

ARTIFICIAL INTELLIGENCE IN EDUCATIONAL MANAGEMENT: ETHICAL DILEMMAS AND OPPORTUNITIES IN NIGERIA

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Abstract

Artificial Intelligence (AI) has become an emerging transformative force across numerous sectors, including education. In Nigeria, the educational system has witnessed a gradual incorporation of AI into various aspects of management and instruction, leading to increased interest among policymakers, educators, and stakeholders. This paper examines the ethical dilemmas and opportunities arising from the use of AI in educational management within the Nigerian context. It critically examines the conceptual frameworks of Artificial Intelligence and Educational Management, analyzing how their intersection is reshaping traditional administrative practices. While AI offers prospects for data-driven decision-making, efficient resource allocation, personalized learning, and predictive analytics for student outcomes, it also presents significant ethical challenges. These include concerns about privacy, algorithmic bias, accountability issues, and the potential displacement of human labor. Moreover, in a country like Nigeria, characterized by diverse sociocultural realities and infrastructural deficits, the use of AI in managing education raises further moral and regulatory questions. This paper assesses existing policies and regulations guiding ethical AI deployment globally and locally, identifying gaps that must be addressed to ensure responsible adoption. It also evaluates the implications of AI integration for school administrators, teachers, students, and policymakers, and suggests pathways for ethical implementation that balance innovation with inclusivity and fairness. Ultimately, the paper advocates for a strategic, context-sensitive approach to AI in educational management in Nigeria—one that leverages technological advancement without compromising ethical standards, equity, and the human essence of education. It concludes with pragmatic suggestions for enhancing the ethical adoption and effective utilization of AI tools in the Nigerian education sector.

Keywords: Artificial Intelligence, Educational Management, Ethical Dilemmas, Opportunities.

Introduction

The 21st century has ushered in rapid technological advancements, and at the forefront of these innovations is AI. AI technologies are redefining various aspects of human life, from healthcare and transportation to governance and education. In education, AI has become an indispensable tool for enhancing instruction, assessing student performance, and managing institutions more effectively (Kizito & Banothile, 2021). Its applications in educational management, in particular, promise improved administrative efficiency, data analytics, and decision-making capabilities. In Nigeria, the integration of AI in educational management is still in its nascent stages but is gradually gaining traction due to the increasing demand for modernization and efficiency in the education sector (Ezenwoke & Eze, 2021).

Educational management in Nigeria, as in many parts of the world, faces several challenges. These include poor funding, inadequate infrastructure, a shortage of qualified personnel, and ineffective administrative practices (Gregory & Jegede, 2021). Against this backdrop, the adoption of AI technologies appears to offer a viable solution for addressing these systemic issues. From automating admission processes and managing learning Management Systems (LMS) to tracking student performance and predicting dropouts, AI presents a broad spectrum of possibilities that could transform the Nigerian educational landscape.

However, the deployment of AI is not without its ethical concerns (Maiga et al., 2020). The use of AI systems in decision-making processes raises critical questions about transparency, fairness, and accountability. Who is responsible when an AI-driven system makes an error in judgment? How do we ensure that these systems are free from bias, especially in a multicultural and socio-economically stratified society like Nigeria? These are pertinent ethical dilemmas that must be considered alongside the technological optimism surrounding AI. Moreover, Nigeria's socio-political and infrastructural realities complicate the adoption of AI in education. Issues such as digital inequality, data privacy concerns, and the absence of strong regulatory frameworks increase the risks associated with unregulated AI implementation. As such, it is imperative to explore how these challenges intersect with the ethical concerns of AI usage in educational management.

This paper aims to delve into these issues, offering a nuanced perspective on the opportunities and ethical dilemmas posed by AI in educational management in Nigeria. It begins by unpacking the concept of Artificial Intelligence from various scholarly perspectives, followed by a discussion of educational management within the Nigerian context. It then examines existing ethical guidelines on AI usage, particularly in educational settings, and highlights the specific ethical dilemmas faced in Nigeria. Furthermore, it explores the opportunities that AI presents for improving educational management in the country and discusses the implications for various stakeholders.

The paper concludes with practical suggestions for integrating AI ethically and effectively in Nigerian educational institutions. By so doing, it contributes to the ongoing discourse on technology and education in Nigeria, providing a roadmap for future policy and implementation strategies.

