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ARTIFICIAL INTELLIGENCE AND CULTURAL SUSTAINABILITY: REVIVING INDIGENOUS KNOWLEDGE IN INDIAN SCHOOLS

Samapti Panja[1] & Chandan Mandal[2]

[1]M.A, B. Ed, Department of Education, Jadavpur University, Kolkata, West Bengal, India.

[2]Research Scholar (Ph. D), Department of Education, Kazi Nazrul University, Asansol, West Bengal,India.

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Keywords	Abstract
Artificial Intelligence, Cultural Sustainability, Indigenous Knowledge Systems, Indian Education, Digital Preservation, Educational Technology.	The rapid advancement of Artificial Intelligence (AI) has significantly influenced modern education systems across the world. In the Indian context, there is a growing need to integrate technological innovation with the preservation of Indigenous Knowledge Systems (IKS), which represent the cultural heritage, traditional practices, languages, and ecological wisdom of local communities. This study explores the role of Artificial Intelligence in promoting cultural sustainability by reviving and integrating indigenous knowledge into Indian school education. The research examines how AI technologies can support the documentation, preservation, and dissemination of indigenous knowledge through digital archives, language processing tools, and interactive educational platforms. It also highlights the potential of AI-driven learning systems to create culturally responsive educational content that connects students with traditional knowledge and community-based practices. Furthermore, the study discusses the opportunities and challenges associated with using AI in preserving indigenous knowledge, including issues related to digital access, ethical considerations, and cultural sensitivity. By integrating AI with Indigenous Knowledge Systems, schools can foster culturally inclusive education while strengthening students' understanding of India's diverse

	cultural heritage. The study concludes that the thoughtful use of AI can serve as an effective tool for revitalizing indigenous knowledge and promoting cultural sustainability in the Indian education system.

1. INTRODUCTION

Education plays a crucial role in preserving cultural heritage and transmitting traditional knowledge from one generation to another (Mandavkar, 2023). In the Indian context, Indigenous Knowledge Systems (IKS) represent a rich repository of cultural values, traditional practices, ecological wisdom, and philosophical insights that have evolved over centuries (Khurana, 2025). These knowledge systems are deeply rooted in local communities and include traditional agriculture, medicine, art, language, folklore, and ethical values (Khurana, 2025).

However, with the rapid expansion of globalization and modernization, many aspects of indigenous knowledge are gradually disappearing from mainstream education (Lal et al., 2024). In recent years, the emergence of Artificial Intelligence (AI) has transformed the landscape of education by enabling innovative methods of teaching, learning, and knowledge preservation (Bonaldo & Pereira, 2023). AI technologies such as machine learning, natural language processing, and digital knowledge repositories have the potential to document, analyze, and disseminate indigenous knowledge in new and accessible ways (Tella et al., 2025). By integrating AI with educational systems, it becomes possible to create interactive learning platforms, digital archives, and culturally responsive curricula that help students engage with traditional knowledge in meaningful ways (Sharma & Awasthi, 2025).

Cultural sustainability refers to the preservation, protection, and promotion of cultural heritage, traditions, and values for future generations (Elliason, 2025). In the context of Indian schools, promoting cultural sustainability means ensuring that students are not only exposed to modern scientific knowledge but also develop an understanding and appreciation of their indigenous heritage (Rao, 2006). Integrating indigenous knowledge into school education can strengthen cultural identity, promote respect for diversity, and encourage sustainable ways of living (Deckker & Sumanasekara, 2025).

Artificial Intelligence can play a significant role in reviving and integrating indigenous knowledge into school education. AI-powered tools can help digitize ancient texts, preserve local languages, and develop educational resources based on traditional knowledge systems. Moreover, intelligent learning systems can personalize cultural learning experiences and make indigenous knowledge more accessible to students across diverse regions (Deckker & Sumanasekara, 2025).

Therefore, the integration of AI with indigenous knowledge in education presents a unique opportunity to promote cultural sustainability in India. It can bridge the gap between traditional

wisdom and modern technology, ensuring that valuable cultural knowledge is preserved while also making it relevant to contemporary educational practices (Elliason, 2025). This study aims to explore the potential role of Artificial Intelligence in reviving indigenous knowledge and promoting cultural sustainability in Indian schools.

