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Artificial Intelligence in the Senegalese Education System: Opportunities, Challenges, and Strategic Governance

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Abstract

This study analyzes the strategic integration of Artificial Intelligence (AI) within the broader framework of the ongoing digital transformation of Senegal's education system. Over the past decade, Senegal has undertaken substantial reforms aimed at modernizing educational administration, expanding digital learning infrastructures, and enhancing institutional performance. Within this evolving digital ecosystem, AI is positioned as a transformative technological paradigm with the capacity to redefine pedagogical practices, assessment mechanisms, educational planning processes, and governance structures.

Adopting a qualitative and analytical research design grounded in documentary analysis and comparative policy review, the study examines four interrelated dimensions: pedagogical innovation, institutional governance, infrastructural readiness, and ethical and sovereignty-related considerations. The findings underscore AI's potential to facilitate adaptive and personalized learning trajectories, advance learning analytics, support intelligent tutoring systems, and streamline administrative operations. Such innovations present significant opportunities to address persistent structural challenges, including overcrowded classrooms, elevated dropout rates, and inefficiencies in institutional management.

Nevertheless, considerable operational constraints persist. Marked infrastructural disparities between urban and rural contexts, insufficient teacher preparedness, and concerns regarding financial sustainability constitute substantial barriers to equitable AI implementation. Furthermore, issues related to data governance, cybersecurity, and digital sovereignty necessitate the establishment of comprehensive regulatory frameworks to mitigate technological dependency and safeguard national educational interests.

The study concludes that AI integration must be embedded within a coherent and strategically articulated national governance framework aligned with broader digital transformation agendas. Rather

than being conceived as a purely technological intervention, AI adoption should prioritize inclusivity, ethical oversight, capacity development, and long-term sustainability. When strategically governed, AI holds the potential to act as a catalyst for systemic educational transformation, fostering enhanced learning outcomes, strengthened institutional efficiency, and more equitable socio-economic development in Senegal.

Keywords: Data Governance; Digital Sovereignty; Institutional Governance; Learning Analytics; Personalized Learning