Concept of Artificial Intelligence

Artificial Intelligence, as a field of study and application, has been interpreted and defined in diverse ways depending on context, discipline, and purpose. At its core, AI refers to the simulation of human intelligence in machines that are programmed to think and learn like humans. John McCarthy, who coined the term in 1956, defined AI as the science and engineering of making intelligent machines. His definition laid the foundation for further explorations into machine learning, natural language processing, robotics, and neural networks. Russell and Norvig (2016) describe AI from four different viewpoints: systems that think like humans, systems that act like humans, systems that think rationally, and systems that act rationally. This broad categorization reveals the interdisciplinary nature of AI and its adaptability across sectors.

Russell and Norvig, in their seminal work *Artificial Intelligence: A Modern Approach*, also emphasize the dual aspects of AI: cognitive modeling and rational agent approaches. While the former focuses on simulating the human thought process, the latter prioritizes rational decision-making independent of human mimicry (Maiga, 2020). In the context of education, Luckin et al. (2018) define AI as technologies that can perform tasks typically requiring human intelligence, such as recognizing patterns, understanding language, and making decisions. They argue that AI

in education should be geared toward augmenting human capabilities rather than replacing them. The emphasis, therefore, is on human-centric AI.

Nick (2014), a philosopher known for his work on the implications of advanced AI, underscores the ethical concerns of creating systems that might one day surpass human intelligence. He warns of the potential risks of unregulated AI development, particularly in settings where ethical frameworks are underdeveloped. From a socio-technical perspective, scholars like Shoshana Zuboff have critiqued AI as a tool that, if unregulated, could lead to surveillance capitalism, where personal data is commodified for profit. This concern is particularly relevant in educational contexts where student data can be exploited without consent.

In Africa, and specifically in Nigeria, the concept of AI is still evolving. Scholars like Kayode Alese and Olayemi Akinwale have called for a contextual understanding of AI that considers local realities such as poor digital infrastructure, limited AI literacy, and cultural diversity. They emphasize the need for indigenous AI solutions that align with African values and educational goals. Ezenwoke and Eze (2021) lamented that the rapid integration of AI technologies in African higher education institutions without robust ethical frameworks and guidelines risks exacerbating existing inequalities and potentially compromising academic integrity and student welfare.

Thus, AI is not a monolithic concept; it is a multifaceted technology with various interpretations. While some view it as a tool for enhancing human capabilities, others warn of its potential to entrench inequalities and undermine ethical standards. As Nigeria explores the adoption of AI in educational management, it is crucial to engage with these diverse perspectives to develop a nuanced and contextually relevant approach.

Concept of Educational Management

Education is the key to the social, economic, political, religious, and technological development of nations and the populace therein. For the goals of education to be fully attained, there should be robust and efficient management mechanisms (Akpan, 2018). Educational management is the foundation of successful schools, institutions, and organizations. Attaining educational-oriented schemes is dependent upon the status and efficiency of the educational management mechanisms

at hand. Educational management is vital for the actualization of the programmes and objectives of education in Nigeria. Osiesi (2023) explained that educational management is the process of organising, planning, directing, and managing the operations of an institution while utilising both people and material resources to effectively and efficiently carry out teaching, research, and extension work tasks.

Educational management refers to the process of planning, organizing, directing, and controlling educational resources to achieve desired learning outcomes. It encompasses various activities such as policy formulation, curriculum implementation, human resource management, and infrastructure development within educational institutions (Ali & Mohamed, 2017). In general, the rationales for education management are for: programme planning and progress; controlling the implementation process, organising available resources; setting and ensuring organisational standards.

In Nigeria, educational management operates within a complex and often fragmented structure. The country practices a three-tier governance system—federal, state, and local government, each with responsibilities for different levels of education. The Federal Ministry of Education oversees policy direction, coordination, and standard-setting, while state ministries manage primary and secondary schools, and local governments supervise early childhood education (Ololube, 2013).

Historically, Nigeria's educational system has faced significant management challenges. These include inadequate funding, bureaucratic inefficiencies, poor data management, and a lack of accountability. School administrators often struggle with outdated record-keeping systems, insufficient staffing, and limited access to real-time data for decision-making. These challenges hinder effective planning, monitoring, and evaluation of educational programs (Musah, 2021). Educational management also involves the leadership and administration of school personnel. In many Nigerian schools, especially public institutions, headteachers and principals are appointed based on seniority rather than merit, resulting in weak leadership. This lack of managerial expertise often translates to poor organizational performance and suboptimal learning outcomes (Musah, 2021).