2. RESEARCH OBJECTIVES

- To explore the concept of Artificial Intelligence and its role in modern education.
- To explore the significance of Indigenous Knowledge Systems in promoting cultural sustainability in India.
- To analyse how Artificial Intelligence can help preserve, document, and disseminate indigenous knowledge in school education.
- To identify the challenges and opportunities in using Artificial Intelligence for reviving indigenous knowledge in the educational system.

3. RESEARCH METHODOLOGY

The present study adopts a qualitative and descriptive research approach to explore the role of Artificial Intelligence in preserving and promoting Indigenous Knowledge Systems (IKS) in Indian school education. The study focuses on analysing how modern technological tools can support the revival and integration of indigenous knowledge to ensure cultural sustainability. This research is based on a descriptive and analytical research design. It aims to examine existing literature, policies, and educational practices related to Artificial Intelligence and Indigenous Knowledge Systems in India. Data will be collected through document analysis and literature review. Various scholarly works related to AI, Indigenous Knowledge Systems, and cultural sustainability will be carefully examined. The collected data will be analysed using qualitative content analysis. Themes and concepts related to Artificial Intelligence, cultural sustainability, and indigenous knowledge integration in school education will be identified and interpreted.

4. FINDINGS AND DISCUSSION

➢ Artificial Intelligence: Concept

The automation of thought is known as artificial intelligence (AI) (Poeta et al., 2025).

AI may be criticized for providing autonomy instead of automation. From a technological perspective, autonomy might be described as the automation of automation. Assume, for instance, that a paper about an algorithm that automates an organization's information workflow is sent by an author (Sarmah, 2019). AI research objectives, including theoretical aims One of the long-term objectives of the discipline is knowledge representation, planning, learning, natural language processing, comprehension, and the capacity to move and handle objects general education (the capacity to solve issues autonomously) (Chatterjee, 2020). In terms of Transactions on Artificial Intelligence, such a study would not be regarded as an AI paper because it is about automating a procedure in an organization and would be appropriate for other journals (Yashchenko, 2014).

Assume, however, that the authors investigated this automation under many conditions and created a genetic programming tree or neural network that can automatically produce an algorithm to automate the process (Poeta et al., 2025). Therefore, the majority of Transactions on Artificial Intelligence's associate editors would concur that this article is appropriate. The article would pass the initial screening process to see whether or not it is within scope, but it is still unclear if it is suitable for publishing.

Artificial intelligence is a social and cognitive phenomenon that allows a machine to communicate with other members of society by exchanging messages with high information content and shorter representations, as well as to socially integrate with society to perform competitive tasks requiring cognitive processes (Sarmah, 2019). The aforementioned description views AI as a social and cognitive phenomenon rather than just a technology or product (Chatterjee, 2020). In order to distinguish between AI as a cognitive phenomenon of individuals and AI as a social phenomenon that arises from the interaction of persons in a society, the word "phenomena" is plural (Yashchenko, 2014).

- **Artificial Intelligence: It's Role in Modern Education**

The Artificial Intelligence (AI) in modern education is becoming increasingly important as it helps improve teaching, learning, and educational management (Chheda et al., 2023). AI technologies support personalized learning, efficient administration, and better access to knowledge. AI helps create personalized learning experiences for students. Intelligent systems can analyze students' learning speed, strengths, and weaknesses and provide customized study materials and feedback (Ran & Korovnikova, 2021). This helps students learn at their own pace. AI-powered tutoring systems can guide students by providing explanations, answering questions, and giving practice exercises. These systems work like virtual tutors and support students outside the classroom (Iasechko et al., 2022). AI can automatically grade assignments, quizzes, and exams. It also provides instant feedback to students, helping them understand their mistakes and improve their learning. Teachers can use AI tools to prepare lessons, analyze students' performance, and identify learning gaps. This helps teachers focus more on creative and interactive teaching. AI helps educational institutions manage administrative tasks such as admissions, scheduling, attendance tracking, and student records more efficiently (Chheda et al., 2023). AI-powered tools such as speech recognition, text-to-speech, and language translation make education more accessible for students with disabilities and those from different linguistic backgrounds (Ran & Korovnikova, 2021). AI analyzes educational data to help schools and policymakers make better decisions regarding curriculum design, teaching methods, and student support systems (Iasechko et al., 2022).

