International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Challenges While Designing School Curriculm Through the Lens of Indian Knowledge System in Era of Artificial Intelligence

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ABSTRACT

In the 21st-century educational landscape, Artificial Intelligence (AI) has profoundly impacted teaching-learning methods, assessment systems, and curriculum development processes. At this time, school curriculum development has become more than just a means of acquiring knowledge, but also a foundation for life skills, innovation, and value-based education. The Indian Knowledge System (IKS) holds a special place in the Indian education tradition, encompassing a rich repository of the Vedas, Upanishads, philosophy, mathematics, Ayurveda, astronomy, yoga, and ethical values. The New Education Policy 2020 clearly emphasizes the need to integrate the Indian knowledge system into the curriculum at the school level. However, curriculum development in the age of artificial intelligence faces numerous challenges. The primary challenge is striking a balance between traditional knowledge and modern technological education. The second challenge is to utilize digital resources and AI-based tools in a way that does not weaken Indian philosophical and cultural values, but rather strengthens them. The third major challenge is teacher training and sensitivity, as using AI-based teaching tools requires both technical proficiency and cultural perspectives. In addition, textbook development, the availability of multilingual resources, and the integration of local and global perspectives also pose challenges. The need today is for school curricula that prepare students for global competitiveness while also connecting them to Indian traditions and values. This research paper theoretically supports the idea that curriculum development in the AI era can be effective only if it incorporates the philosophical, ethical, and cultural dimensions of the Indian knowledge system, and if teachers are trained and empowered in this direction.

KEYWORDS: School Curriculum, Indian Knowledge System, Artificial Intelligence**,** School Education and NEP 2020

INTRODUCTION

The Indian educational system is a complex structure with advantages and disadvantages. Even while it struggles with problems like rote learning and quality discrepancies, there are exciting potential for change, such digital transformation, creative teaching strategies, and vocational education. It is impossible to overestimate the influence that educators have on the system, and funding their professional development is essential. Indian education is becoming more and more well-known throughout the world,

which helps the nation's soft power. Addressing the issues and seizing the chances presented by the Indian educational system are crucial for securing the country's future. Teachers in the Indian educational system have a significant impact on students' academic and psychological growth. The quality of schooling is significantly impacted by their commitment and proficiency. As a result, funding professional development and teacher training is crucial. Teachers must possess the abilities and know-how to adjust to the evolving educational landscape and the shifting requirements of their students. The varied curriculum options of the Indian educational system are one of its unique characteristics. Students can select from a variety of courses, including the humanities, arts, social sciences, and STEM (science, technology, engineering, and mathematics). Students' varied interests and career goals are met by this diversity, which enables them to follow their passions and succeed in their chosen sectors.

India's education system has significantly improved access, marked by high enrolment rates at all levels and comprehensive reforms such as the National Education Policy (NEP) 2020. These initiatives emphasize curriculum modernization, incorporating contemporary skills and knowledge, and promoting multilingual early education to nurture diverse linguistic backgrounds. The adoption of a 5+3+3+4 structure aims to provide a more holistic and flexible learning experience, catering to different developmental stages. Despite these positive developments, challenges remain in ensuring quality learning outcomes, reducing disparities between urban and rural areas, and addressing socio-economic inequalities. Continued efforts are necessary to ensure education is truly inclusive, equitable, and able to prepare students for future demands. The findings of the ASER 2023 survey highlight a worrying learning crisis affecting millions of students across the country. Data shows that many learners aged 14 to 18, as well as primary-level students, continue to lack basic numeracy and language skills. This situation highlights a sobering reality: simply enrolling children in schools does not guarantee meaningful education. Quality education, focusing on basic skills, must be prioritized to ensure that students acquire the necessary competencies needed for their future development and socio-economic mobility. Furthermore, reports from the World Bank and UNESCO draw attention to the widespread issue of 'learning poverty' in India—a situation where children are unable to read and understand basic texts. The pandemic has exacerbated this crisis, causing widespread disruptions to education systems across the country. The COVID-19 pandemic led to school closures, a shift to online education, and other disruptions, resulting in a significant decline in children's learning abilities, particularly in their reading abilities. Studies indicate that these learning losses persist and have not been fully compensated, especially in rural areas where resources and infrastructure are limited. The recovery process remains slow and uneven, underscoring the need for targeted and sustained intervention programs to bridge learning gaps. The digital divide further exacerbates these challenges. Access to digital devices and reliable internet connectivity varies greatly across regions and socio-economic groups. Students from remote and poor communities often find themselves at a significant disadvantage in online or hybrid learning environments, further exacerbating existing inequalities. While the National Education Policy (NEP) 2020 outlines a visionary framework that emphasizes foundational skills, a multidisciplinary approach, and inclusive education, the effectiveness of its implementation depends heavily on addressing infrastructure and resource-related constraints. Without concerted efforts to ensure equitable access and quality education, the goal of transforming education for all remains a distant goal.