Technological interventions have been introduced in recent years to address some of these issues. Tools such as school management software, biometric attendance systems, and digital grading platforms are being adopted in some urban and private schools. However, their reach remains limited due to infrastructural and economic constraints, particularly in rural areas (Arubayi & Ikoya, 2015). The Nigerian National Policy on Education recognizes the importance of effective management for achieving educational goals. It calls for capacity building for educational managers and the adoption of technology to enhance efficiency. Despite this, implementation has been hampered by policy inconsistency, corruption, and lack of political will (Gregory & Jegede, 2021).

In this context, the integration of AI into educational management presents a significant opportunity to overcome some of these systemic bottlenecks. AI-powered tools can help automate administrative tasks, streamline resource allocation, and provide real-time analytics for better decision-making. However, the adoption of such technologies must be carefully managed to ensure inclusivity, transparency, and ethical integrity. Therefore, understanding the current state and challenges of educational management in Nigeria is critical for evaluating the potential impact of AI. It is not merely about introducing technology but transforming the underlying systems and cultures that govern education in the country.

Regulations on the Ethical Use of AI

Globally, the ethical regulation of Artificial Intelligence has become a pressing issue due to the rapid expansion of its application in critical sectors, including education. Organizations such as UNESCO, the European Commission, and the IEEE have provided ethical guidelines for AI development and use (UNESCO, 2021). These frameworks emphasize key principles such as transparency, fairness, accountability, privacy, human oversight, and non-maleficence (Chasignol & Alizee, 2021). For example, in developed economies like the USA and Japan, ethical implementation frameworks such as the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems provide guidelines that advocate for transparency in decision-making processes of AI algorithms. This ensures they are accountable and unbiased (IEEE Standards Association, 2019).

For instance, UNESCO's *Recommendation on the Ethics of Artificial Intelligence* provides a human-centred framework for AI governance, especially in education. It advocates for inclusive access to AI, protection of learners' data, and accountability mechanisms for algorithmic decisions (UNESCO, 2021). The EU's AI Act, while still in progress, also outlines the classification of AI systems by risk level and recommends compliance standards.

In countries like the UK, efforts are made to involve diverse stakeholders, including researchers, policymakers, industry leaders, and the public, in shaping ethical guidelines for AI technologies. This inclusive approach helps address societal concerns and ensures that AI systems are developed and deployed in ways that align with ethical standards and public expectations (UK Government Office for Artificial Intelligence, 2020). In the USA, for instance, ethical implementation in AI has been significantly influenced by initiatives such as the development of AI ethics guidelines by organizations like the IEEE and the Partnership on AI. These guidelines aim to ensure that AI technologies are developed and deployed in a manner that respects ethical principles such as fairness, transparency, and accountability.

In the African context, the African Union's *AI for Africa* policy framework, though still emerging, encourages member states to adopt ethical AI governance aligned with African values, cultural context, and development goals. It stresses the importance of digital sovereignty and the development of indigenous AI capacities. For instance, South Africa is advancing the ethical implementation of AI through initiatives that prioritize ethical guidelines and regulatory frameworks. The South African Responsible AI Principles outline principles such as fairness, accountability, and privacy protection in AI development and deployment. Efforts by regulatory bodies and research institutions aim to promote ethical AI practices that align with South Africa's sociocultural contexts and legal frameworks. By fostering ethical AI innovation, South Africa seeks to maximize the benefits of AI while minimizing risks and ensuring societal inclusivity (Department of Communications and Digital Technologies, 2021).

In Nigeria, however, regulatory structures for AI remain underdeveloped. As of 2025, there is no comprehensive national AI policy. Nonetheless, some initiatives are underway. The *National Information Technology Development Agency (NITDA)* released a draft *National Artificial Intelligence Policy (NAIP)* in 2023, which seeks to provide direction for AI development and

application in Nigeria. The policy framework acknowledges the need for ethical principles such as fairness, inclusiveness, and respect for human rights. Nigeria is developing its approach to AI ethics through initiatives that prioritize ethical guidelines and regulatory frameworks. The Nigerian National AI Strategy aims to promote principles such as fairness, transparency, and data protection in AI technologies. Nigeria's strategy includes capacity-building programs and stakeholder engagements to address ethical concerns related to AI adoption in sectors like agriculture, fintech, and telecommunications (National Information Technology Development Agency, 2020).

