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Artificial Intelligence as a Pedagogical Tool for Teaching Swachhta and Indian Knowledge Systems in Higher Education

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ABSTRACT

Deeply ingrained in ancient scriptures, cultural customs, and moral behavior, swachhta has been an essential part of Indian Knowledge Systems (IKS). Indian society has always been shaped by ideas of cleanliness, communal duty, environmental harmony, and purity. However, these indigenous values frequently continue to be isolated from current learners in higher education, who are increasingly impacted by digital learning methods. In this regard, artificial intelligence (AI) shows itself to be a strong teaching tool that can connect conventional knowledge with contemporary teaching methods. The use of artificial intelligence in teaching Swachhta and Indian knowledge systems in higher education is examined in this study. It looks at how AI-powered resources including learning management systems, digital archives, intelligent tutoring programs, and interactive customized apps might improve comprehension and applicability of Swachhta-related ideas derived from Indian customs. The paper examines the educational potential of AI in value-based education using a descriptive and analytical methodology based on secondary sources like articles and journals. The study makes the case that, when applied morally and carefully, AI broadens the scope and influence of traditional knowledge rather than replacing it. Higher education institutions can encourage sustainable living, cultural awareness, and responsible citizenship among students by fusing AI with indigenous educational ideals. The study comes to the conclusion that, in the current educational environment, AI-enabled pedagogy might be extremely significant for maintaining, promoting, and reviving Indian Knowledge Systems associated to Swachhta.

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KEYWORDS

Artificial Intelligence; Swachhta; Indian Knowledge Systems; Pedagogy; Higher Education; Sustainability

OBJECTIVES OF THE STUDY

The objectives of the study are:

1. To examine the concept of Swachhta as reflected in Indian Knowledge Systems.
2. To explore the role of Artificial Intelligence in contemporary higher education.
3. To analyze AI as an effective pedagogical tool for teaching Swachhta and IKS.
4. To suggest ways of integrating AI-driven methods into value-based education.

INTRODUCTION

Since ancient times, cleanliness, or swachhta, has played a major role in Indian knowledge systems. (Chattopadhyay, S., 2024) Indian philosophical traditions see personal hygiene as a social, ethical, and spiritual responsibility in addition to a physical one. Texts like the Vedas, Upanishads, Ayurveda, and Dharmashastras are rich in ideas like reverence for nature, dinacharya (daily discipline), and aurcha (purity). These customs place a strong focus on communal well-being, environmental harmony, and personal hygiene as essential components of sustainable life. Through national programs like the Swachh Bharat Abhiyan, which aims to combine traditional values with modern sanitation methods, these indigenous concepts are given fresh life in modern India.

In order to pass on such value-based information to future generations, higher education is one of the key essential factors. However, modern learners who are surrounded by digital settings frequently find it difficult to be engaged by old methods of teaching Indian Knowledge Systems. (Kanwar, S., & Rai, M. N. 2025) Teachers must embrace cutting-edge pedagogical strategies since the swift growth of technology-driven education has changed the learning environments. In particular, artificial intelligence (AI) and machine learning has become an influential force in changing how people study and teach in a variety of academic fields like schools, colleges and Institutions. Intelligent tutoring systems, digital repositories, adaptive learning platforms, and interactive material delivery systems are examples of AI-enabled products that present new opportunities to improve learner accessibility and engagement among the students.

AI can serve as a link between traditional knowledge and contemporary teaching methods in the context of Indian Knowledge Systems. (Singh, M. N. I., & Meitei, M. A. P) AI can assist a greater knowledge of Swachhta-related concepts entrenched in Indian traditions by digitizing literature, providing personalized learning routes, and producing

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interactive learning experiences. AI is a helpful pedagogical tool that enhances the work of educators in value-based education rather than taking the place of human instruction. This research examines how AI may revitalize the teaching of Swachhta and Indian Knowledge Systems in higher education by placing it within the larger context of educational pedagogy. Institutions can encourage sustainability, ethical consciousness, and responsible citizenship among students by fusing technology with cultural heritage.

REVIEW OF LITERATURE

The holistic aspect of cleanliness in ancient Indian thought is highlighted by scholarly studies of Swachhta within Indian Knowledge Systems. Research on Ayurveda and Vedic traditions highlights the tight relationship between spiritual purity, mental discipline, and physical well-being. (Kapadia, M., & Dagar, C., 2022).) Researchers have noted that traditional Indian methods of managing trash, conserving water, and maintaining communal hygiene show a sophisticated awareness of environmental sustainability. These customs reinforced the notion that Swachhta was a shared obligation because they were integrated into everyday routines and social structures rather than being isolated tasks.

