

MAKING AI WORK IN INDIAN EDUCATION SYSTEM: EXPLORING POTENTIAL AND CHALLENGES

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1. Introduction

Artificial Intelligence (AI) has emerged as a powerful tool that is transforming various sectors across the world. In India, AI has the potential to revolutionize education, which is considered a public good and essential for fostering democratic participation, socio-economic mobility, and equality. However, the implementation of AI in the Indian educational landscape is fraught with challenges and complexities.

2. Context of Indian Education

India's school education system, one of the largest in the world, faces severe challenges. Public education is underfunded, infrastructure is inadequate, and the teaching workforce is demotivated. Additionally, the over-reliance on rote memorization over meaningful conceptual understanding has led to poor learning outcomes. A significant proportion of students are unable to perform basic arithmetic or read at their expected grade levels.

3. ICT and AI in Indian Education

Information and Communication Technology (ICT) integration in schools has had limited success. The government's ICT @ School program, which outsourced teaching and curriculum to private vendors, failed to meaningfully integrate ICT into the educational process. Teachers often do not engage with ICT tools, and the infrastructure remains unused. Despite these setbacks, elite private schools have embraced technology, widening the gap between private and public education systems.

4. AI's Potential in Education

The NITI Aayog, India's premier policy think tank, has identified education as one of five key sectors where AI can play a transformative role. AI can enable personalized learning, automate administrative tasks, and predict when students may require intervention to prevent dropouts. AI applications in education can analyze vast amounts of data to tailor content, pedagogy, and assessments to individual student needs, thereby addressing diverse learning levels and contexts.

5. Challenges and Risks of AI in Education

Several concerns arise from the adoption of AI in education. One major issue is the **lack of big data**. Schools in India, especially public institutions, lack the digital infrastructure required to generate and collect the data necessary to develop AI algorithms. Moreover, there is ongoing **contestation around data ownership**—whether the schools, government, or private corporations should control the data generated by students and teachers.

Another significant issue is the **reinforcement of bias**. AI is not neutral; the data it is trained on reflects societal biases. In India, where education is already stratified by caste, gender, and class, AI could exacerbate these divisions. For instance, predictive models might unfairly assign students from marginalized communities to vocational tracks based on biased data, perpetuating socio-economic inequalities.

6. Compromising Educational Values

The introduction of AI risks turning education into a purely individualistic process, neglecting its social purpose. Research in education emphasizes that learning is a social activity requiring interaction between students and teachers. Over-reliance on AI-driven personalized learning could diminish the role of human interaction in fostering critical thinking, collaboration, and social skills.

7. Recommendations

To harness the potential of AI in education while mitigating its risks, several steps are recommended:

7.1 Teacher and Student Participation: Teachers and students should be actively involved in designing AI systems. Rather than treating them as passive users, AI applications must empower educators to make informed decisions about pedagogy and curriculum.

7.2 AI Literacy: To ensure that AI is used ethically and effectively, AI literacy should be included in secondary and tertiary education. Schools must educate students about AI's potential benefits and risks, encouraging a critical understanding of technology.

7.3 Data Governance Frameworks: Schools and education departments need to develop frameworks for collecting, storing, and sharing data in the public interest. Data should be anonymized and owned collectively by schools, teachers, and parents, rather than being controlled by private entities.

7.4 Open and Transparent AI Systems: Algorithms used in educational AI applications should be open-source to allow for public scrutiny. This would enable educators to understand and refine AI systems in alignment with educational goals.

7.5 Research and Pilots: Rigorous research and pilot projects are essential to understanding the broader implications of AI in education. Research should explore the potential of open AI resources to promote inclusivity and counteract bias.

8. Conclusion

AI holds the promise of transforming Indian education by offering personalized learning and addressing systemic inefficiencies. However, its implementation must be carefully managed to ensure that it does not exacerbate existing inequalities or compromise the broader social goals of education. With thoughtful design, AI could indeed become a powerful tool for making education in India more inclusive, equitable, and effective.

9. References

- NCERT (2006). **National Focus Group on Aims of Education.**
http://www.ncert.nic.in/new_ncert/ncert/rightside/links/pdf/focus_group/aims_of_education.pdf.
- NITI Aayog (2016). **Discussion paper: National strategy for Artificial Intelligence.**
http://www.niti.gov.in/writereaddata/files/document_publication/NationalStrategy-for-AI-Discussion-Paper.pdf.
- Sharma, Yogima (2019). **Niti Aayog Bats for Ending Data Monopoly- ET Tech.**
<https://tech.economic-times.indiatimes.com/news/technology/niti-aayog-bats-for-ending-data-monopoly/69366570>.
- Smith Matthew & Sujaya Neupane (2018). **Artificial Intelligence and Human Development: Toward a Research Agenda.** <https://www.idrc.ca/en/stories/artificial-intelligence-and-human-development>.
- Srikrishna B. N. & Data Protection Committee (2018). **A Free and Fair Digital Economy Protecting Privacy...** http://meity.gov.in/writereaddata/files/Data_Protection_Committee_Report.pdf.