In the education sector, no specific legal instrument currently regulates the use of AI technologies. The Nigerian Data Protection Regulation (NDPR) of 2019, however, provides a general framework for protecting personal data, which is relevant to AI systems used in educational management. It requires institutions to ensure data security, obtain consent for data collection, and prevent unauthorized access (Kizito & Banothile, 2021). Despite these provisions, there is a glaring lack of enforcement mechanisms and institutional capacity to monitor compliance, particularly in public educational institutions. Furthermore, the ethical implications of AI, such as algorithmic transparency, automated decision-making in admissions or evaluations, and data ownership, have not been explicitly addressed in Nigerian law (Ezenwoke & Eze, 2021).

In conclusion, while Nigeria has made preliminary steps toward regulating AI, there is an urgent need to accelerate and deepen these efforts. An ethical AI framework tailored to the Nigerian education sector is essential for balancing innovation with the protection of rights and equity.

Ethical Dilemmas in AI Usage in the Nigerian Educational System

The deployment of Artificial Intelligence in educational management presents numerous ethical dilemmas, particularly in a context like Nigeria, where sociocultural, economic, and technological disparities are prominent.

1. Data Privacy and Consent: AI systems require massive amounts of data to function effectively. In educational management, this includes students' personal information, academic records, behavioral patterns, and health data. In many Nigerian institutions, data is collected

without informed consent or clear data protection policies. This raises serious ethical concerns about privacy, data security, and potential misuse of sensitive information. In the absence of strong regulatory oversight, there is a risk that student data could be commodified or exposed to cyber threats.

2. Bias and Discrimination: AI algorithms often reflect the biases of their developers and the datasets on which they are trained. In Nigeria, where social inequalities based on ethnicity, gender, and geography are pronounced, biased AI systems could exacerbate existing disparities. For instance, if AI tools are used for student admissions or scholarship recommendations, underrepresented or marginalized groups could be unfairly disadvantaged due to biased data inputs or a lack of contextual sensitivity.

3. Accountability and Transparency: When AI makes a decision—such as selecting candidates for admission or flagging students for disciplinary action—who is accountable if the decision is wrong or harmful? The “black box” nature of many AI systems means their processes are opaque and difficult to audit. In the Nigerian educational context, where transparency is already a challenge, relying on inscrutable systems can erode trust among stakeholders.

4. Dehumanization of Education: AI tools are increasingly used to automate tasks such as grading, feedback, and communication. While this improves efficiency, it also risks reducing education to a mechanical process devoid of human empathy. In Nigeria, where emotional and social learning are deeply embedded in the teacher-student relationship, over-reliance on AI could weaken the humanistic essence of education.

5. Digital Divide and Inequality: AI systems are often implemented in urban, elite institutions with access to internet infrastructure and technical support. Rural and underfunded schools, where the majority of Nigerian students learn, are frequently excluded. This creates a two-tiered educational system where technological advancement further marginalizes those already disadvantaged.

6. Job Displacement: As AI tools automate administrative tasks, there is a growing fear of job loss among non-teaching staff such as clerks, registrars, and record-keepers. In a country with

high unemployment, this raises ethical questions about technological disruption and the need for reskilling programs to ensure inclusivity.

Addressing these ethical dilemmas requires more than technical fixes. It demands a multi-stakeholder approach involving educators, students, policymakers, technologists, and ethicists. Deliberate efforts must be made to create culturally appropriate, transparent, and inclusive AI systems that reflect Nigerian values and prioritize the well-being of all learners.

Opportunities in AI Usage in the Nigerian Educational System

Despite the ethical dilemmas, AI offers significant opportunities to revolutionize educational management in Nigeria. When strategically implemented, it can help overcome long-standing administrative inefficiencies and improve learning outcomes across the board.

1. Efficient Data Management and Decision-Making: AI tools can automate the collection, storage, and analysis of student data, allowing for real-time insights into academic performance, attendance, and behavior. This enables school administrators to make evidence-based decisions, identify struggling students early, and allocate resources effectively.