In modern education, AI plays a transformative role by enhancing learning experiences, supporting teachers, and improving institutional management. However, it should be used responsibly to ensure ethical practices, data privacy, and equal access to technology.

- **Indigenous Knowledge Systems: Promoting Cultural Sustainability**

Indigenous Knowledge Systems (IKS) refer to the traditional knowledge, skills, beliefs, and practices developed by local communities through generations. In India, IKS is deeply connected with culture, environment, spirituality, and social life (Ajani et al., 2024). These knowledge systems play a vital role in preserving traditions and promoting cultural sustainability, which means maintaining and protecting cultural heritage, values, and practices for future generations (Handayani et al., 2018).

IKS helps preserve traditional customs, rituals, languages, and social practices that form the cultural identity of communities (Breidlid, 2009). These traditions strengthen the sense of belonging and continuity of cultural heritage. Indigenous knowledge is usually passed from elders to younger generations through storytelling, observation, and practical experiences (Acton et al., 2017). This intergenerational transmission ensures the survival of cultural traditions. Many indigenous practices in India promote harmony with nature, such as traditional farming methods, herbal medicine, and ecological conservation (Breidlid, 2009). These practices support environmental sustainability along with cultural preservation. IKS reinforces community identity and social cohesion (Acton et al., 2017). Local festivals, folk arts, crafts, and traditional knowledge systems help maintain the unique cultural identity of different regions of India (Handayani et al., 2018).

In recent years, educational policies in India have emphasized the inclusion of indigenous knowledge in curricula. This integration helps students appreciate cultural heritage while connecting traditional wisdom with modern knowledge (Breidlid, 2009). Indigenous Knowledge Systems play a crucial role in promoting cultural sustainability in India by preserving traditions, strengthening community identity, and encouraging sustainable living practices (Ajani et al., 2024). Recognizing and integrating IKS into education and development policies can help protect India's rich cultural heritage while promoting sustainable development.

- **Artificial Intelligence: Preserve, Document, and Disseminate Indigenous Knowledge**

Artificial Intelligence (AI) can play an important role in preserving and promoting Indigenous Knowledge Systems (IKS) in school education. Indigenous knowledge includes traditional practices, languages, cultural values, local histories, and ecological wisdom developed by communities over generations (Tella et al., 2025). AI technologies can help document, protect, and share this knowledge with students in a systematic and accessible way. AI tools can help collect and digitize

indigenous knowledge such as oral traditions, folk stories, songs, rituals, and traditional practices (Horna-Saldaña et al., 2025). Speech recognition and text analysis technologies can convert oral narratives into written and digital formats, ensuring that valuable knowledge is preserved for future generations.

Many indigenous languages are disappearing. AI-based language processing and translation tools can help record, analyze, and translate indigenous languages. This helps preserve linguistic diversity and allows students to learn about local cultures and traditions. AI can help organize large amounts of cultural data into digital archives. These archives may include traditional medicinal knowledge, agricultural practices, crafts, and folklore. Schools and researchers can access these digital repositories for educational purposes (Ehikioya & Olusayo, 2025). AI-based educational platforms can create interactive learning materials such as virtual storytelling, simulations, and multimedia lessons related to indigenous culture (Horna-Saldaña et al., 2025). This makes learning more engaging and helps students understand local traditions and cultural heritage. AI-powered learning systems can distribute indigenous knowledge through online learning platforms, educational apps, and smart classrooms (Ehikioya & Olusayo, 2025). Students from different regions can learn about diverse indigenous cultures of India. AI can analyze cultural data and help educators integrate indigenous knowledge into school curricula. This supports culturally relevant education and aligns with efforts to include traditional knowledge in modern education.