As artificial intelligence revolutionizes education, there is a growing emphasis on incorporating Indian Knowledge Systems (IKS) into school and university curricula, aligning with the goals outlined in the National Education Policy 2020. While this integration promises to enrich learning experiences and foster

cultural pride, designing effective and inclusive curricula that authentically represent IKS remains a complex challenge, requiring careful consideration and collaboration among educators, scholars, and policymakers.

In the rapidly evolving era of artificial intelligence, the education landscape is undergoing profound transformation. As digital tools and machine learning algorithms reshape teaching and learning processes, the integration of Indian Knowledge Systems (IKS) into modern curriculum is emerging as a necessary and complex endeavor. Traditional Indian education emphasizes a holistic approach, centered on ethics, experiential learning, and harmony with nature, offering valuable perspectives that are often overlooked in traditional, technology-driven classrooms, where logic, automation, and standardized assessments are prioritized. The National Education Policy (NEP) 2020 advocates a meaningful integration of IKS with contemporary technological advancements, acknowledging the importance of preserving indigenous knowledge while fostering innovation. However, significant challenges remain—disparities in digital infrastructure across regions, inadequate training for teachers in IKS principles, and a lack of localized content in regional languages pose obstacles to implementation. To realize the full potential of AI in Indian education, it is essential that technological solutions are designed to incorporate Indian values such as self-awareness, community interconnectedness, and environmental harmony. This integration can help cultivate a generation that is not only technologically competent but also rooted in cultural identity and ethical consciousness, ensuring a more inclusive and holistic educational future.

In many rural and semi-urban areas across India, the integration of artificial intelligence (AI) into education faces serious obstacles. Limited internet connectivity hinders access to online resources and AI-powered tools, while unreliable power supply makes consistent technology use difficult. Furthermore, a lack of digital devices such as computers and tablets prevents both teachers and students from engaging with emerging educational technologies. These infrastructural challenges pose a significant obstacle to implementing AI-based solutions that could otherwise improve learning experiences.

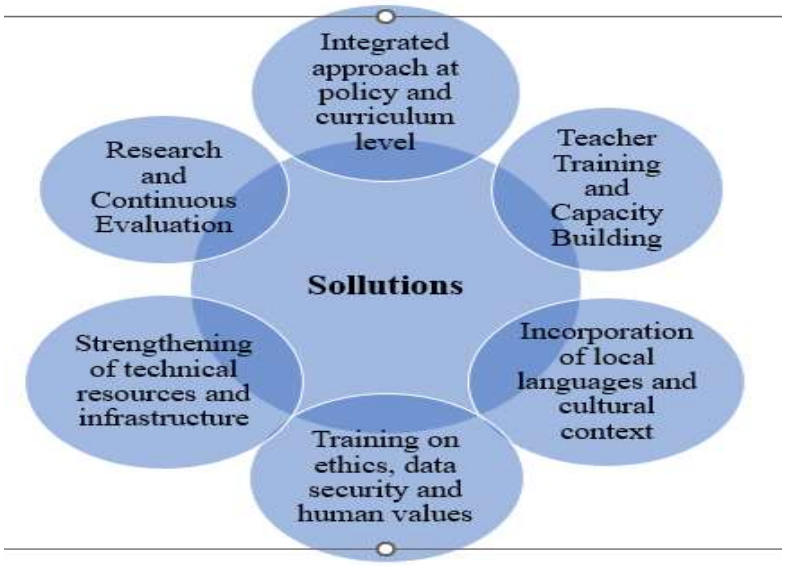
Research studies highlight these issues. For example, a report titled "The Impact of Large Language Models on K-12 Education in Rural India" highlights the difficulties faced by teachers in states like Rajasthan and Delhi. Many of these teachers rely solely on traditional teaching methods due to poor connectivity and a lack of appropriate equipment. They often lack training on AI tools, making them unprepared to incorporate such technologies into their classrooms. Additionally, there is limited understanding of the ethical implications and concerns surrounding data privacy, further complicating the adoption of AI in these circumstances.