2. Personalized Learning Paths: AI-powered platforms can adapt to individual learners' needs, providing customized content, pacing, and feedback. This is particularly beneficial in Nigeria's overcrowded classrooms, where teachers may struggle to attend to every student. Adaptive learning systems can bridge these gaps and enhance student engagement.

3. Streamlining Administrative Processes: Tasks such as student registration, timetable scheduling, fee payment tracking, and result computation can be managed efficiently through AI systems. This reduces human error, speeds up processes, and frees up time for staff to focus on more strategic functions.

4. Predictive Analytics: AI can predict trends such as dropout risks, future enrollment patterns, and workforce needs. These insights help educational planners and policymakers anticipate challenges and design proactive interventions, especially in regions with low school retention rates.

5. Enhancing Teacher Support and Training: AI can assist in monitoring teacher performance, identifying training needs, and recommending professional development courses. Virtual teaching assistants can also support teachers by grading assignments and managing class communications.

6. Expanding Access to Quality Education: AI-driven platforms can facilitate remote learning, especially in underserved regions. Tools like intelligent tutoring systems and speech recognition software can support students with disabilities or language barriers, promoting inclusive education.

7. Curbing Examination Malpractice: AI-powered surveillance tools can help monitor exam environments through facial recognition, behavior detection, and plagiarism checks. This can enhance the integrity of assessments in schools and universities.

These opportunities, however, are not self-actualizing. Realizing the full potential of AI in Nigerian education requires political will, investment in digital infrastructure, stakeholder training, and ethical oversight. If these conditions are met, AI could play a transformative role in achieving Nigeria's education and development goals.

Implications for Educational Management in Nigeria

The integration of Artificial Intelligence into educational management in Nigeria holds profound implications for governance, policy, human resource development, and institutional operations.

1. Shift toward Data-Driven Leadership: AI will enable educational managers to move from intuition-based to evidence-based decision-making. This shift can enhance accountability, planning, and policy implementation. Real-time data analytics on student outcomes, staff performance, and financial efficiency can support leaders in identifying problems early and implementing targeted interventions.

2. Transformation of Administrative Roles: The automation of repetitive administrative tasks will redefine the roles of school administrators. Instead of being consumed by paperwork, managers can focus on strategic functions such as quality assurance, stakeholder engagement,

and innovation. However, this transformation requires upskilling to ensure managers can interpret AI-generated data and use it effectively.

3. Need for New Ethical and Policy Frameworks: AI adoption will necessitate the development of new policies addressing data privacy, algorithmic accountability, and equitable access. Educational leaders must be trained in digital ethics to oversee the responsible use of AI tools. Failure to establish ethical standards could result in discrimination, data abuse, and public distrust.

4. Capacity Building and Professional Development: The success of AI implementation depends on the digital literacy of educational managers and teachers. There will be increased demand for training programs focusing on AI applications, change management, and digital transformation strategies. Institutions will need to invest in continuous professional development to build competent AI-literate leadership.

5. Equity and Inclusion Challenges: AI can either bridge or widen existing gaps in education access and quality. Educational managers must ensure that AI tools are deployed equitably across urban and rural schools, and that marginalized students are not left behind. Deliberate inclusion strategies must be part of AI implementation plans.

6. Institutional Innovation and Change Management: AI adoption represents a broader digital transformation that will affect institutional culture. Resistance to change is likely, especially in traditional educational settings. Leaders will need to champion innovation, communicate benefits, and manage transitions sensitively to gain stakeholder buy-in.

In essence, AI in educational management is not merely a technological upgrade but a paradigm shift. For Nigerian educational institutions to benefit fully, management practices must evolve to accommodate this shift-prioritizing strategic thinking, ethical governance, and continuous learning.

Conclusion

Artificial Intelligence presents a double-edged sword for educational management in Nigeria—offering groundbreaking opportunities while posing serious ethical dilemmas. If thoughtfully implemented, AI can drive efficiency, personalization, and predictive decision-making in education. However, without robust ethical frameworks, inclusive policies, and digital literacy, it could exacerbate inequalities and erode trust. Nigeria stands at a crossroads where strategic, ethical, and context-sensitive integration of AI can redefine its education landscape for the better. This calls for deliberate action from government, educators, technologists, and civil society to harness the full potential of AI responsibly and inclusively.

