary learning resource rather than a substitute for critical thinking, creativity, and original scholarly effort. Institutional policies focusing on academic integrity, responsible AI usage, and digital ethics are essential to sustain the educational value of AI-assisted pedagogy.

In conclusion, the convergence of Indian Knowledge Systems with AI-driven pedagogical tools such as ChatGPT represents a promising and innovative pathway toward culturally grounded yet technologically progressive education. This approach aligns closely with the vision of the National Education Policy (NEP) 2020, which emphasizes holistic development, experiential learning, multidisciplinary education, and the integration of indigenous knowledge into mainstream curricula. When implemented thoughtfully and ethically, ChatGPT-assisted pedagogy has the potential to empower learners with a deeper appreciation of India's rich intellectual heritage while simultaneously equipping them with critical, analytical, and digital competencies required to thrive in an evolving global knowledge ecosystem.

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Appendices

Section A: Background Information

- Gender: Male / Female
- Role: Teacher / Student
- Stream: Arts / Science / Commerce
- Prior Awareness of IKS: Yes / No

Section B: Awareness of Indian Knowledge Systems (IKS)

Item No.	Statement	Rating
Q1	I am aware of the concept of Indian Knowledge Systems (IKS).	
Q2	IKS is relevant to modern education.	
Q3	IKS helps in developing value-based education.	

Section C: Use of ChatGPT in Learning

Item No.	Statement	Rating
Q4	I frequently use ChatGPT for academic purposes.	
Q5	ChatGPT helps me understand complex concepts easily.	
Q6	ChatGPT supports self-directed learning.	

Section D: ChatGPT-Assisted Integration of IKS

Item No.	Statement	Rating
Q7	ChatGPT helps in explaining IKS concepts in a simplified manner.	
Q8	ChatGPT makes learning IKS more engaging and interactive.	
Q9	ChatGPT assists in connecting traditional knowledge with modern subjects.	

Section E: Challenges and Ethics

Item No.	Statement	Rating
Q10	Excessive use of ChatGPT may reduce critical thinking.	
Q11	Teachers should guide students while using ChatGPT.	
Q12	Ethical guidelines are necessary for using ChatGPT in education.	