Another study, "Understanding Teacher Attitudes After Implementing an AI Literacy Curriculum," emphasizes the importance of providing adequate resources, time, and external support to develop effective curricula. Teachers need ongoing training and access to materials that can help them confidently integrate AI concepts into their teaching practices. Without this support, efforts to introduce AI literacy risk being superficial or ineffective.

Traditional curricula further complicate matters, often isolating subjects and incorporating Indigenous Knowledge Systems (IKS). These IKS are largely oral, regionally rooted, and culturally significant, making them difficult to evaluate using standard assessment standards designed for Western, English-based content. Incorporating AI into such a culturally rich educational landscape requires sensitivity and adaptability. In India, integrating AI within the framework of local values—such as dharma (duty and righteousness) and non-violence—requires the development of culturally relevant approaches. This effort ensures that AI tools are not only accessible but also resonate with local cultural contexts, promoting ethical and meaningful technology integration into education.

The study highlights that volunteer teachers recognize the significant potential of artificial intelligence to transform rural K-12 education through personalized learning experiences tailored to students' individual needs. However, challenges such as inadequate infrastructure, limited digital literacy among both students and teachers, and local communities' concerns about technology adoption hinder progress. Government efforts, such as increased funding for technological infrastructure, training programs to improve digital skills, and community engagement, are essential to address these barriers and ensure equitable access to innovative educational tools.

SOLUTIONS TO THE CHALLENGES OF IKS-BASED SCHOOL CURRICULUM IN THE AGE OF ARTIFICIAL INTELLIGENCE



In line with the National Education Policy (NEP 2020), a holistic framework should be developed to integrate Indian Knowledge Systems (IKS) and AI-based education. AI and IKS should be viewed as complementary – where AI develops data-driven thinking and IKS imparts values, ethics, and philosophy of life. An AI and Indian Knowledge Integration Framework can be developed by combining NCERT and AICTE IKS Division.

Training in both AI literacy and IKS literacy should be made mandatory for teachers. Prepare regular online modules on platforms like Nishtha, Diksha, and the AICTE IKS portal. Study (Singh et al.)

AI tools and digital content will be developed in Indian languages to increase access for rural and regional students. IKS subjects such as yoga, Ayurveda, mathematics, logic, astrology, music, and environmental knowledge should be taught through local examples and in the mother tongue. According to the ASER 2023 report, education in the mother tongue improves learning outcomes.

AI-based education should include topics related to data privacy, bias, and ethical decisions. The ethical concepts of IKS—such as "Vasudhaiva Kutumbakam," "Ahimsa," "Service," and "Truth"—should be integrated with digital ethics. This will allow technology to be used not only for productivity but also for human well-being.

Digital labs, AI learning hubs, and open-source learning platforms should be developed in rural areas. The availability of AI resources in schools should be increased through public-private partnerships (PPP models). According to NITI Aayog (2022), increased access to AI resources increases both equity and innovation in education.

Research projects on the "integration of AI and IKS" should be encouraged in universities and educational institutions. Policy reforms should be made based on the experience of pilot projects in each state. Curriculum should be continuously evaluated – regular studies should be published on learning outcomes, teacher efficacy, and the impact of technology use.

CONCLUSION

Integrating artificial intelligence and Indian knowledge systems is not just a technological innovation, but a cultural renaissance. This requires the joint participation of education policy, teachers, students, technology, and society. If AI is guided by Indian values, it can make education not only more effective but also more humane, ethical, and inclusive. In the age of Artificial Intelligence (AI), designing school curriculum from the perspective of the Indian Knowledge System (IKS) is not just a technical or policy task, but a crucial step towards the reinvention of Indian education. Today, as education becomes digital and data-driven, IKS reminds us that knowledge is not just information but a tool for building experiences, values, and character. AI can personalize education, accelerate it, and broaden it, while IKS can provide cultural depth, ethics, and a human perspective. If the two are combined in a balanced manner, the Indian education system can become a model that is based on both "knowledge and compassion." Measures such as teacher training, the use of local languages, equitable distribution of digital resources, and ethical AI education are essential for this. Therefore, future education will subordinate technology to human values. The confluence of AI and IKS is not just a means to increase efficiency, but a direction towards building a sensitive, inclusive, and value-based society. This is the soul of Indian education and the real objective of NEP 2020 – “Gyanam Param Dheyam”. e. Knowledge that unites humanity.

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