Suggestions

To ethically and effectively integrate AI into educational management in Nigeria, the following suggestions are recommended:

1. Develop a national ethical AI framework specific to education, with enforceable guidelines.
2. Invest in digital infrastructure and equitable access, especially in rural areas.
3. Train educational leaders and teachers on AI tools and digital ethics.
4. Promote transparency in AI systems used for decision-making.
5. Encourage collaboration between government, academia, and tech developers to create locally relevant AI solutions.
6. Implement pilot programs before large-scale deployment to assess impact.
7. Regularly review and audit AI systems to ensure fairness, accountability, and inclusivity.

References

- Akpan, C. (2018). Types of educational planning/reasons for planning education. <https://www.researchgate.net/publication/338774755>
- Ali, I., & Mohamed, M. (2017). Educational management, educational administration and educational leadership: Definitions and general concepts. *African Journal of Computing and ICT*, 15(2), 123-137.
- Arubayi, E. A. & Ikoya, P. O. (2016). Education and best practices in the twenty-first century. In P. Oghuvbu (Ed). *Global best practices in higher education for national development*. Delsu Press.
- Chassignol, M., & Jumeau, A. (2021). AI in education: The state of play and future directions. *International Journal of Artificial Intelligence in Education*, 16(1), 39-50.
- Department of Communications and Digital Technologies. (2021). South African responsible AI principles. Government of South Africa. https://www.gov.za/sites/default/files/gcis_document/202107/responsibleaiprinciples.pdf
- Ezenwoke, A. C., & Eze, U. C. (2021). Ethical issues and adoption of artificial intelligence in higher education: A literature review. *Library Philosophy and Practice (e-journal)*. <http://digitalcommons.unl.edu/libphilprac/4792/>
- Gregory, D., & Jegede, D. (2021). Educational planning in Nigeria: Problems and the ways forward. *Central Asian Journal of Literature, Philosophy and Culture*, 2(2), 41-48. <https://doi.org/10.47494/cajlp.v2i2.67>
- Gregory, D., & Jegede, D. (2021). Educational planning in Nigeria: Problems and the ways forward. *Central Asian Journal of Literature, Philosophy and Culture*, 2(2), 41-48. <https://doi.org/10.47494/cajlp.v2i2.67>
- IEEE Standards Association. (2019). Ethically aligned design: A vision for prioritizing human well-being with autonomous and intelligent systems (2nd ed.). IEEE. <https://ethicsinaction.ieee.org/>
- Kizito, R. N., & Banothile, M. (2021). Ethical implications of artificial intelligence adoption in African higher education institutions. In *Proceedings of the IST-Africa 2021 Conference* (pp. 1-11). IEEE. DOI: 10.23919/ISTAFRICA51381.2021.9478999
- Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B, (2018). Intelligence unleashed - an argument for AI in education. *Journal of AI & Society*, 8(1), 2-16.

- Maiga, E. H., Thomas, M. O., & Odiaka, I. M. (2020). Artificial intelligence in higher education: Opportunities and challenges for African institutions. *International Journal of Educational Technology in Higher Education*, 17(1), 1-21. DOI: 10.1186/s41239-020-00219-8
- Musah, E. (2021). Educational psychology: An imperative tool for effective education management in Nigeria. *Open Journal of Educational Development (OJED)*, 2(2), 1-11.
- National Information Technology Development Agency. (2020). National AI strategy. Government of Nigeria. <https://nitda.gov.ng/national-ai-strategy/>
- Nick B. (2014). On the application of artificial intelligence in teaching. *International Journal of Educational Development using ICT*, 8(1): 162-163.
- Ololube, N. P. (2013). The problems and approaches to educational planning in Nigeria: A theoretical observation. *Mediterranean Journal of Social Sciences MCSER Publishing*, . 4 (12), 37-48.
- Osiesi, M.P. (2023). Emerging issues in educational planning and management in Nigeria: Implications for educational evaluators. *International Journal of Academic and Applied Research (IJAAR)*, 7(2), 60-64.
- Russell, S., & Norvig, P. (2016). *Artificial intelligence: A modern method*. People's Posts and Telecommunications Press.
- UK Government Office for Artificial Intelligence. (2020). AI in the UK: Ready, willing and able? UK Government. <https://www.gov.uk/government/publications/ai-in-the-uk-ready-willing-and-able>
- UNESCO. (2021). *Education and artificial intelligence: How can AI support education?*