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## Artificial Intelligence in Lower Primary Teaching: A Study with Special Reference to NEP 2020 in Assam

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### ABSTRACT

This research paper explores the transformative potential of Artificial Intelligence (AI) in lower primary education in Assam, with specific reference to the National Education Policy (NEP) 2020. The study examines the role of AI-driven tools in early childhood education, investigates the alignment of such tools with the policy's emphasis on foundational literacy and numeracy, and highlights the opportunities and challenges in integrating AI into Assam's lower primary classrooms. Using secondary data and stakeholder perspectives, the research reveals that while AI has immense promise in enhancing personalized learning and reducing teacher workload, infrastructural and linguistic challenges remain significant. The study advocates for policy-aligned, inclusive, and localized AI integration to fulfill NEP 2020's vision of equitable and quality education.

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### Introduction

Education at the lower primary level (Grades I to V) lays the foundation for lifelong learning. In India, and particularly in Assam, the implementation of the National Education Policy 2020 marks a paradigm shift in pedagogy, assessment, and learning outcomes, especially in foundational literacy and numeracy.



Artificial Intelligence (AI), a branch of computer science enabling machines to simulate human intelligence, has emerged as a powerful tool in reshaping education delivery. In the context of Assam, where diverse linguistic and socio-economic challenges persist, integrating AI into primary teaching could significantly enhance learning equity and effectiveness.

This paper investigates how AI can support NEP 2020 goals at the lower primary level in Assam, its feasibility, and its practical implications for educators and policymakers.

## 2. Objectives

1. To explore the role of AI in enhancing foundational learning in lower primary education.
2. To analyze how AI aligns with the objectives of NEP 2020.
3. To examine the current status and scope of AI adoption in lower primary education in Assam.
4. To identify challenges in implementing AI-based education in rural and urban Assam.
5. To suggest recommendations for AI-integrated policy and practice.

## 3. Review of Related Literature

Studies on AI in education (Holmes et al., 2019; Luckin et al., 2016) highlight its effectiveness in personalized learning, intelligent tutoring, and predictive analytics. AI tools like chatbots, learning analytics platforms, and adaptive assessments have been shown to improve engagement and outcomes in early education.

NEP 2020 (Government of India, 2020) places a strong emphasis on Early Childhood Care and Education (ECCE), foundational literacy, and pedagogical reforms supported by technology. It advocates for digital infrastructure and tech-based teaching aids, especially in underserved regions.

Research on Assam's educational landscape (Saikia, 2021) reveals disparities in access to quality education, digital literacy, and infrastructural readiness, particularly in tribal and remote areas. AI offers potential but requires contextual adaptation.

## 4. Methodology

This study adopts a qualitative approach based on:



- **Document analysis** of NEP 2020, Assam government policy papers, and AI in education frameworks.
- **Interviews** with 10 lower primary teachers from rural and urban schools in Assam.
- **Observation** of classroom practices using EdTech tools in pilot schools in Kamrup and Dibrugarh districts.

## 5. AI and NEP 2020: Conceptual Framework

NEP 2020 introduces several reforms in lower primary education, notably:

- The **5+3+3+4 structure**, beginning formal education at age 3.
- Emphasis on **Foundational Literacy and Numeracy (FLN)** by Grade 3.
- Use of **technology-enhanced pedagogy**, with AI and data-driven instruction as future goals.

AI can directly support these goals through:

- **Adaptive learning platforms** like Mindspark, that adjust difficulty levels based on child performance.
- **Speech recognition software** for early reading skills.
- **Gamified learning** applications enhancing engagement.
- **Predictive diagnostics** identifying learning gaps early.

## 6. Status of AI Integration in Lower Primary Education in Assam

While the Government of Assam has initiated some digital learning projects (e.g., Gunotsav, SWAYAM), full-scale AI implementation is still in infancy. Pilot programs supported by NGOs like Pratham and central government schemes like PM eVidya have introduced EdTech in select schools.

However:

- Most AI applications are in English or Hindi, with **limited Assamese/local language support**.
- **Teacher digital literacy** is low in many rural schools.
- **Infrastructure issues**—like power supply and internet connectivity—hamper AI use.



Some urban private schools in Guwahati and Dibrugarh have begun using AI-based learning apps. In contrast, government schools in districts like Lakhimpur or Karbi Anglong lag behind.

## 7. Findings and Discussion

### 7.1 AI Supports Foundational Learning

Teachers noted that AI-based reading and math games increased student motivation. Voice-enabled feedback helped early learners correct pronunciation and improve fluency.

### 7.2 Teachers as Facilitators, Not Replacements

Educators appreciated AI tools but stressed the continued need for human interaction, especially in emotionally supportive environments for young learners.

### 7.3 Language and Cultural Relevance

AI tools often ignore Assamese or tribal languages. For meaningful integration, content must reflect local stories, languages, and cultural values.

### 7.4 Access Disparity

Urban schools are better equipped to experiment with AI. Rural and tea garden areas face stark inequalities in devices, electricity, and connectivity.

### 7.5 Positive Alignment with NEP Goals

AI aligns with NEP's vision of personalized and competency-based learning. However, large-scale capacity building is needed for it to be sustainable.

## 8. Challenges

1. **Infrastructure Gaps:** Poor internet connectivity, lack of devices, and erratic electricity supply in rural Assam.
2. **Language Barriers:** Lack of Assamese and tribal language-compatible AI tools.
3. **Teacher Training:** Limited digital competence and fear of technology replacing jobs.



4. **Data Privacy Concerns:** Unclear data governance frameworks in primary schools.
5. **Funding Limitations:** High cost of AI-enabled devices and software for government-run institutions.

## 9. Recommendations

1. **Localized AI Tool Development:** Encourage creation of AI-based apps in Assamese and tribal languages like Mising or Bodo.
2. **Teacher Training Modules:** Implement NEP-recommended digital pedagogical training through SCERT and DIETs.
3. **Public-Private Partnerships:** Collaborate with EdTech companies for affordable AI access in government schools.
4. **Policy and Funding Support:** Allocate specific funds under Samagra Shiksha Abhiyan for AI integration.
5. **Digital Infrastructure:** Strengthen rural school digital labs with solar-powered solutions and community internet hubs.

## 10. Conclusion

AI has the transformative potential to bridge learning gaps in Assam's lower primary education system if implemented inclusively and sustainably. NEP 2020 provides a visionary framework to integrate such technologies, emphasizing equity, personalization, and foundational literacy. However, addressing language barriers, digital divides, and teacher readiness is crucial for AI to truly benefit Assam's young learners. A collaborative approach involving educators, technologists, government, and communities can ensure that AI becomes a tool for empowerment and educational justice in the foundational years.

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