Further research on Indian knowledge systems indicates that schooling was essential to maintaining and passing along these ideals to future generations. Ethical and hygienic behaviors were frequently instilled through the employment of traditional pedagogical techniques like oral transmission, storytelling, and practical learning. (et al (Goraya, M. M., 2025. p186-205.) However, a number of academics note that indigenous knowledge is frequently marginalized in favor of Western frameworks in current educational systems, creating a gap between cultural heritage and modern learning.

The majority of the research on artificial intelligence in education system has been on how it can improve learner engagement, efficiency, and customization. According to (et al (Navas Bonilla, C. D. R. 2025 p366) AI-powered learning environments can actually promote self-directed learning, offer real-time feedback, and adjust to different learning styles. The use of AI in digital archiving and knowledge preservation, which makes enormous amounts of traditional knowledge available to a larger audience, is another point made by academics. AI is becoming more closely linked to digital humanities projects in humanities education that integrate technology with literary and cultural studies. (Chun, J., & Elkins, K. 2023 p 147-167)

The integration of AI in education and Indian knowledge systems has received little scholarly attention, especially when it comes to teaching Swachhta-related ideals, despite the fact that both fields have seen substantial research. Studies that are now available hardly ever look at how AI can be used as a teaching tool to teach indigenous ethical and sustainable values. The necessity for interdisciplinary study that integrates technology,

pedagogy, and cultural studies is highlighted by this gap. By examining the pedagogical potential of AI in teaching Swachhta and Indian Knowledge Systems within the context of higher education, the current study fills this gap and lay path to the new ideas and innovation in teaching learning process.

DISCUSSION AND ANALYSIS

Swachhta in Indian Knowledge Systems: A Holistic Perspective

According to Indian Knowledge Systems, Swachhta is a comprehensive notion that includes environmental harmony, mental purity, social duty, and physical cleanliness. Saucha is emphasized in ancient Indian writings as a moral and spiritual discipline that is necessary for a balanced life, in addition to being personal hygiene. Ayurvedic methods, such dinacharya, emphasize the value of cleanliness in day-to-day activities, while customs from the community emphasize shared accountability for keeping the environment neat and tidy. (Mane, G. M. 2023, p 69) According to these indigenous viewpoints, Swachhta is not a stand-alone practice but rather an essential component of sustainable existence. However, in higher education, these comprehensive understandings are sometimes limited to theoretical discussions, requiring creative instructional approaches to make them relevant for modern students in to their practice for their life.

Artificial Intelligence in Higher Education: Pedagogical Possibilities

By providing individualized, interactive, and adaptive learning environments, artificial intelligence has had a profound impact on contemporary educational methods. Learners can access content at their own pace, get immediate feedback, and interact with multimedia resources that improve comprehension thanks to AI-driven platforms. (Aithal, S., & Aithal, P. S. 2023). AI is being employed more and more in digital libraries, learning management systems, and intelligent tutoring programs in higher education. When used carefully, these tools promote not only skill-based learning but also conceptual and value-oriented education. AI is especially well-suited for teaching multidisciplinary disciplines like Indian Knowledge Systems because, from a pedagogical standpoint, it supports learner-centered education by promoting inquiry, introspection, and critical engagement. (Li, W. 2025, June)

AI as a Tool for Teaching Swachhta and Indian Knowledge Systems

When teaching Swachhta and Indian Knowledge Systems, artificial intelligence acts as a bridge between traditional knowledge and digital learning environments. AI-powered digital archives can retain traditional literature, commentaries, and cultural narratives on cleanliness and sustainability. et al (Ardalan, I. D., 2025) Interactive platforms enable students to engage with indigenous knowledge in ways that go beyond memorization by showcasing traditional activities through multimedia formats, narrative, and simulations. Additionally, instructors can use AI-enabled tools to contextualize Swachhta principles

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within modern sustainability discourse, which helps students make the connection between traditional ideals and contemporary environmental challenges. Thus, AI enhances accessibility, relevance, and engagement while maintaining the integrity of cultural information.

Role of Educators in AI-Enabled Value-Based Education

Teachers continue to play a crucial role in education despite the increasing use of AI, particularly in value-based learning. According to (Oye, E. 2025) (Riser, P. 2025). Teachers serve as intermediaries, placing AI-generated material in context and assisting students with moral interpretation. Teachers must make sure that technology enhances human insight rather than replaces it when teaching Swachhta and Indian Knowledge Systems. While AI can help with resource organization and material delivery, human connection is the best way to foster moral reasoning, cultural sensitivity, and critical discourse. Thus, pedagogical training, ethical consciousness, and a balanced approach that honors both technological innovation and conventional wisdom are necessary for the successful integration of AI in higher education. (et al Ojha, M., 2025).