Artificial Intelligence has significant potential to preserve, document, and disseminate indigenous knowledge in school education (Horna-Saldaña et al., 2025). By digitizing cultural resources, protecting languages, and creating interactive learning systems, AI can help safeguard traditional wisdom while making it accessible to future generations (Tella et al., 2025). However, ethical use and respect for community ownership of knowledge are essential when using AI for this purpose.
Artificial Intelligence: Opportunities for reviving indigenous knowledge in School Education

AI technologies can help digitize and preserve traditional knowledge such as folklore, oral traditions, medicinal practices, and cultural rituals. This ensures that valuable indigenous knowledge is not lost over time. Many indigenous communities transmit knowledge orally. AI tools such as speech recognition and language processing can convert oral narratives into written and digital formats, making them easier to store and study. AI-based translation and language learning tools can help preserve and promote endangered indigenous languages by creating digital dictionaries, learning materials, and educational resources. AI can help educators develop interactive learning materials, digital content, and educational platforms that incorporate indigenous knowledge into the curriculum, making education more culturally relevant. AI-powered digital platforms allow indigenous knowledge to reach a broader audience, enabling students from different regions to learn

about diverse cultural traditions and practices. AI can analyze large amounts of cultural and educational data, helping researchers and policymakers design better strategies for integrating indigenous knowledge into the education system.

- **Artificial Intelligence: Challenges for reviving indigenous knowledge in School Education**

Many indigenous communities have limited access to digital technology and internet connectivity. This digital divide can restrict their participation in AI-based knowledge preservation projects. Indigenous knowledge belongs to communities, and its digital documentation raises issues related to ownership, consent, and cultural sensitivity. AI systems must respect community rights and traditions. AI systems may misinterpret cultural practices, languages, or symbolic meanings if the data is incomplete or incorrectly recorded. Indigenous knowledge is often scattered and undocumented, making it difficult to collect accurate and reliable data for AI systems. There is a shortage of experts who understand both AI technology and indigenous knowledge systems. This can limit the effective integration of AI in this field. Excessive reliance on digital tools may reduce direct community interaction and traditional methods of knowledge transmission. Artificial Intelligence offers significant opportunities to revive and promote Indigenous Knowledge Systems in the educational system through preservation, documentation, and wider dissemination. However, addressing challenges such as ethical concerns, the digital divide, and cultural sensitivity is essential. A balanced approach that respects community participation and integrates traditional knowledge with modern technology can make AI a powerful tool for cultural sustainability in education.

5. CONCLUSION

The study on Artificial Intelligence and Cultural Sustainability: Reviving Indigenous Knowledge in Indian Schools highlights the growing importance of integrating modern technology with traditional knowledge systems. Indigenous Knowledge Systems (IKS) represent the cultural heritage, values, practices, and ecological wisdom developed by Indian communities over generations. However, due to globalization, modernization, and changes in the education system, many aspects of this knowledge are gradually disappearing.

Artificial Intelligence offers significant opportunities to preserve, document, and disseminate indigenous knowledge in a systematic and accessible way. Through digital archiving, language processing, virtual learning tools, and intelligent educational platforms, AI can help record oral traditions, local histories, folk practices, and indigenous languages. Integrating such resources into school education can promote culturally relevant learning and help students develop respect for their cultural heritage.

Furthermore, the inclusion of indigenous knowledge in school curricula can support the goals of culturally sustainable education by strengthening cultural identity, community participation, and

environmental awareness among students. AI-based educational technologies can make learning more interactive, inclusive, and connected to local knowledge traditions.
However, the successful implementation of AI in this field requires careful attention to ethical concerns, cultural sensitivity, data ownership, and equitable access to technology. Collaboration between educators, indigenous communities, researchers, and policymakers is essential to ensure that indigenous knowledge is represented accurately and respectfully.

In conclusion, the thoughtful integration of Artificial Intelligence with Indigenous Knowledge Systems has the potential to promote cultural sustainability in Indian schools by preserving traditional wisdom while enriching modern education. This approach can help create a balanced education system that values both technological advancement and cultural heritage for future generations.

6. AUTHOR(S) CONTRIBUTION

The writers affirm that they have no connections to, or engagement with, any group or body that provides financial or non-financial assistance for the topics or resources covered in this manuscript.

7. CONFLICTS OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

8. PLAGIARISM POLICY

All authors declare that any kind of violation of plagiarism, copyright and ethical matters will take care by all authors. Journal and editors are not liable for aforesaid matters.

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