Integrating AI with Sustainability and Ethical Learning

The objectives of sustainable development are strongly aligned with the incorporation of artificial intelligence into Swachhta education. AI-enabled pedagogy fosters the development of socially conscious citizens by raising awareness of cleanliness, responsible consumption, and environmental stewardship. By fusing traditional ecological knowledge with contemporary sustainable practices, AI tools can promote reflective learning. Students' long-term behavioral transformation and ethical consciousness are encouraged by this multidisciplinary approach. In this approach, (et al Allam, 2025). AI in higher education becomes more than just a technological tool; it becomes a tool for sustainable existence and cultural continuity.

FINDINGS

Several significant conclusions are drawn from the examination of artificial intelligence as a teaching tool for Swachhta and Indian Knowledge Systems in higher education. First, Swachhta is a multifaceted notion in Indian Knowledge Systems that incorporates social harmony, environmental responsibility, ethical discipline, and physical cleanliness. Despite being extremely pertinent to current sustainability issues, these holistic ideals are frequently under-represented in contemporary curricula.

Second, the teaching and learning of values-based and culturally grounded courses could be greatly improved by artificial intelligence. Digital repositories, interactive learning platforms, and adaptive learning systems are examples of AI-enabled solutions that make traditional information more accessible and encourage student involvement. With the help

of these resources, students can engage with indigenous ideas in ways that suit their preferred method of digital learning.

Third, the study concludes that rather than taking the place of conventional schooling, AI is a useful support system. By connecting traditional Swachhta practices with contemporary ecological issues, AI promotes contextual learning under the direction of educators. Students' comprehension of ethical and cultural values is strengthened by the incorporation of AI, which promotes interdisciplinary learning opportunity among the students and critical thought.

Lastly, the results show that pedagogical sensitivity and ethical awareness are essential for the effective application of AI in teaching Indian Knowledge Systems. In order to ensure that technological tools maintain the authenticity and cultural depth of Swachhta-related knowledge, educator involvement is essential.

CONCLUSION

The use of artificial intelligence as a teaching tool for Swachhta and Indian Knowledge Systems in higher education has been investigated in this work. Swachhta, which has its roots in ancient Indian customs, is an all-encompassing concept of cleanliness that includes environmental sustainability, social responsibility, and personal hygiene. Effectively imparting these indigenous values to modern learners is a problem in a time when digital learning predominates.

By improving accessibility, engagement, and contextual understanding, artificial intelligence presents creative solutions to this problem. Indian Knowledge Systems can continue to be useful in higher education when AI is carefully used to bridge the gap between traditional knowledge and contemporary teaching methods. The study does, however, highlight that AI should serve as an auxiliary tool under the direction of human educators who offer cultural context and ethical interpretation.

Incorporating AI-driven pedagogy into Swachhta instruction not only enhances academic learning but also promotes responsible citizenship and sustainable thinking. Higher education institutions may make a significant contribution to national growth and cultural preservation by balancing technology and traditional knowledge. The study comes to the conclusion that the revitalization of Indian knowledge systems for a sustainable future can be greatly aided by the balanced and value-oriented application of artificial intelligence.

LIMITATIONS OF THE STUDY

This study relies primarily on secondary sources, including academic literature, policy documents, and conceptual analyses. Consequently, it does not incorporate empirical data from classroom applications, student assessments, or institutional case studies, which

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limits the ability to evaluate the practical effectiveness of AI-based pedagogy in teaching Swachhta and Indian Knowledge Systems.

The research adopts a theoretical and descriptive approach rather than an experimental or longitudinal framework, restricting its capacity to measure long-term educational impact, behavioral change, or sustained value internalization among learners. Additionally, the study is focused on higher education, and its findings may not be directly transferable to school-level or community-based learning environments.

Given the rapidly evolving nature of artificial intelligence, some technological insights discussed may require future revision. Ethical considerations—such as cultural authenticity, algorithmic bias, and equitable access to AI tools—are acknowledged but not explored in depth, representing another constraint of the study.

SCOPE FOR FURTHER STUDIES

Future research can extend this work through empirical and field-based investigations, examining the real-time implementation of AI tools in teaching Swachhta and Indian Knowledge Systems. Quantitative and qualitative studies involving learners and educators could offer stronger evidence regarding learning outcomes, engagement, and value formation.

Comparative studies assessing AI-driven versus traditional pedagogical approaches would further clarify the effectiveness of technology-supported value education. Additional research may also explore AI's role in the preservation, digitization, and regional diversification of indigenous knowledge, expanding beyond the thematic focus on Swachhta.

There is significant potential for examining the ethical, cultural, and socio-educational implications of AI integration in heritage-based learning. Interdisciplinary studies combining education, sustainability, technology, and cultural studies could contribute to the development of more culturally grounded, ethically responsible, and future-oriented educational models.

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